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The Problems of Contemporary Education

Areas of Improvement of Public Procurement Procedures in the Field of Education

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Abstract

The subject of this research is the normative legal acts of the Russian Federation that regulate the procedure for public procurement in education. The objectives of the article are to identify problematic issues and features of public procurement of educational services, as well as to formulate directions for the development of legal regulation of high-quality and the conclusion of government contracts in the field of educational activities in Russia. The study revealed the need to optimize the legal support of public procurement in the educational sphere. The study used the chi-square test to test statistical hypotheses. The study found that the current procurement system does not fully contribute to the economic growth of the state. Improving the efficiency of the procurement system is hindered by the following factors: 1) the complexity and instability of procurement legislation. In total, during the entire period of the Law No. 44-FZ in force, 80 federal laws were adopted, amending it; 2) efforts are aimed at improving the procurement procedure, and not at achieving procurement efficiency and ensuring the proper quality of goods, works, services. Despite the upward trend in the volume of public procurement and the orientation of the procurement system towards increasing the efficiency of procurement through increased competition, during the entire period of operation of the contract system, there have been no significant changes in the indicators of competition and savings. A significant share of purchases from a single supplier remains, there is practically no competition. In this regard, it is advisable to optimize the procedure for holding tenders and auctions, clarifying cases of purchases from a single supplier in the field of education. Conclusions are formulated that the practical recommendations

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obtained as a result of the research can be applied when developing a strategy for the development of the public procurement system in the field of education.

Keywords: public procurement, customer, education, contract system, educational institution, school, legal regulation.

1. Introduction

Government purchases in the education system are regulated by Federal legislation. The specificity of public procurement in an educational organization is such that both universities and schools are forced to adhere to uniform legislative norms, carrying out purchases for completely different amounts. At the same time, government purchases provoke high competition among suppliers and contractors. The legislation has already undergone changes many times and still remains imperfect, although it fixes the procedure for the distribution of budgetary funds, the formation and publicity of orders for the performance of work, the delivery of goods and the provision of services, a list of requirements for performers.

It should be noted that the public procurement system should simultaneously meet two types of criteria: requirements for state contracts management and economic policy goals. For the reason that the simultaneous compliance with the requirements for these two types is often simply impossible, the development of a balanced policy of public procurement acquires particular importance (Aleksandrova, Ostapovets, 2017).

The specifics of public procurement in an educational organization requires public procurement to be publicly justified, predicted and planned.

Thus, the purpose of the study is to improve public procurement procedures in education in the context of digitalization by developing practical recommendations for the implementation of its digital transformation based on the analysis of problematic issues, features, risks that impede the quality and prompt implementation of public procurement in the field of education.

2. Materials and methods

The methodology for studying problematic issues of public procurement procedures in education in the context of digitalization in order to further improve the directions of development of a competitive environment in the field of procurement is a synthesis of legal science methods based on materialistic dialectics: comparative legal, formal legal, systemic legal (legal aspect), – with an analysis of the main indicators of the development of digital transformation of state economic activity, in particular, in relation to the conclusion of state contracts for the provision of educational services (financial and economic aspect).

Legal technologies of legal analysis allow carrying out a system analysis to study the legal, social, organizational and economic processes of digital transformation of public procurement in general, as well as taking into account the specifics in the field of education, in particular.

The chi-square test was used to test statistical hypotheses. The χ^2 (chi-square) test is one of the most widely used criteria for testing statistical hypotheses in socioeconomic and humanities research. This is the simplest test for the significance of associations between categorized variables. The popularity of this criterion is associated both with its simplicity and with the possibility of a very flexible application.

3. Results

Legal regulation of public procurement in the field of education is carried out by a system of normative legal acts, among which are:

- Federal Law "On the contract system in the field of procurement of goods, works, services to meet state and municipal needs" dated 05.04.2013 N 44-FZ,
- Civil Code of the Russian Federation, part 2 (Civil Code of the Russian Federation, part 2),
- Federal Law "On Protection of Competition" of July 26, 2006 N 135-FZ,
- Federal Law "On Education in the Russian Federation" dated December 29, 2012 N 273-FZ,
- Federal Law "On the Procurement of Goods, Works, Services by Certain Types of Legal Entities" dated July 18, 2011 N 223-FZ.

As well as by-laws:

- Decree of the Government of the Russian Federation of September 15, 2020 N 1441,

- Decree of the Government of the Russian Federation of 09/18/2020 N 1490 (as amended on 11/30/2021) "On licensing educational activities",

- "Federal state educational standards, additional professional programs".

As you know, starting from 2022, a number of serious changes will take place in the field of public procurement. 360-FZ introduces innovations in the current bidding procedure and is aimed primarily at simplifying and accelerating all processes ([Federal Law "On the contract...", 2021](#)).

1. Perhaps the most important change will be a complete transition to electronic document management. Electronic registration will be carried out through standard forms that will be sent to the customer in the EIS (Electronic Information System).

The act of acceptance of goods, work or services, all kinds of appeals and other operations will be carried out exclusively in electronic format. The draft contract, for now, will be attached as a separate file, but in 2023 it will also become available for filling in a special form.

Even the filing of a complaint will be carried out through a unified information system, and when filing it, an indication of the IKZ (Purchasing Identification Code is a 36-digit number, in the structure of which information about the purchase is encrypted) will become mandatory.

2. From the beginning of next year, the requirements and instructions for completing the application will become part of the notice. Procurement documentation will remain only in closed procedures, for obvious reasons.

Open tenders, in turn, will become less loaded in terms of the attached documents, which will greatly facilitate familiarization with the tender and all important information.

In addition, when filling out the application form for participation, most of the information will be automatically pulled from the EIS (Electronic Information System). This convenience will appear on 04/01/2022.

Separately, it should be noted that now there is no need to indicate the characteristics of the goods upon delivery. The innovation works only if the customer has indicated the trademark, and only the country of origin will need to be additionally indicated.

3. The new law introduces universal prequalification for participation in tenders worth over 20 million rubles. If the initial maximum contract price is equal to or higher than the indicated amount, then only those companies that have successfully completed a contract with a value of at least 20 % of the current purchase price in the last 3 years will be allowed to participate. In this case, the subject of fulfilled obligations does not play a role, but the fact itself is taken into account.

The innovation will allow customers to protect themselves from unscrupulous suppliers, because only those companies that have managed to establish themselves from a positive side will become participants ([Egorova, Andreeva, 2021](#)).

4. To simplify procurement, the new law provides for only three types of competitive tendering. We remind you that today 11 types are used.

As a result, as of January 1, 2022, the following methods of competitive bidding will be available to suppliers and customers:

- request for quotations in electronic form;
- auction (electronic, closed and electronic closed);
- competition (electronic open, closed and electronic closed).

5. In addition to the significant "downsizing", the procedures themselves will also undergo changes. To a greater extent, they are aimed at accelerating the usual processes so that the procedures take place in a shorter time frame.

In general, in order to place a purchase, you need to understand what kind of educational service you need. It is necessary to decide on the direction and type of advanced training. What will it be: a classic program for obtaining additional education or professional retraining, or a more modern and effective way with individual and situational trainings, master classes? Both options are good in their own way, but they have different methods of conveying information to the listener. The service provider can be both an educational organization and an invited speaker.

The quality of functioning of the procurement system and its effectiveness to a decisive extent depend on taking into account industry specifics in the procurement planning process, organizing and conducting procurement procedures, forming the terms of contracts and their execution.

For services in the field of arts, entertainment, recreation and sports, in the field of education and health care, goods of manufacturing industries, services in the field of information and communication, there are also significant and relatively high values of the correlation and elasticity

indicators. The coefficient of elasticity is an indicator of the strength of the relationship between the factor x and the result y , showing the percentage of the change in the value of y when the value of the factor changes by 1 %. The coefficient of elasticity (E) is calculated as the relative change in y per unit of the relative change in x .

Calculated estimates of the elasticity of output to demand, realized through the system of government and corporate procurement, demonstrate high values for 10 out of 20 considered types of activities. Thus, an increase in the volume of purchases of services related to services in the field of education by 1 % provides an increase in output for this type of activity by 0.30 % (Table 1).

We also calculated the correlation coefficients between the time series of the cost volumes of purchases and the time series of the Gross Value Added (GVA) with a leading annual lag and the exclusion from their values of the demand realized through the system of government and corporate purchases. These correlation coefficients indirectly reflect the influence of the volume of purchases of the current year on the growth of the sectoral output of the next year, which is not conditioned by the demand realized through government and corporate purchases.

Table 1. Indicators of correlation and elasticity of output with respect to demand realized through the system of government and corporate purchases

Industry name	Elasticity index	The indicator of the correlation between the volume of government and corporate purchases and industry GVA
Educational services	0,30	0,96
Services in the field of arts, entertainment, recreation and sports	0,78	0,84
Health and social services	0,74	0,65
Manufacturing products	0,20	0,61
Information and communication services	0,33	0,61
Services related to scientific, engineering, technical and professional activities	0,34	0,49

These tables indirectly confirm the significance of the impact of government and corporate purchases on the development of a number of industries, and, therefore, planning and implementation of purchases with a high probability have an impact on the magnitude of the multiplier of budget expenditures, and, accordingly, on the rate of GDP growth. The procurement system can be used as one of the tools to stimulate economic growth.

Consider the statistical data in the field of public procurement for 2020–2021. The situation in the third quarter of 2021 is ambiguous. The total number of purchases is 1,978,920 tenders for a total amount of about 11.5 trillion rubles.

Compared to 2020, the number of tenders increased by 36,891, the growth rate reached 6.97 %. At the same time, the total cost of all purchases fell by almost 1.2 trillion rubles.

The decline was due to government orders: last year, 2.4 trillion rubles more were spent on the purchase of goods, works and services.

In the public sector, a significant increase in funds invested in procurement was shown by the sphere of science – 478 %, although in terms of the total amount of purchases, science is only in eighth place.

Thus, we see that already in the 1st quarter of 2021, the number of government contracts concluded by an educational organization with a single supplier decreased, which is a positive aspect in the development of competition in the public procurement market in education (Analiticheskij otchet..., 2013).

Table 2. Contracts Concluded in 2020–2021 with a Single Supplier (Contractor, Contractor) in the Settlement of The Grounds for Concluding such Contracts

Reason for contracting with a single supplier	Number of concluded contracts (3 quarter 2020)	The price of the concluded contracts (3 quarter 2020)	Number of concluded contracts (1 quarter 2021)	The price of the concluded contracts (1 quarter 2021)
Part 1, paragraph 33 of Article 93 – the purchase of teaching services, as well as the services of a guide (guide) provided by individuals	14 390	820 850 918	10 970	627 194 345
Part 1, paragraph 35 of Article 93 – the conclusion by organizations engaged in educational activities and recognized in accordance with the legislation of the Russian Federation on education as federal or regional innovation sites, contracts for the supply of equipment (including its technical operation), software necessary for the implementation of scientific and technical results and results of intellectual activity, with the owner of exclusive rights to such equipment and software at the expense of funds allocated for the development of innovative infrastructure in the education system	19	5 501 110	3	306 747

4. Discussion

Any purchases for educational institutions are strictly regulated by law. Some procedures allow the conclusion of an agreement with a single supplier for a total amount of less than 400 thousand rubles. In other cases, the maximum contract price is 100 thousand rubles.

The status of an educational institution determines the subtleties of the procurement procedure. In addition to 44-FZ, there are several other laws regulating this area. So, 223-FZ "On the procurement of goods, works, services by certain types of legal entities" is applied in the case of the purchase of goods or services at the expense of grants, the income of the organization or within the framework of subcontracting ([Federal Law "On the procurement...", 2011](#)). According to this law, the regulation on procurement in an educational institution determines the procedure. If other procurement methods are used, one should be guided by the content of 44-FZ ([Demchenko, Simaeva, 2021](#)). The main criterion for choosing a specific type of procedure is the maximum competition between suppliers. This is what determines the efficiency of the purchasing process. To follow the principle of maximum competition, the law provides for various types of procurement procedures: auction, competition, request for quotations and proposals. These

activities are time-consuming and involve a large volume of workflow, which creates additional difficulties. Note that, according to 44-FZ, the contracting authority has the opportunity to sign an agreement with a single contractor of its choice (part 1 of article 93).

Selection of a single supplier or contractor an educational institution may not conduct a competitive procurement procedure in two cases. First, there are situations when conducting a competitive procedure does not make sense from an economic point of view, that is, the time and money spent are incomparable with the cost of the contract. Secondly, some areas will be distinguished by the absence of competition in principle, that is, the purchased product or service is unique, or the executing company has exclusive rights for implementation. The most common example is utilities, where there is only one copyright holder. In addition to the above situations, the choice of a contractor is carried out without a competition, if the services are paid for to an individual (teaching or the work of a guide).

Educational institutions can also purchase from a single supplier in other areas when it comes to suppliers with exclusive rights. This rule applies, for example, to the purchase of books and electronic publications for the organization's library. In this case, the supplier (author or publisher) must be the exclusive right holder, have an exclusive license to sell books or electronic access to materials (clause 14, part 1, article 93). When concluding a contract with such a supplier, an annex to the contract will be documents certifying the exclusive rights to the goods: letters of guarantee, lists of contracts between authors and publishers, etc. Similarly, books and works of specific authors are purchased, incl. recordings of performers, phonograms of certain studios. Exclusive rights or licenses in this case must be in the hands of one person (clause 13, part 1 of article 93). But this rule does not include film projects that cannot be purchased in this way, if the purpose of the purchase is further rental.

Leisure of students is another area in which it is permissible to do without competitive procedures (clause 15, part 1 of article 93). Tickets for a theater, concert, circus, museum or sporting event can be purchased from one supplier. In the same way, you can pay for services for the creation of works of literature or art, the organization of a concert, physical. person or legal entity face. This also includes the creation of decorations and props for performances.

When making purchases, in particular, food products, it is recommended to give preference to competitive methods, while reducing the number of purchases from a single supplier (contractor, contractor), thereby observing in the field of procurement, goods, works, services to meet state and municipal needs " principles of ensuring competition and efficiency of procurement, as well as the efficiency of using budget funds, provided for in Article 34 of the Budget Code of the Russian Federation. In this context, attention should be paid to the possibility of such a procurement method as a tender with limited participation. This procedure provides for the ability to guarantee the required qualifications of the supplier by establishing additional requirements for him.

The educational institution may need to purchase medicines to fill the first-aid kits and ensure the work of honey offices. The purchase of this type of goods is governed by Art. 33 44-FZ. This article sets out the requirements for the indication of the international non-proprietary name (INN) of a product, and not the name of a specific brand name. If a drug does not have an INN, then its chemical name (grouping) is indicated. The exception is drugs from the special list of the Government, as well as those prescribed for specific indications. In this case, you can specify a specific brand.

It should also be remembered that purchases for educational institutions are carried out according to the national regime. The national regime is understood as a list of established prohibitions and restrictions on the acquisition of foreign goods. The same concept includes preferences for manufacturers from the Russian Federation. Admission restrictions apply to the following groups of goods: medical products; medications; Food; electronic goods. There are also a number of bans for the following products: furniture and woodworking products; mechanical engineering; light industry; software products.

5. Conclusion

The purchase of educational services is a specific process. In addition to the fact that you comply with all the rules and procedures of Federal Law 44-FZ, you need to take into account the requirements of Federal Law No. 273-FZ "On Education". You have to carefully choose an

educational service so that its content meets the goals and objectives of future students. Choosing a reliable provider of educational services is becoming a serious issue.

Let us calculate the significance of the results of the study (p-value) on the need to reduce the conclusion of state contracts in education with a single supplier. Thus, in the third quarter of 2020, 14,390 contracts for the purchase of teaching services in the field of education were concluded in the first quarter of 2021, the number of contracts decreased significantly and amounted to 10,970 contracts with a single supplier. Let's assume that in the first quarter of 2022 the number of such contracts drops to 5,100. Let's look at the value of χ^2 (chi-square). We determine the number of degrees of freedom by the formula $n-1$ and get 1. Further, by the formula $\chi^2 = \sum((o-e)^2/e)$, where "o" is the observed value, and "e" is the expected value. we get the value of χ^2 -square equal to 2.3. Using the χ^2 -squared spreadsheet to find the p-value, we find that it is 0.1, which is practically equal to the 0.1 significance level. This means that there is a proven plausible link between our observed results in phasing out single-source government contracts in education and is likely to decrease over time.

In general, the first quarter of 2022 was generally marked by a drop in the number of public procurements. During this period, their number reached 425 thousand, which is 7 % less than in the first quarter of 2021.

If we consider all public procurements for the 1st quarter of 2022 by industry, then contracts in the field of construction works and structures occupy the first place by a huge margin. Here, the total maximum price of all contracts amounted to 1.1 trillion rubles. In second place are products of manufacturing industries (550 billion rubles), in third place are services related to scientific, educational, engineering and professional activities (86 billion rubles).

Despite this, the total amount of public procurement, on the contrary, increased by 11 % year-on-year and amounted to 2.1 trillion rubles.

Thus, the main reasons for such changes to reduce the number of public procurements, including in the field of educational services, were, among other things, changes in legislation that came into force in 2022. According to them, customers are not required to publish data on procurement participants. The second reason is the unstable economic situation in the country and the imposed sanctions, due to which the fulfillment of a number of contracts was called into question.

Any payment for goods and services in the field of education must be initially entered into the organization's procurement plan in the appropriate line. The schedule and procurement plan must be published in the Unified Information System. The procurement plan of the educational institution for each item should include: the procurement identification code, the purpose of acquiring educational services within the scope of the customer's activity, the exact name of the services purchased, the amount of financial support for the procurement procedure, timing, justification for the need for procurement (drawn up in the form and in accordance with Decree of the Government of the Russian Federation of 05.06.2015 No. 555).

When drawing up a plan, it is important to correctly indicate the purpose of the purchase, as well as to describe in detail the purpose of the allocated amount of funding. By this, the customer justifies the need to purchase certain goods and services. The law provides for a number of goals, of which the one that most fully corresponds to the specifics of the customer's activity is selected. It is important to indicate how the purchase of certain educational services will contribute to the fulfillment of the functions and powers of the client.

Customers often purchase training through auctions. Here the winner is determined on the basis of one criterion – the price of the contract. It is difficult to objectively assess the service only by its cost, and its characteristics in the description are interpreted by participants in different ways. It is preferable to use an open tender in such cases, since it provides several evaluation criteria. Price is not always critical here. Resolution No. 1279 of 09/30/2019 clarifies whether the procurement of the employee training service is included in the schedule: yes, like the rest of the procurement of the organization ([Decree of the Government..., 2019](#)).

Tender documents for training are drafted so that suppliers correctly interpret all requirements and criteria. In this case, they will be able to objectively calculate the price.

When preparing the terms of reference for the tender of educational services, take into account a number of nuances, the violation of which entails the restriction of competition and, as a result, disputes in the FAS: Educational institutions themselves determine the names of their

own educational programs (No. 273-FZ of 12/29/2012), therefore the customer does not have the right to indicate in the terms of reference the exact names without special instructions. It is recommended to indicate the number of hours in a range of values (for example, minimum or maximum), and not a specific one, since this limits the number of participants. The choice of the location for the training should be left to the provider. The customer indicates only the locality where the end users will be able to gain new knowledge, or the area. For full-time or part-time training, indicate this, as well as the name of the procurement object required to ensure the transition to distance learning for employees. For example: distance learning on labor protection. The services purchased are described based on educational standards. For example, advanced training will take at least 16 hours, and retraining will take more than 250.

Educational activities are subject to licensing (Art. 91 No. 273-FZ) ([Federal Law "On Education...", 2012](#)). The procurement documentation should establish the requirement for the supplier to have an educational license. Such a document is not required only for individual entrepreneurs who provide services directly.

The place of provision of services is not indicated in the appendix to the license. This means that educational institutions are not limited in terms of the place where classes are held. Rejection of the application on the basis that the supplier's address does not coincide with the customer's requirements is not permissible (Decision of the FAS dated February 27, 2020 in case No. 44-1161/20) ([Decision of the Federal..., 2020](#)).

Federal Law № 273 explains what license an organization must have for training in accordance with 44-FZ: a license to conduct educational activities in the field of additional professional education.

In addition, the conclusion of a subcontract for the purchase of educational services under 44-FZ is not prohibited (unless otherwise specified in the contract), therefore, the place of training does not always coincide with the address of the winner of the tender.

In the future, the acceptance of training is carried out in accordance with the terms of the contract. It provides for an examination, the creation of an admission committee at the request of the customer, the drawing up of an acceptance certificate within a specified period. After the fulfillment of obligations, the contractor provides the customer with an act of reconciliation of mutual settlements ([Gavurova et al., 2019](#)).

Thus, in order to carry out procurement procedures in the interests of an educational institution, it is necessary to know all possible methods and situations in which they are applied in accordance with the Law on the Contract System. Note that this activity can be carried out most effectively if you approach the issue flexibly and choose a procurement method in accordance with the interests and characteristics of the customer's activities.

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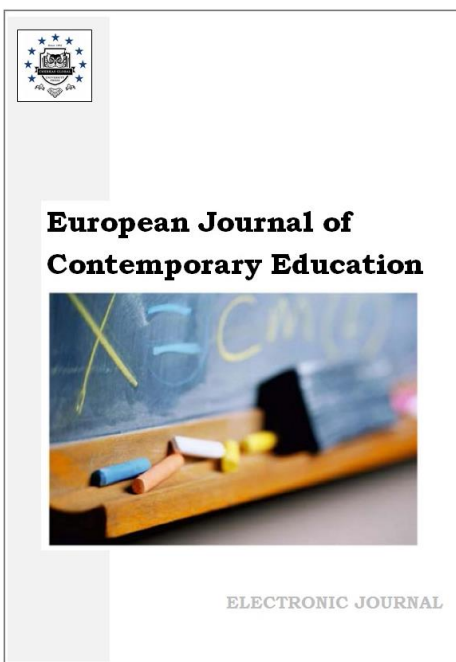
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(Dis)Satisfaction with the Body Image Among 13-14-Year-Old Students of Lithuanian Schools

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Abstract

The article focused on the evaluation of Lithuanian adolescents' (dis)satisfaction with their body image by performing self-evaluation of their body image components through their body parts. Due to major physical, social, emotional, and moral ongoing changes, adolescents' physical appearance becomes one of the top concerns. Dissatisfaction with physical appearance among girls is often reflected in a desire to be thinner, while among boys – a desire to be taller, become more muscular and have a nice body shape. However, there is a gap in research analyzing dissatisfaction with the body parts among adolescents. The aim of this research was to evaluate 13-14-year-old Students of Lithuanian Schools (dis)satisfaction with their body image by performing a self-evaluation of their body image components through their body parts. A 40-question authorial questionnaire was developed to measure (dis)satisfaction with one's body parts and validated in a representative sample. The sample consisted of 1,347 13-14-year-old students. As established, (dis)satisfaction with one's body parts was related to gender: the satisfaction of boys and girls with the image of their bodies differed ($p = 0,000$). Adolescents were more unsatisfied with the body parts that depended on an individual's phenotype (in the lower area – with buttocks, hips, legs, thighs, and calves; in the middle area – with abdomen and waist; in the upper area – with shoulders, arms and chest), and they were more satisfied with individual morphological characteristics of the body (facial skin, feet, cheeks, ears, hair, chin, lips, eyes, neck), depending on an individual's genotype. The boys' satisfaction with their body parts among 13-14-year-old students was higher than that of the girls.

Keywords: body image, students, schools, satisfaction, dissatisfaction, physical appearance.

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1. Introduction

Body image is closely related to an individual's self-image (Berk, 2009). Body image and self-image are subjective phenomena (Murray et al., 2013, Trif, 2012, Watkins et al., 2008). Other researchers, e.g., Watkins et al. (2008), indicated that body image covered only one part of an individual as a whole, viz. the body (Watkins et al., 2008).

Body image is closely related to an individual's physical appearance. Based on the statements of Naumann et al. (2009) the physical appearance of an individual described their external looks (Naumann et al., 2009). Body image reflected an individual's physical appearance (Levine, Smolak, 2002). An individual's dissatisfaction with their own physical appearance suggested their having a negative body image, whereas one's satisfaction with their physical appearance indicated their having a positive body image (Stice, Shaw, 2002).

The findings of Raufelder et al. (2014) revealed that body image was especially actualised in early adolescence, as adolescents started paying more attention to their physical appearance (Raufelder et al., 2014). At that age stage, adolescents were maturing intensely. In the period of adolescence, the development and the changes were the fastest, and fast biological, psychological, physiological, mental, and social development and maturation took place. In adolescence, the height and weight were rapidly increasing, bones of limbs were growing fast, while muscles and limbs grew slower than bones (Brake, 2012). That is a kind of transition from childhood to youth. It was during that period that complex contradictions in physical and mental development took place that affected the formation of body image (Brake, 2012).

The rapid pace of development of Lithuania as a post-Soviet country and the socio-economic changes revealed the changes in the adolescent self-evaluation of their bodies particularly distinctly. After Lithuania became a free independent country, wide possibilities were created to follow the trends of global fashion and body aesthetics using the media, which influenced the perception of one's body image. The Lithuanian case study highlights the problems of adolescent perception of their body image and its consequences in adolescence. The insights in the scientific context can be relevant to the broader European and global community looking for solutions how to help adolescents to take a realistic view of their bodies and to be more satisfied with their body parts.

An individual at any age stage is characterized by a unique perception of the world, a unique relationship with the world, and a specific view of physical appearance. That is of special importance for the studies of body image of individuals in early adolescence and its objectivation and moulding. Therefore, first, we are going to emphasise the significance of objectivation seeking a positive body image formation in early adulthood (Derkontienė, 2015).

The aim of this research was to evaluate 13-14-year-old Students of Lithuanian Schools (dis)satisfaction with their body image by performing a self-evaluation of their body image components through their body parts.

Differences in the adolescent negative body image from the gender viewpoint.

Negative body image is a specific characteristic of adolescence. The conclusion was based on numerous studies (e.g., Abbott, Barber, 2010) which proved that many adolescents had negative body image. The differences in body image in terms of gender were common not only among girls (Striegel-Moore, Franko, 2002), but also among boys (Murnen, 2011; Murray et al., 2013).

The research findings witnessed that quite a few adolescent girls were dissatisfied with their bodies, especially with their weight and attractiveness (Striegel-Moore, Franko, 2002; Murnen, 2011; Puhl et al., 2017). They spent a lot of time comparing themselves with their peers, tended to compare themselves with the images seen in the media, and imagined a big gap between the actual and the ideal body images (Murnen, Smolak, 2013). The findings of the research conducted by Murnen (2011) showed that girls tended to receive more comments on their physical appearance (both positive and negative) than boys (Murnen, 2011). The authors noted an important fact that negative comments were most often directed towards the physical appearance of girls, while in the case of boys, they were more often related to body functions (e.g., exercise and good preparation).

The bullying and substance use literatures, as well as tenets of sociocultural body image theories, suggest that during adolescence, girls may be at greater risk for substance use after victimization experiences, in comparison to boys (Davis et al., 2018; Johnston et al., 2018; Klinck et al., 2020; Ramseyer Winter et al., 2017), they are relatively more sensitive to appearance-related

feedback, placing them at greater risk for negative affective responses to appearance-related teasing (Puhl et al., 2017; Weissman, 2019).

Some authors stated that adolescent boys did not express concern about their physical appearance (Murnen, 2011). In fact, unlike girls, boys were more often dissatisfied with their bodies in adolescence, while in the process of maturation they were becoming increasingly satisfied with them until they acquired their ideal body shape (Bearman et al., 2006). Adolescent boys, as compared to girls, were more dissatisfied with the upper part of their bodies (Ata et al., 2007).

The boys' concern about their physical appearance was associated with a need to have a muscular body (Hargreaves, Tiggemann, 2006). The authors based the statement on the research, which led to the conclusion that a desire to have a muscular body was the main reason for boys' concern. They noted that adolescent boys tried to increase their muscles, and for that purpose they used different strategies aimed at moulding a muscular upper part and a slim lower part of the body.

Causes and Consequences of negative body image in adolescence. The research into body image proved that a number of factors were conducive to adolescents' formation of a negative body image, including the media (Ip, Jarry, 2008), the incompatibility between the Real and Ideal Self (Bearman et al., 2006), the body mass index (Goldfield et al., 2010), negative self-esteem (Budreikaitė, 2011; Franzoi, Shields, 1984), age (Finne et al., 2011), family influence (Ata et al., 2007).

Researchers pointed to various unwanted effects of negative body image. Appearance-related teasing during adolescence appears to confer risk for internalizing problems, eating disorder psychopathology (Puhl et al., 2017) and substance use (Johnston et al., 2018; Klinck et al., 2020). As stated by Goldfield et al. (2010) negative body image promoted the development of depression (Goldfield et al., 2010). Negative body image was associated with excessively active exercise, plastic surgery, and the use of various chemicals and promoted social avoidance, sexual dysfunction, and the use of cosmetic, surgical, and dermatological procedures due to irrational beliefs (Menzel et al., 2011).

Adolescent girls may be especially attuned to sexualized self-presentations, because the body and sexuality are both highly salient during puberty. Forming negative attitudes about another person based on a sexualized presentation is a form of objectification because the attitudes are based solely on the individual's body. It is reasonable to expect that this objectification of a sexualized other via negative evaluations could translate into negative behavior directed at girls (Daniels, Zurbriggen, 2016). Such an approach does nothing to address the underlying problematic issue of the widespread sexualization of girls and women in our culture.

Background theory. The Objectivism theory (Rand, Peikoff, 1982) argues that reality exists independently of consciousness. People are believed to have a direct contact with reality through perception. As proved by scientific theories and conceptions, most adolescents experience body image-related problems, which, if left unresolved, can disrupt the adolescent's personal development. DeLeel et al. (2009) noted the importance of understanding body image-related problems since the difficulties faced in adolescence can persist in adulthood (DeLeel et al., 2009). Those arguments led to the conclusion that it was especially relevant to correct the body image specifically in adolescence and thus have a positive effect on its moulding.

It should also be noted that early adolescence was particularly important in the process, since more attention was paid to physical appearance at that time (Raufelder et al., 2014). Consequently, in early adolescence, the process develops increasingly rapidly. If we want adolescents to learn to accept themselves as they are, we ought to remember that it is specifically in early adolescence that the body image objectification takes place, i.e. subjective activity and behaviour (unrealistic provisions and attitudes) transform into conscious and regulated activity (Derkintiene, 2015).

When looking for body image objectification factors of individuals in early adolescence, attention was drawn to a close link between objectification and conscious, regulated activity (or control and self-control). The control of pupils' activity has to promote self-control and the efforts to improve activity (Kontautienė, 2015). Self-control (inspection, evaluation, and correction) creates preconditions for the body image objectification and moulding (Derkintienė, 2015).

Scientific research (e.g., Lindberg et al., 2006) witnesses that the control of physical appearance is not sufficiently developed in pre-adolescence. The checking would provide both teacher and adolescent with the information about the body image. During the evaluation of the body image, the pedagogue and the adolescent understand whether the current body image is adequate. Such a system of inspection, evaluation, and correction helps adolescents to form a

positive body image. Self-evaluation of one's body parts is the first step towards the body image objectivation (Derkintiene, 2015).

2. Methodology

Sample. Sampling is essentially predetermined by two factors: the sample is to be representative, i.e. to reflect the population from which it is composed as accurately as possible and to ensure a low sample error. The sample used in the present research is 1,347 adolescents, therefore, in terms of the sample size it should be considered as reliable and representative.

A probability cluster sample was chosen for the research. The probability cluster sample is obtained when the whole population is divided into similar groups – clusters in accordance with certain characteristics. A part is selected from the total number of clusters through simple random sampling, and all the elements of the selected clusters get into the sample. For the present diagnostic test, general education schools were randomly selected.

The authors used the SPSS programme to draw lots and received 24 educational institutions (progymnasiums), representing all five regions of Lithuania, where the test was to be carried out. In each school, we sought to survey all the Form 8 pupils.

The research sample consisted of $n = 674$ boys and $n = 670$ girls, i.e. in terms of gender, the sample consisted of similar numbers of boys (50.0 %) and girls (49.8 %). In terms of age, 13-year-old respondents accounted for 59.0 %, and 14-year-olds, for 41.0 %.

Instrument. A questionnaire developed by Derkintienė (2015) was used for the diagnostic research. It was developed on the basis of instruments used in the works of Lithuanian and other researchers (Franzoi, Shields, 1984, Jankauskienė, 2001; Miškinytė, 2011, Pajaujienė, 2012).

Part 1. Questions for adolescents' self-evaluation of anthropometric indicators. Since satisfaction with the physical development indicators which could affect the adolescents' body image was important for the research, the respondents were asked to name the current and the desired height and weight indicators (4 questions).

Part 2. The scale of adolescents' satisfaction with their body parts. That section of the instrument included 40 questions. Three areas of the stature were identified: 1) the upper area of the body; 2) the middle area of the body; and 3) the lower area of the body. The areas cover 20 parts of the body (Derkintienė, 2015; Franzoi, Shields, 1984). In the diagnostic instrument, a semantic differential scale was used: a 7 point scale with opposite characteristics at its end (like/dislike). Moreover, provided an adolescent marked 1 to 3 on the scale of satisfaction with parts of the body, (s)he was asked to comment on what (s)he disliked in that specific part of the body. The data of these answers are analyzed as a qualitative study - content analysis is provided.

Validity. A positivist strategy was chosen, based on which we believe that the investigated phenomenon can be measured. The following principles of the positivist strategy have been implemented: those of control, replication, forecasting, detailing the sample, randomness of the sample, visibility, and the establishment of universal behaviour rules and ways.

The internal validity was based on the fact that the obtained facts and the results of the statistical analysis justified the conclusions on the issue of dissatisfaction with body parts. Other information to be taken into account: the principle of triangulation was applied (methodologies, sources, theories and researchers: through the application of different data collection methods, similar data were obtained); the researcher was also a research participant; other people were involved in the data collection process: co-authors of the paper Budreikaitė, Kontautienė took part in the research conducting and the data analysis; gradual repeated data collection under different conditions (in the morning, in the daytime, during the school year, etc.) contributed to finding out whether the changes in the situation affected the stability of the data.

External validity indicates whether the research findings can be applied to the general set. According to the statistical portrait (2011, June) of Lithuanian schools based on the data of the Lithuanian Department of Statistics, Lithuanian schools had 34,400 pupils in Form 8 (Lithuanian residents..., 2011), and they represented the general set of the diagnostic test. The probability sample size for the test was calculated according to the Paniotto formula, with a 3.0 % error (Kardelis, 2017). The random probability research sample with a 3.0 % error consisted of 1347 participants ($n = 1,347$).

Reliability. The developed research instrument was approved, seeking to check the clarity of the questions to the respondents. The procedures to establish the data stability were used

(the instrument was used twice under similar conditions: during the approval and in the research, and the ratio of the findings was close to 1 (in other words, the results were similar)). The internal compatibility of the questionnaire scales, or coherence, was checked. Cronbach's alpha was used to find out whether all the questions on the scale sufficiently reflected the investigated object, and to specify the number of required questions on the scale. After verifying the reliability of the developed scale, the Cronbach's alpha reliability was found to be $\alpha=0,887$, consequently, the scale was a reliable measuring instrument.

Data selection procedure. The empirical research started with a diagnostic test carried out in 2012. The questionnaires were filled in the classroom during a class meeting. At the beginning of the survey, the author of the paper distributed the questionnaires and explained to the respondents how to fill them in. The 8th formers were addressed in a clear and comprehensible way and were explained the goals of the research. The author answered all the relevant questions of the survey participants, related to the conducted research. It took the respondents from 30 to 45 min to fill the questionnaire. During the day, two to three classes were surveyed.

Ethics. The research ethics issues were discussed at a meeting of the Department of Physical Education of Klaipeda University (PF-46/09, 2012-02-20,). The research project was presented to the Lithuanian Research Council and received funding for the research. Prior to the investigation, written permissions were obtained from the heads of the municipal education departments, the headteachers, and the parents. Only those pupils who had submitted their parents' written consent for them to take part in the survey could participate. The pupils who had parental permission but did not wish to participate in the survey had the right not to respond to the questionnaire, thus ensuring the principle of volunteering.

The participants of the survey were informed that the information collected would not be accessible to anyone except the author of the research work, who was going to first encode the received data, and only afterwards publish the already conceptualized research outcomes. The survey provided anonymity to the respondents and adhered to other principles of research ethics.

Because adolescents (13 to 14 year-olds) were a specific group, i.e. minors under 18, the security principle was observed. The implementation of the principle of goodwill and respect for the individual's dignity (Kardelis, 2017; Rupšienė, Rutkienė, 2016) was ensured by the correct formulation of the statements of the questionnaire, which were presented respectfully and did not create preconditions for violating the privacy of the respondents. Voluntary and anonymous participation was guaranteed – the respondents were allowed not to participate in the survey if they did not want to.

Statistical analysis. For the analysis of the collected data, Statistical Package for Social Sciences SPSS 20 was used. In the diagnostic test, the following methods of statistical analysis were applied: to evaluate the questionnaire scale reliability and internal consistency, Cronbach's alpha reliability coefficient was used, characterized by the questionnaire inter-item correlation. The descriptive statistics method was intended for the analysis of the variables grouping traits, grouping intervals, and grouping types, for the evaluation of the data variation and concentration, and for the presentation of statistical data through graphs and tables. The meaningfulness of the differences between the adolescent satisfaction with elements of their statures was calculated using the Chi-square test, Friedman test, and Student's t-test. The Chi-square test was used to measure the differences in height and body mass by gender. The Friedman test was used to determine which body part the respondents were most dissatisfied with. The derived quantitative variables were created from the respondents' satisfaction variables with their body parts, the gender specific differences of which were calculated by applying the Student's t-test. To identify the differences between the boys and the girls' satisfaction with their body parts, the Mann-Whitney U test was chosen. Arithmetic averages, the largest (Max) and the smallest (Min) values were calculated. The method of content analysis was used for the analysis of qualitative data.

3. Results

Satisfaction with the physical development indicators by gender.

In the analysis of the morphological characteristics (body shape and structure) of adolescents, the relevant indicators of physical development are height and weight. As satisfaction with the physical development indicators was important for the research because it could affect

adolescents' body image, the respondents were asked to indicate the current and the desired height and weight indicators.

Height. The results of the test revealed that 5.7 % of the boys and 12.3 % of the girls were satisfied with their current height, while the rest were dissatisfied. From among them, 80.8 % of the boys and 93.3 % of the girls wanted to be higher, and 6.8% of the girls and 1.0% of the boys wanted to be lower. On applying the Chi square (χ^2) criterion, the differences between the boys and the girls' answers were found to be statistically significant ($\chi^2 = 51,592$; $df = 2$; $p = 0,000$). One can argue that the boys were more dissatisfied with their height.

Body mass. As witnessed by the analysis of the test data, only 4.7 % of the boys and 10.4 % of the girls were satisfied with their weight; the remaining 88.9 % of the boys and 49.2 % of the girls believed that their body mass was too small. 6.4 % of the boys and 40.4 % of the girls thought that their body mass was too large. Based on the Chi square (χ^2) criterion, the differences between the boys and the girls' answers were found to be statistically significant ($\chi^2 = 257,866$; $df = 2$; $p = 0,000$). One can argue that the boys were more dissatisfied with their body mass.

Results of the respondents' satisfaction with their body parts.

General results. On conducting a diagnostic test, we established the respondents' satisfaction with their body parts (Table 1). Based on the Friedman's test criterion, the differences between the adolescents' satisfaction with their body parts was found to be statistically significant ($\chi^2 = 16329,475$; $df = 25$; $p = 0,000$). The respondents were more dissatisfied with the following body parts: in the lower area of their bodies, with buttocks, hips, legs, thighs, and calves; in the middle area of their bodies, with abdomen and waist; and in the upper area of their bodies, with shoulders, arms, and chest. The composition of above-mentioned body parts depended on environmental factors (economic and social conditions, the character and intensity of physical activity, nutrition, experienced diseases, etc.), i.e. on the phenotype that keeps changing throughout life and shows an individual's development at specific age stages.

Table 1. Results of the respondents' satisfaction with their body parts (rank averages are based on the Friedman's test criterion)

	UBP – upper	MBP – middle	LBP – lower
Neck	17,26	*Abdomen 5,24	Feet 15,83
Hair	16,22	*Waist 8,95	Buttocks 8,50
Ears	16,04		Calves 8,99
Chin	16,35		Thighs 7,12
Lips	16,39		Hips 8,09
Cheeks	15,85		Legs 6,37
Nose	10,41		
Eyes	17,26		
Face	10,01		
Arms	5,57		
Shoulders	5,58		
Chest	9,46		

The composition of body parts dependent on phenotype can be corrected by physical exercise. As witnessed by Table 1, the respondents were most satisfied with individual morphological characteristics of their bodies inherited from parents, i.e. feet, cheeks, ears, hair, chin, lips, eyes, and neck. Those characteristics depended on the adolescents' genotype.

By gender. On conducting a diagnostic test, we established the differences in the respondents' satisfaction with individual body parts by gender (Table 2).

During the analysis of the differences in the upper area of the body, the girls, as compared to the boys, were found to be more dissatisfied with their face ($U = 172289,500$; $z = -7,802$; $p = 0,001$), nose ($U = 163292,000$; $z = -9,057$; $p = 0,001$), cheeks ($U = 206748,000$; $z = -2,957$; $p = 0,003$), hair ($U = 205523,000$; $z = -3,223$; $p = 0,001$), chest area ($U = 206717,000$; $z = -2,875$; $p = 0,004$). The above-mentioned body parts depended on the adolescents' genotype and could not be corrected by physical exercise.

Table 2. Results of the respondents' satisfaction with their body parts (rank averages were based on the *Mann–Whitney U* test: distribution by gender)

Upper body part			Middle body part			Lower body part		
UBP	Boys	Girls	MBP	Boys	Girls	LBP	Boys	Girls
Neck	673	674	*Abdomen	715	633	*Feet	714	634
*Hair	706	642	*Waist	708	640	*Buttocks	718	629
Ears	669	679				* Calves	744	604
Chin	699	649				*Thighs	737	611
Lips	685	662				*Hips	749	599
*Cheeks	704	644				*Legs	710	638
*Nose	768	580						
*Eyes	681	667						
*Face	755	593						
Arms	668	680						
Shoulders	684	664						
*Chest	704	644						

During the analysis of the middle area of the body (see [Table 4](#)), the girls, as compared to the boys, were found to be more dissatisfied with their waist ($U = 203616,000$; $z = -3,309$; $p = 0,001$) and abdomen ($U = 199037,000$; $z = -4,016$; $p = 0,001$).

During the analysis of the lower area of the body, the girls, as compared to the boys, were found to be more dissatisfied with the shape and volume of their legs ($U = 202790,000$; $z = -3,429$; $p = 0,001$), hips ($U = 176005,500$; $z = -7,221$; $p = 0,001$), thighs ($U = 184430,500$; $z = -6,053$; $p = 0,001$), calves ($U = 179827,000$; $z = -6,704$; $p = 0,001$), buttocks ($U = 196810,500$; $z = -4,288$; $p = 0,001$) and feet ($U = 199549,000$; $z = -4,059$; $p = 0,001$). The above-mentioned body parts depended on the adolescents' phenotype and could be corrected by physical exercise.

Results of the respondents' dissatisfaction with their bodies

Results of the content analysis. By means of the content analysis method, we identified the body parts that the adolescents were most dissatisfied with. It turned out that the greatest dissatisfaction ($n = 193$) was caused by the abdominal shape and volume ([Table 3](#)).

Table 3. Characteristics of the respondents' dissatisfaction with their body parts

Category	Subcategory	Statements confirming the problem (answers of the respondents)
Dissatisfaction with body parts	Shape and size of arms ($n = 82$) UBP	...scar on one hand; arm hair; arm moles; large, massive, not girly like; very thin; could be larger; veined; long; too large; little muscle; short...
	Shape and size of chest ($n = 93$) UBP	...flat chest; thick layer of body fat; weak muscles, could be bigger; ribs stick out; small; bigger...
	Shape and size of stomach ($n = 193$) MBP	...thick layer of body fat in stomach area; large stomach; weak muscles; no clearly evident abdominal muscles; could be flat; unattractive shape of belly; unattractive skin of belly...
	Shape and size of waist ($n = 99$) MBP	...large; I am very thin and my bones stick out; large layer of body fat; could be thinner; no waistline; I cannot wear clothes that I like; do not like; weak muscles; no clear line; have no waist...
	Shape and size of legs ($n = 165$) LBP	...plenty of body fat; unattractive skin; large; hairy; short; crooked; very thin; unattractive; weak muscles; wish they were longer and thinner; wish they were tighter; unattractive shape...
	Shape and size of	...plenty of cellulite; plenty of body fat; need more

thighs (n = 148) LBP	exercising; large; fat; could be smaller; too large; very thin; do not like; unattractive; wish they were more muscular...
Shape and size of hips (n = 112) LBP	...plenty of cellulite; could be narrower; could be broader; large; wide; round; could be larger...

Part of the respondents complained about excessive belly fat, a large belly, and weak abdominal muscles. In the lower area of the body, the respondents (n = 165) were especially dissatisfied with the shape and volume of their legs. They disliked their legs due to excess fatty tissue and weak muscles. The respondents (n = 148) were also dissatisfied with the shape and volume of their thighs: part of them indicated that was due to excess fatty tissue and weak muscles. In the lower area of the body, the respondents (n = 112) mainly disliked the shape and volume of hips: part of them complained about the hips being too large and wide. In the middle area of the body, the respondents (n = 99) mostly disliked the shape and the volume of their waist: part of them indicated a dense layer of fatty tissue in the lumbar region, non-existent waist, and weak muscles. In the upper area of the body, the respondents (n = 93) did not like the shape and volume of their chest: they complained about the chest being flat and having a dense layer of fatty tissue and weak muscles. In the upper area of the body, the respondents (n = 82) disliked the shape and volume of their arms: the arms were either too thick, with too little muscle mass.

The research findings indicated (Table 4) differences in the boys and girls' satisfaction with their bodies ($t = 8,223$; $p = 0,000$; Levene $p > 0,05$). The boys were more satisfied with their bodies than the girls.

Table 4. Distribution of the results of the respondents' satisfaction with their body parts by gender

Derived variable	Gender	Min.	Max	Arithmetic mean	Standard Deviation
Rating of satisfaction with the body parts	Boys	22	154	105,30	19,05
	Girls	22	154	101,09	19,26

4. Discussion

Lately an increasing number of Lithuanian and other countries' authors (Lamarque, Gammage, 2012; Mantilla et al., 2014; Pajaujienė, 2012; Pelegrini, Petroski, 2010; Trif, 2012) emphasize that adolescents' body image becomes a major part of their life. This is partially influenced by the biological changes undergoing in the adolescent's body, which, in their turn, change the adolescents' body image.

During the diagnostic research, attempts were made to rate the subjective satisfaction with anthropometric indicators among the adolescents at the age 13 through 14. Results have demonstrated that a majority of boys and girls are dissatisfied with their height. Expression of adolescent dissatisfaction with the height provokes a greater desire to be taller.

The present research has revealed that adolescents consider the body mass as a significant indicator. Results have shown that a high number of boys are dissatisfied with their weight as they wish to have a bigger body mass, i.e. be more muscular. The girls are more dissatisfied with their weight as they wish to have a lower body mass. These results are consistent with data that 51.3 % of boys were willing to gain, while 48.4 % of girls were willing to lose their weight (Pelegrini, Petroski, 2010).

Results obtained during the present research demonstrate that adolescents are more dissatisfied with such body parts, which are phenotype dependent. Body part self-assessment allowed to identify gender differences. The boys are more often dissatisfied with their body composition compared to the girls. The girls are more often dissatisfied with the middle and the lower areas of the body. These results are consistent with Pajaujienė (2012) research results, demonstrating that the girls are less content with the middle and the lower areas of the body compared to the boys (Pajaujienė, 2012). The above named results are consistent with the research results, which have revealed that adolescent girls starting from 40.0 % to 70.0 % are dissatisfied with two or more areas of their body (Levine, Smolak, 2002).

The research supports the assumption that girls more than boys are dissatisfied with their body shape, largeness, as well as body size and muscle weakness, features, which are phenotype

dependent. Similar results were observed in Watkins et al. (2008) research, which emphasize that girls and boys experience a great dissatisfaction with their body (Watkins et al., 2008). According to research results, the boys more often focus on an attempt to maintain their body shape and increase their muscle mass (Levine, Smolak, 2002). The present research has demonstrated a tendency that the boys wish to become larger, more muscular, while the girls – thinner. Results obtained during this research support Evans et al. (2008) statement that the boys often wish to be larger, taller and to have well-developed muscles, while dissatisfaction with the body for seven girls out of ten very often is reflected in an intention to become thinner (Evans et al., 2008).

The summarized data of the current diagnostic study, conducted with a Lithuanian adolescent sample, revealed that each individual had certain innate traits and specifics of body composition. The current paper presents the findings of the research in the satisfaction of 13-14 year old students with their body parts, as in that way an objective body image and satisfaction with one's physical appearance starts forming. The Lithuanian case study provides a better understanding of the psychological well-being of all adolescents and can help them to better understand and accept a realistic picture of their body image. It is a universal thing, not depending on nationality or country. The understanding which body parts one is dissatisfied with allows the adolescent to gain a greater sense of control and thus come to an understanding that they can become active and change what depends on the phenotype of their body appearance. Through getting to know and evaluate their physique, adolescents learn to develop a positive attitude towards it and to use special exercises and tools to correct their physical appearance, thereby promoting an objective approach to the body image. Self-evaluation can motivate adolescents to become physically active, because the inherited traits do not fatally determine a person's physique. Physical activity and sports is the essential condition for normal growth, development, the improvement of physical development and making an influence on the body image. That is especially important for modern adolescents, who tend to be physically passive and hypodynamic (Derkintiene, 2015).

Catunda et al. (2017) highlight the role of Physical Education in offering activities compatible with the level of motor development of adolescents, making them feel able to participate and perform tasks successfully. There is an expectation that Physical Education classes will influence development and provide a positive relation with body image, bringing improvements to self-esteem and positive self-assessment of their body image (Catunda et al., 2017).

On the other hand, self-evaluation can form a more objective understanding of the appearance of their bodies and to accept those body parts that are genotype dependent. Psychologically, it helps one to accept things that one cannot change and take away the guilt, the stigma, and the responsibility for what one is like. Accepting the characteristics of one's body can make one realize that it is one's uniqueness and part of one's unique image.

5. Conclusion

Adolescents were less satisfied with the body parts dependent on the individual phenotype and more satisfied with individual morphological characteristics of their bodies (their facial skin, feet, cheeks, ears, hair, chin, lips, eyes, and neck) dependent on the individual genotype.

The 13-14 year old students' satisfaction with their body parts is related to gender. Boys and girls' satisfaction with their body image differed ($p = 0,000$). Boys were more satisfied with their body image than girls.

The analysis of the differences in the upper area of the body revealed that the girls, as compared to the boys, were more dissatisfied with their faces, noses, cheeks, hair, breast, and feet; the analysis of the differences in the middle area of the body revealed that the girls, as compared to the boys, were more dissatisfied with their waist and abdomen; the analysis of the differences in the lower area of the body revealed that the girls, as compared to the boys, were more dissatisfied with the shape and volume of their legs, hips, thighs, calves, and buttocks.

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7. Conflict of interests

The authors declare no conflict of interest.

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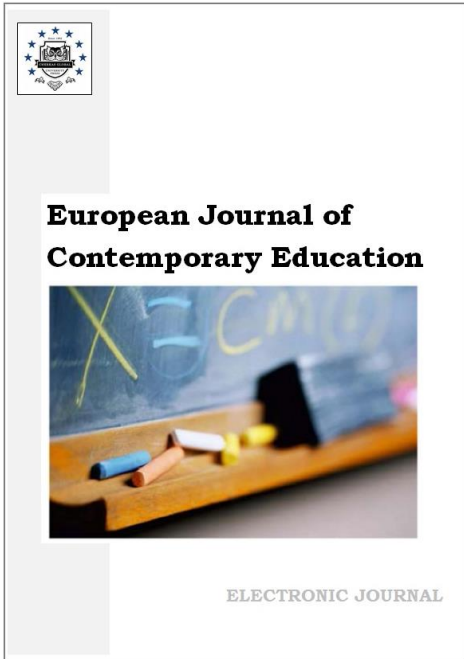
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Cooperation of Companies with Educational Institutions for Contemporary Education in Kosovo

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Abstract

Educational institutions focus is mainly on the demands of the labor market, where the planning of various strategies from further studies can be implemented in their field. There is a big challenge to prepare new generation to competitive labor market. As we see also in all over the world, it is very important to have qualified workers who are able to adapt to the needs of companies. In Kosovo is very challenging to find qualified workers, this is a fact well known by companies. Companies in Kosovo are not satisfied with qualification of potential employees. Companies are constantly complaining about problems they face to find or to hire qualified workers. The main purpose of this paper is to strengthen the cooperation of educational institutions with companies. This can be achieved by studying such collaborations across different countries, which can be a guide for adaptation in our country.

A structured questionnaire was used to collect primary data, which was then distributed to large corporations with the greatest number of employees. Secondary data is used for reviewing scientific literature and specific studies which are state of the art in this field.

The results of this research do not show a satisfactory level in terms of cooperation of companies with educational institutions, as most do not practice this form of cooperation, even if it is for mutual benefit.

Keywords: educational institutions, labor market, companies, cooperation.

1. Introduction

High unemployment rate (25.7 %), in particularly for women (34 %) continues to be the major challenge for the country's economy (KAS, 2021). The highest unemployment rate among women might be due to maternity leave, which is significantly expressed more in the private sector.

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Companies in the first six months of pregnancy have to pay 70 % of the basic salary ([Labor Law No. 03/L212, 2010](#)), and this is considered to be financial burdensome for private companies and most probably one of the reasons that causes high unemployment rate among women.

Although there is evidence about high unemployment rate compared to countries in the region, private companies in Kosovo continue to express their difficulties in finding labour force with appropriate qualifications in demand of their various work processes ([ACCK, 2018](#)). One of the primary conditions for high productivity and the most adequate development of education system in Kosovo is adapting supply to labor market demands ([ACCK, 2018](#)).

According to Isgoren et al. (2009) more appropriate resources should be provided to strengthen education, while student education should be adjusted according to the needs of the industry. Whereas Ptak (2014) foresees cooperation between businesses and educational institutions as one of the most important actions in to tackle the discrepancy between the supply and demand for qualified labour force.

Any country that wants to improve its educational situation necessarily has to spend more on education. According to AMK (2018), during 2018 from the report of the European Commission for Kosovo, only 4.7 % of GDP was spent on education. The main interventions in the field of education have been grouped in three categories ([MEST, 2016](#)):

Programs that support improving the quality of education;

- Programs that support the effective interconnection of education with the labor market;

- Programs targeting marginalized groups.

Economic success depends significantly on the creation of information and knowledge transfer freely available to individuals and organizations, establishing in the so called "knowledge-based economy". European universities have enormous potential; there are over 4000 institutions, with over 17 million students, and approximately 1.5 million workers, 435000 of whom are researchers ([Zavargo, Šumić, 2011](#)). For this reason, very good cooperation is needed between educational institutions and businesses, because the university plays an important role in educating people and has an impact on the development of the region through interaction with industry ([Zavargo, Šumić, 2011](#)).

Companies could participate in collaborative relationships with universities and research organizations in order to obtain access to basic information, better use of their current competencies across a wide variety of functional management areas, including finance and marketing ([Veugelers, Cassiman, 2005](#)).

Knowledge is developed with the objective of contributing to and helping the development of populations, boosting their competitiveness and increasing their worth. Despite the importance of knowledge and information transfer in businesses, few studies have been carried out within the framework of the cooperative connection between universities and companies. The establishment of universities surely promotes competitiveness and stimulates entrepreneurial activity. There is limited information on the impacts of entrepreneurial activity and cooperation between companies and universities. Therefore the main aim of our study is to fill this vacuum in research by investigating factors that may impact cooperation between companies and educational institutions, such as entrepreneur characteristics and urban location.

2. Literature review

Cooperation between companies and educational institutions plays a very important role in the economic development of a country. Universities are important actors in the innovation system ([Pereira, Franco, 2021](#)). Pavlin (2016) shows that cooperation between educational institutions and universities can take numerous forms, and among them are science and technology parks, entrepreneurship, research carried out jointly by students and companies, lecturers, and researchers, as well as research centers.

Zojda (2007), through his article presents an overview of vocational education and technical training in general in Australia and around the world. According to his study, the necessary knowledge gaps and skills should be identified and training that affects job opportunities in the labor market ([Zojda, 2007](#)). According to Dragusha and Prenaj (2021), new generation used social networks to interact with companies and get involved to work. This could be new way for companies to approach graduated students and cooperate with educational institutions.

Cooperation between vocational education and the labor market can be improved by identifying the most favorable means of cooperation, such as: educational, socio-economic, technological, practical, and innovative (Terentyeva et al., 2018). This cooperation will affect the promotion of vocational education programs, the engagement of students and their development, the application of research and production projects, as well as the development of professional competencies (Terentyeva et al., 2018).

Employability is a major challenge for initial vocational education, therefore education policy measures need to be complemented by policies aimed at increasing regional job mobility (Maliranta et al., 2010). The established criteria can make a greater contribution to the integration of education programs as well as to the interconnection of educational and professional standards (Terentyeva et al., 2018).

The authors Teixeira, Veiga and Fernandes (2019), through a sample of 500 Portuguese companies, analyzed the cooperation between educational institutions and companies. According to Teixeira et al., (2019), cooperation is more preferable when entrepreneurs are younger, and have better financial performance.

Whereas Ptak (2014) in his study shows that for many years, businesses and universities have collaborated in a variety of ways, and both benefited from each other. Such collaboration gives higher education institutions the possibility of increasing their scientific and didactic capacities. The repercussions of this well-acknowledged collaboration provide companies with the possibility to obtain competitive advantage and boost the proportion of knowledge in the generation of corporate value (Ptak, 2014).

A study conducted by Aristei, Vecchi and Venturini (2015) evaluated the invisible factors that affect the forms of collaboration using data from seven EU countries during the period 2007–2009. The results of this study show that internal knowledge, eligibility conditions, and external explanations represent a major difference in the intensity of research and development of cooperation of European companies with educational institutions (Aristei et al., 2015).

Higher education institutions are places where innovation is required, and society implements their information (Dalyan, 2004). His study aimed to solve the problems and disabilities of higher education in Turkey, while the creation of the project "Acquiring Enterprising Skills Project" was intended to be implemented first in one region and then throughout the country (Dalyan, 2004). Many questions addressed to entrepreneurship in Turkey are mainly studied by academicians who are not entrepreneurs. The premise is that students would have a better grasp of the conditions for success and lessen the sensation of dread associated with the business world by being schooled in a genuine business setting (Dalyan, 2004).

According to Mavlanova (2021), the essence and practical application of the group approach to education form the necessary conditions for the development of the education system, as well as the search for new opportunities to improve the quality of education. Cooperation between them will create a more suitable environment, providing training of qualified specialists with more favorable conditions (Mavlanova, 2021). There is a need for active labor market programs, prequalification vocational training programs (Elezaj et al., 2019).

University and company cooperation permits the study and verification of the creative transfer of information (Aristei et al., 2015). The relevance of information transfer and of cooperation between companies and institutions is of huge value due to their valuable contribution to global development and competitiveness (Fernandes, Ferreira, 2013). The competitive advantages offered by information from electronic recruitment should be used as much as possible, not only for recruitment but also for advancing the recruitment strategy, which is one of the most important challenges for companies (Dragusha, Ukaj, 2021). The current situation in the labor market shows us that after a pandemic Covid 19 a new era of technological changes is coming and companies should have to adapt to these changes quickly. Companies that are directly involved in the labor market selection process have to adapt to changes by using electronic recruitment.

Despite the importance of management and information transfer in companies, few research has been carried out within the scope of the cooperative connection between universities and companies (Rodríguez-Gómez, Gairín, 2013).

3. Methodology

The primary data used in this study was provided from a large private companies operating

in Kosovo market. Secondary data is used from scientific literature and specific studies in this field. The questionnaire, structured into four sections, was sent to the managers of the companies who are directly involved in decision-making process regarding collaboration with educational institutions. Data analysis was done by data processing with programs like Excel, statistical programs SPSS 20.0 and Stat Soft STATISTICA 10.0 software version for statistical analysis.

The reliability test for LIKERT scale variables was performed using Cronbach's Alpha coefficient. The mathematical expression of the Alpha coefficient is represented as in the following equation:

$$\alpha = \frac{K}{K-1} \left(1 - \frac{\sum_{i=1}^K \sigma_i^2}{\sigma^2} \right)$$

Where, K stands for the number of questions or variables,
 σ^2_{is} shows the variance of the answer to the question of,
 σ^2 is the variance for the answers to the general questions.

Pearson chi-squared test was used for testing relationship between two categorical variables to determine the associative relations. The values of this test range from 0 to 1 and try to correct the chi-square (χ^2) proportionally to N . This test is commonly used for 2x2 tables with nominal data. That's why, according to Hair et al. (2003) Chi-square test can also be applied to ordinary data. The formula for calculating the chi-squared test is as follows:

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

Where, χ^2 = Chi-square

O_i = observed value

E_i = expected value

4. Results

Majority (76.1 %) of interviewed managers was male, while relatively smaller percentage (23.9 %) was female. This indicates that in the private sector in Kosovo, men dominate in manager positions. Concerning the level of education, majority (52.2 %) have completed basic/bachelor studies, 45.7 % had a master's degree, while only 2.2 % had secondary education.

Table 1. Descriptive statistics for managers of companies

Variables	Unit	Min	Mean	SD	Max
Manager age	year	23.00	34.60	9.11	58.00
Work experience	year	1.00	11.58	8.68	35.00
Work experience in the current company	year	1.00	8.32	7.25	28.00
Attending trainings within the year	in number	1.00	2.62	1.54	8.00

Note: SD-Standard Deviation

Source: Own.

With regard to the research question: How many trainings in the field of finance did the managers attended within a year? The results of the study show that only 13 % of the managers attended trainings in finance regularly, 23.9 % attended training frequently, 17.4 % of them have rarely attended trainings, 32.6 % of them have ever attended trainings, while 13 % have never attended trainings in the field of finance. Life-long financial education/training is relevant as it provides people with useful tools to make decisions that improve their economic well-being (Larracilla-Salazar et al., 2019). From the results, we can see that the attendance of trainings by managers is very low, compared to the dynamics of market development. It is therefore suggested to create a more effective communication channel between universities and companies on how to access new programs (Pereira, Franco, 2021).

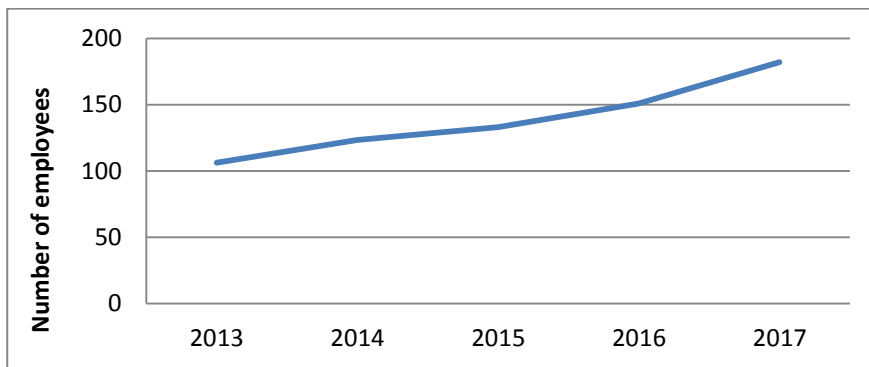
Table 2. General information for large companies

Variable	Unit	Minimum	Mean	SD	Maximum
Establishment of the company	year	4.00	19.58	9.31	42.00
Number of employees – 2017	People	32.00	182.02	201.41	1,000.00
Number of employees – 2016	People	20.00	150.93	123.19	650.00
Number of employees – 2015	People	15.00	133.04	122.00	650.00
Number of employees – 2014	People	15.00	123.41	118.23	650.00
Number of employees – 2013	People	15.00	106.33	81.68	350.00

Note: SD-Standard Deviation

Source: Own.

From the general information, we can see a trend of increasing the number of employees in the company. From 2013 to 2014, the number of employees engaged in the company increased by 16.06 %, while from 2014 to 2015 there was a slight increase of only 7.8 %. The positive trend has been from 2015 to 2016 by 13.44 %, while a more pronounced increase in employees engaged in large companies was from 2016 to 2017 by 20.59 %.

**Fig. 2.** Average of employees engaged in the company (2013–2017)

In the following table, we can see the number of large companies categorized by sectors of economic activity.

Table 3. Companies by sectors of economic activity

Sectors of economic activities	Number of companies	Number of Companies %	Number of observations
Trade	31	56	124
Production	11	20	44
Health	1	2	4
Service	5	9	20
Construction	6	11	24
Information and Communication	1	2	4
Total	55	100	220

Source: Own.

The large companies included in this research belong to sectors such as: trade, manufacturing, health, service, construction, as well as information and communication. From the data presented in the [Table 3](#), we can see that the trade sector dominates with 56 % of companies, while the combination of activities has only 9 companies.

The total number of variables measured on the LIKERT scale was 5 such as: none, little, neutral, partial and many). The result of Cronbach's Alpha coefficient (0.758) of the responses of the respondents received confirmed a high degree of reliability.

Table 4. Reliability statistics for LIKERT scale variables

Cronbach's Alpha	Cronbach's Alpha based on standardization elements	Number of elements
0.758	0.757	21

Source: Own.

The results of the total statistics showed that if an item is removed from the database, the Alpha Cronbach coefficient will decrease for all LIKERT scale variables included in the reliability analysis, with the exception of the regional situation in the financial position, the global situation in the financial position, and the financial analysis of the company.

Table 5. Total element statistics for LIKERT scale variables

	Average rate if element is removed	The degree of variance if the element is removed	Corrected element-Total correlation	Correlation i manifold	Cronbach's Alpha if element removed
Increasing the number of employees	68.5366	84,705	0.270	0.761	0.752
Expansion of activity	68.2927	83,162	0.355	0.813	0.746
Adding products	68.3171	81,822	0.414	0.797	0.741
Increase investment	68.7073	82,262	0.302	0.684	0.750
Increasing marketing costs	68.4146	81,649	0.333	0.565	0.748
Regional situation in financial position	68.4878	89,806	0.014	0.605	0.770
Global situation in financial position	68.8780	87,460	0.124	0.721	0.762
Bank loans	68.4634	78,605	0.430	0.894	0.739
Bank overdraft	68.7561	79,889	0.376	0.883	0.744
Credit card overdraft	69.1707	80,745	0.379	0.825	0.744
Subsidized bank grants or loans	69.6829	76,022	0.596	0.718	0.724
Trade loans	69.0732	82,270	0.353	0.722	0.746
Other loans	69.5854	80,999	0.434	0.819	0.740
Leases	69.7073	84,062	0.315	0.540	0.749
Financial analysis of the company	67.0976	90,740	0.057	0.653	0.760
SWOT analysis	67.6098	84,144	0.371	0.712	0.745
Company environment analysis	67.7561	85,939	0.335	0.741	0.749
Recognition and analysis of workers	67.4146	88,499	0.177	0.755	0.756
Customer knowledge and analysis	67.1707	89,345	0.161	0.561	0.757
Recognition and analysis of competitors	67.1463	88,478	0.243	0.717	0.754
Audit of the company	67.3415	82,880	0.430	0.634	0.742

Source: Own.

The results of [Table 5](#) show that if the regional situation in the financial position is removed from the data for the LIKERT scale variables, the reliability scores will increase from 0.758 to 0.770

(Alpha Cronbach if the regional situation in the financial position is removed 0.770 – Cronbach's Alpha coefficient 0.758 = 0.012). The Alpha Cronbach coefficient will decrease if the global situation in the financial position is removed from the reliability analysis, e.g. (Alpha Cronbach coefficient if the global position in the financial position is deleted 0.762 – Alpha Cronbach coefficient 0.758 = 0.004). Whereas, for the last element, which was the financial analysis of the company, the Alpha Cronbach coefficient will decrease by 0.002 (0.758 – 0.706 = 0.002).

In Table 6 is presented Distribution of frequency of cooperation between companies and educational institutions.

Table 6. Distribution of frequency of cooperation between companies and educational institutions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	25	54.3	55.6	55.6
	Yes	20	43.5	44.4	100.0
	Total	45	97.8	100.0	

Source: Own.

In Table 7 is presented descriptive statistics on Forms of cooperation between companies and educational institutions.

Table 7. Forms of cooperation between companies and educational institution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		27	58.7	58.7	58.7
	1	2	4.3	4.3	63.0
	1, 2, 3	1	2.2	2.2	65.2
	2, 3	2	4.3	4.3	69.6
	2,3	1	2.2	2.2	71.7
	3	11	23.9	23.9	95.7
	3/4.Financial	1	2.2	2.2	97.8
	Practices, donation	1	2.2	2.2	100.0
	Total	46	100.0	100.0	

Note: The codes that describes what codes in table means

(1) Research projects with cooperation between companies and educational institutions,

(2) Training for students,

(3) Practices for students

(4) Others.

Source: Own.

In Table 8 was presented crosstab of gender of respondents for cooperation with educational institutions. In Table 9 we used chi-square tests to see association between gender of respondents for cooperation with educational institutions.

Table 8. Crosstabulation of gender of respondents for cooperation with educational institutions

		Crosstab			
Count		Gender		Total	
		1.00	2.00		
Cooperation with educational institutions	No	5	20	25	
	Yes	6	14	20	
Total		11	34	45	

Source: Own.

Table 9. Chi-Square Tests of gender of respondents for cooperation with educational institutions

Chi-Square Tests					
	Value	df	Asymptotic Significance (2- sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)
Pearson Chi-Square	.602 ^a	1	.438		
Continuity Correction ^b	.182	1	.670		
Likelihood Ratio	.599	1	.439		
Fisher's Exact Test				.500	.333
Linear-by-Linear Association	.588	1	.443		
N of Valid Cases	45				

a. 1 cells (25.0 %) have expected count less than 5. The minimum expected count is 4.89.

b. Computed only for a 2x2 table

Source: Own.

Based on the analysis of [Table 9](#), we conclude that there is a association between the above mentioned variables presented in the table are positive significant association between two variables of cooperation with educational institutions.

In [Table 10](#) was presented crosstab of qualification of respondents for cooperation with educational institutions and in [Table 11](#) we used chi-square tests to see association between qualification of respondents for cooperation with educational institutions.

Table 10. Crosstabulation of qualification of respondents for cooperation with educational institutions

Count	Crosstab				Total
	Qualification				
	1.00	2.00	3.00		
Cooperation with educational institutions	1.00	1	12	12	25
	2.00	0	11	9	20
Total		1	23	21	45

Source: Own.

Table 11. Chi-Square Tests of qualification of respondents for cooperation with educational institutions

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.928 ^a	2	.629
Likelihood Ratio	1.303	2	.521
Linear-by-Linear Association	.004	1	.951
N of Valid Cases	45		

a. 2 cells (33.3 %) have expected count less than 5. The minimum expected count is .44

Source: Own.

Based on the analysis of [Table 11](#), we conclude that there is an association between the above mentioned variables presented in the table are positive significant association between variables of qualification and cooperation with educational institutions.

In [Table 12](#) was presented crosstab of job positions of respondents for cooperation with educational institutions. In [Table 13](#) we used chi-square tests to see association between job position and cooperation with educational institutions of respondents.

Table 12. Crosstabulation of job positions of respondents for cooperation with educational institutions

Count		Crosstab						Total
		Job Position						
		.00	1.00	2.00	3.00	4.00		
Cooperation with educational institutions	1.00	1	5	17	1	1	25	
	2.00	1	6	9	1	3	20	
Total		2	11	26	2	4	45	

Source: Own.

Table 13. Chi-Square Tests of job positions of respondents for cooperation with educational institutions

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.034 ^a	4	.552
Likelihood Ratio	3.083	4	.544
Linear-by-Linear Association	.162	1	.687
N of Valid Cases	45		

a. 7 cells (70.0%) have expected count less than 5. The minimum expected count is .89.

Source: Own.

Based on the analysis of [Table 13](#), we conclude that there is a association between the above mentioned variables presented in the table are positive significant between job position and cooperation with educational institutions.

5. Research Limitations

The pandemic COVID-19 was challenging during the research. It also has an impact on the research and has extended the research time. As a first step, contacts were established with companies via e-mail and social networks. Then, in the second phase, we conducted direct interviews, sometimes using different communication platforms, to make the research more reliable. There is a lack of previous research on this subject to make a comparative approach in Kosovo. But beside these difficulties respondent responses made realizable to reach research results on the cooperation of companies with educational institutions for contemporary education in Kosovo.

6. Conclusion and suggestions

An important factor for companies is their cooperation with other businesses at the local, regional, and international level. The findings of the study show that 95.7 % of companies cooperate with local businesses, while 4.3 % of them lack this cooperation. Regarding the question of whether they have cooperation with regional businesses, 88.9 % of them answered positively, while only 11.1 % they do not enjoy this cooperation. The results show that there is no lack of cooperation of companies with international businesses, since 80 % of them stated such a thing. The results show that there positive significance between gender, qualification and job position of respondents to cooperation with educational institutions.

The companies also cooperate with educational institutions through training, various research projects, internships for students, and employment opportunities. However, the results of this research do not show a satisfactory level, because 6.5 % admitted that there is cooperation with these institutions, while the remaining 93.5 % do not enjoy this type of cooperation, although it is important for both parties. The low level of cooperation between universities and industry companies 4.0 is also observed in modern Russia ([Fonina, et al., 2019](#)). The main difficulty

regarding relationships between companies and universities is the lack of knowledge about undergraduate programs that can support them (Pereira, Franco, 2021).

According to Ptak (2014), it should be highlighted that there is still a tiny number of companies that deal with the educational community, possibly owing to the quite difficult norms of collaboration. Among the difficulties of collaboration between businesses and the education sector, one should mention: educational programs not exactly complying with the demands of the company, cumbersome norms of cooperation, or contradictory expectations with respect to establishing partnership.

University and business cooperation in the field of science and innovations is not well-functioning, according to researchers (Baskakova et al., 2016). Some of them are related to regulatory areas and demand participation of government institutions. Other parts of them are related to information and communication fields and can be removed by further development of forms for universities and businesses.

In terms of training, 10.9 % of large companies in Kosovo provide training for students, while the vast majority of 89.1 % do not offer such a thing. However, the most appropriate form of cooperation between companies and students, with about 37 %, is the application of internships for students, although not satisfactory. Although universities have established numerous cooperation agreements with companies operating in Kosovo. However, more than half of them, or approximately 63 %, have not yet begun this type of collaboration with educational institutions. But this form of cooperation is expected to attract other companies, which is in the interest of both companies and educational institutions. The same case is presented by the authors Fonina et al. (2019) in their work, where numerous agreements on cooperation between regional companies and universities exist but which do not provide an increase in employment indicators of recent graduates.

Further research should be conducted in the public sector as well, so that the two sectors can be compared in terms of collaboration between private and public organizations with educational institutions.

Technological developments have changed a way of interaction between companies and educational institutions. During the lockdown we saw that it was possible to work online. New technological tools or systems could be used to improve cooperation between companies and educational institutions.

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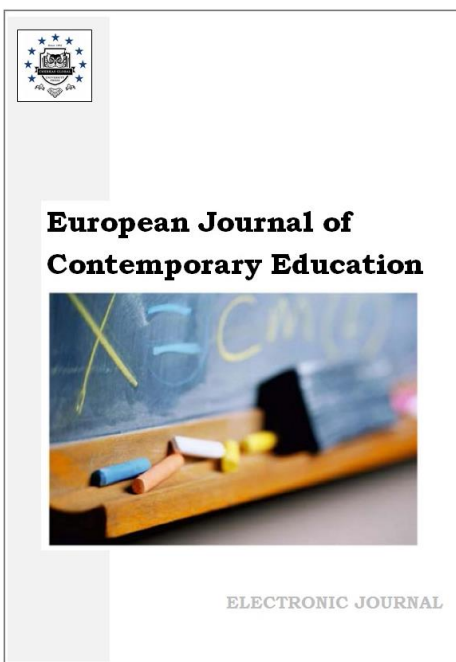
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Knowledge and Attitude towards Sexuality in Old Age. A Study in the Classroom of Experience and the Degree in Social Education at the University of Huelva

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Abstract

False beliefs and negative myths about sexuality in old age lead to stereotypes and prejudices towards this group. These negative opinions germinate from a lack of knowledge about a subject. In an ageing society, education plays an important role, attending to the needs of these people throughout their lives and offering information that encourages optimistic attitudes towards this group and about a subject that seems to be frowned upon or forbidden in old age.

To this end, this research aims to analyse the knowledge and attitudes that young people studying for the degree in Social Education and older people attending the training course of the experience classroom at the University of Huelva have towards sexuality in old age. The method used is descriptive-correlational and comparative-causal. A questionnaire was administered to a sample of 304 subjects between 18 and 78 years of age. For data analysis, descriptive statistics, group comparisons and multiple linear regression model were used to identify factors that condition sexuality in old age. The results showed that the older population has more knowledge and a more conservative attitude towards sexuality in old age than the younger participants. Age, knowledge and educational qualifications are noted as conditioning factors of sexuality in old age. The research provides elements to be considered when drawing up educational-sexual initiatives to help improve certain attitudes and contribute to a more positive conception regarding the elderly.

Keywords: sexuality, attitude, older people, social education.

1. Introduction

Sexuality in old age is a topic that has been the subject of study in recent years (Medina et al., 2019; Piñero-Aguín, 2021; Saldarriaga, 2021). The rise in the population of older people in our society (increased life expectancy, improvements in health status) opens up a new focus of interest

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for research to help shed light on this reality and meet their requirements, including sexual needs (Paschkes, Palumbo, 2021).

The majority of works reviewed on this subject are focused on sexual health, both physical and mental (Iacub et al., 2020; OMS, 2016) and on the attitudes of certain groups towards sexuality in old age (Hernández-Hernández et al., 2021; Medina et al., 2019). In this sense, the thoughts and/or beliefs that a person has can give rise to prejudices, causing rejection towards the sexuality of older people (García-Villanueva, 2020). In the research by García-Villanueva et al. (2020), it was found that sexuality in old age is still a taboo subject, without much presence, and when it is present, it seems to be perceived as something indecent and in bad taste. Torres and Rodriguez (2019) agree with this finding, pointing to social stereotypes and prejudices as barriers to sexual expression of the elderly. Despite these negative perceptions, research highlights sexuality in old age as a substantial aspect of the lives of older people, providing wellbeing in their quality of life (Bejarano et al., 2021; Guadarrama et al., 2010; Piñero-Aguín, 2021). At this point, we ask ourselves which factors can help foster a liberal attitude towards sexuality in old age, as identifying them helps us to work with them and provide greater wellbeing in the lives of the elderly. In this regard, is there any knowledge about sexuality in old age? Who maintains a more conservative attitude? Young people? Or the older population? Concerned with these issues, in this paper, we intend to analyse the knowledge and attitudes that young people, in this case students taking the degree in Social Education, and older people attending the Experience Classroom at the University of Huelva, harbour towards sexuality in old age. The Experience Classroom consists of a training programme, included in the study plan of the University of Huelva, aimed at people over 55 years of age. The main purpose of this initiative is to improve the quality of life of these people and encourage their active participation in their social context.

Stereotypes and prejudices are often unfounded due to a lack of knowledge of a subject. In other words, beliefs or ideas appear steeped in the conceptions held about something. These conceptions may be the result of personal or close experiences, the context, the culture, the time, the representations held about old age and how old men and women are expected to be (García-Villanueva et al., 2020; Morell-Mengual, 2018).

There are many factors that can influence the attitude towards sexuality in old age, which can be grouped in large blocks: physiological factors, hormonal factors and social factors (Wong et al., 2010).

Research points to age as one of the main elements associated with the attitude adopted towards sexuality in old age; in this sense, young people seem to have a more liberal attitude than older people (Orozco, Rodriguez, 2006; Ramos, Melgizo, 2017). Other studies have shown how certain sociodemographic variables, such as having a partner, having children, educational level and religious beliefs, are sociocultural aspects associated with attitudes towards sexuality in old age (Fischer et al., 2018; Palacios et al., 2012; Sinković, Towler, 2019). Some of these variables have been related to a liberal attitude, such as reaching a high level of education or having a partner (Medina et al., 2019; Vivaldi, Barra, 2012), and other variables with a conservative attitude, such as having religious beliefs, having children or having an elderly person in the family (López, 2012). In relation to gender, there are studies that indicate that men are less conservative than women (Orozco, Rodriguez, 2006). On the other hand, we also found other studies that found no differences in terms of gender (Ramos, Melguizo, 2017).

In general, society assumes false beliefs and negative myths about sexuality in old age. The lack of information on this subject encourages the proliferation of negative stereotypes and prejudices, stigmatising this group and omitting the presence of this need (sexual) in the group (Ramos, Melguizo, 2017).

On the other hand, the training of different professional groups that work with the elderly can play a valuable role in enhancing these people. In this sense, social educators find in the group of the elderly a booming professional field (Muñoz-Galiano et al., 2020). The degree in Social Education is a four-year university degree designed to train students in the knowledge, skills and attitudes necessary for them to carry out socio-educational interventions with people in various contexts, in order to enhance personal and social development and promote social inclusion.

In an ageing society, education plays an important role in meeting the needs of these people throughout their lives and promoting their wellbeing and quality of life. Promoting awareness raising and training campaigns that help diminish stereotypes and prejudices towards the elderly is becoming increasingly necessary in professional groups that provide socio-educational care to

these people (Limón et al., 2021). Consequently, in line with the above, the study of knowledge and attitudes towards sexuality in old age in future social education professionals can help to outline and understand the social conception they have about these people, as well as the beliefs they have about them and the training they have about sexuality in old age.

In short, social educators can be professionals who can help avoid discriminatory attitudes towards this group (Belchi et al., 2017).

1.1. Objectives

To analyse the knowledge of students from the Experience Classroom and the Social Education degree course about sexuality in old age.

To analyse the attitudes of students from the Experience Classroom and the Social Education degree course towards sexuality in old age.

To analyse the relation between knowledge, personal characteristics and attitudes towards sexuality in old age.

2. Method

This research follows a quantitative, descriptive and correlational methodology, as the aim is to study the statistical relationship between variables whose information has been gathered at the same point in time, applying the survey method in a cross-sectional design. Each of its elements is described in detail below:

2.1. Sample

Intentional and convenience sampling was used, with a group consisting of 304 subjects, of which 40.6 % are men and 59.4 % are women, corresponding to students from the Experience Classroom (university programme for the elderly based on the lifelong education concept) and students from the second year of the Social Education degree course. The selection criterion was the age range, for which the students from the Experience Classroom (at the University of Huelva, access as of 55 years of age) were chosen to represent the older population and students in the second year of the degree in social education to represent the young population. This selection criterion is motivated by the aim of examining differences in the perception of sexuality in old age between the young and the mature population. The age range is from 19 to 78 years old. Some 71.8 % of the sample has a partner, 50.3 % has children and 55.9 % has an elderly person in the family. As for educational qualifications, 1.5 % have no studies, 18.2 % have basic education, 32.4 % have intermediate education and 47.6 % have university education. In terms of religious beliefs, 15.9 % are practising believers, 54.4 % are non-practising believers and 28.7 % are non-believers.

2.2. Instruments and variables

Two scales were applied:

1) Knowledge scale (Table 1) (White, 1982, with adaptations by López, 2012) consisting of 31 items with three response options: 1. True, 2. False and 3. Don't Know, with only one correct option (correct answers: 1-2; 2-1; 3-2; 4-1; 5-1; 6-2; 7-1; 8-1; 9-2; 10-2; 11-1; 12-1; 13-1; 14-2; 15-1; 16-1; 17-1; 18-2; 19-1; 20-1; 21-1; 22-1; 23-2; 24-2; 25-1; 26-1; 27-2; 28-2; 29-1; 30-1; 31-1). The scale scored a Cronbach's alpha in this study of .86 for 31 items.

2) Scale of attitudes towards sexuality in old age (Table 2) (White, 1982; adapted and expanded from López, 2012), consisting of 37 items measured on a scale of 1 to 7 where 1 is Strongly Disagree and 7 is Strongly Agree. The items are formulated positively (higher scores are indicative of a more liberal attitude) and negatively (higher scores are indicative of a more conservative attitude). Liberal items: 10, 13, 14, 15, 16, 17, 18, 20, 22, 26, 30, 32, 35 and 37. Conservative items: 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 19, 21, 23, 24, 25, 27, 28, 29, 31, 33, 34 and 36. The scale obtained a Cronbach's alpha of .93 for 37 items. Both scales showed good internal consistency for this study.

Information was gathered on sociodemographic variables as possible factors conditioning sexuality in old age (López, 2012): age (measure: scale), sex (male, female), having a partner (yes/no), having children (yes/no), having an elderly person in the family (yes/no), level of education (no education, basic, intermediate, university) and religious choice (practising believer, non-practising believer, non-believer). After data collection, we proceeded to categorise the age variable into age ranges: 19-25; 26-35; 36-45; 46-55; 56-65, and 66-78 years. This grouping facilitated analysis of the differences in scores for the age range and study variables (knowledge and attitude).

2.3. Data analysis

The data were analysed using SPSSv25 statistical software. An exploratory Kolmogorov-Smirnov test was performed to observe the normal distribution of the data in the sample under study, finding that all the study variables (attitude, knowledge, age, sex, having a partner, having children, having an elderly person in the family, education level and religious choice) were different from the normal distribution ($p < .05$). In this sense, it is recommendable to use certain statistical procedures that will be detailed in this section according to the techniques used to meet the research objectives. To analyse the sample's knowledge of sexuality in old age, a set of variables (dichotomous variables) was created by counting the percentage of correct answers to each of the items. Moreover, the total number of correct and incorrect answers to the knowledge construct was calculated and the Kruskal-Wallis test was applied to examine the differences in the scores obtained in relation to age range. To analyse the sample's perceptions of attitudes towards sexuality in old age, means and standard deviations were obtained for each of the items and the overall score of the attitude towards sexuality in old age scale was calculated. As with the previous construct, the Kruskal-Wallis test was applied to analyse differences in the perception of these attitudes with age range. Finally, to analyse the relationship between knowledge, sociodemographic variables and attitudes towards sexuality in old age, an exploratory study of Spearman's rho bivariate correlations was carried out and a multiple linear regression model was applied using the data entry technique, in order to verify whether the differences observed in the factors that condition sexuality in old age (knowledge, age, sex, having a partner, having children, having an elderly person in the family, education level and religious option) predict the attitude towards it (liberal or conservative). This model should be understood as having certain limitations, since it does not comply with the multivariate normality condition. Estimating parametric improvements does not depend on the normality assumption, so regression can be applied. The aim is to estimate the fit of the model based on the variables that are significantly correlated.

2.4. Procedure

Data gathering took place during the 2020–2021 academic year during school hours and in the facilities of the University of Huelva. Participation was voluntary and the scales were filled in anonymously. The sample was accessed in person, as the researchers provide teaching services in both areas (2nd year of Social Education and Experience Classroom).

3. Results

The results are presented according to the research objectives:

3.1. Analysis of knowledge about sexuality in old age.

Table 1 shows the percentages of cases that gave correct answers to each of the items:

Table 1. Percentages of correct answers of the participants on knowledge of sexuality in old age

Items	N	% cases
1. Sexual activity in people over 65 years of age is often dangerous for their health.	289	85 %
2. Men over 65 years of age tend to take longer than younger men to achieve erection.	231	68 %
3. Males over 65 years of age tend to experience a reduction in orgasm intensity compared to younger males.	82	24 %
4. Erection firmness is often less in the elderly than in the young.	230	68 %
5. Women over 65 years of age lubricate (moisten) their vagina less than younger women.	254	75 %
6. Women over 65 years of age take longer to have adequate lubrication than younger women.	25	7 %
7. Women over 65 years of age may experience pain during intercourse because they have reduced elasticity of the vagina and lubricate it less.	145	43 %
8. Sexuality is, under normal conditions, a lifelong need.	298	88 %
9. Sexual behaviour in over-65s increases heart attack risk.	201	59 %

10. Most men over 65 are unable to have sexual intercourse.	237	70 %
11. Those who were more sexually active during youth tend to be more active when they are older.	103	30 %
12. There is evidence that sexual activity of the elderly has beneficial health effects.	232	68 %
13. Sexual activity can be psychologically beneficial for the elderly.	292	86 %
14. Most women over 65 years of age do not react sexually to erotic stimuli.	202	59 %
15. Ingestion of pharmaceutical substances may alter sex drive in individuals.	263	77 %
16. Basically, changes in sexuality beyond the age of 65 involve a decrease in the speed of response, rather than a decrease in interest in sex.	223	66 %
17. People over 65 years of age tend to experience less need to ejaculate, and are able to maintain an erection for longer than younger people.	50	15 %
18. Elderly men and women cannot act as sexual partners for each other, since they need a young partner to become aroused.	252	74 %
19. The factor that most determines the frequency of sexual activity in elderly couples is the male's interest or disinterest in sexual activity with the female.	91	27 %
20. Barbiturates, tranquilisers and alcohol can lower the sexual arousal level of older people and interfere with their sexual responsiveness.	293	86 %
21. Lack of sexual interest in the elderly may be a reflection of a depressive psychological state.	217	64 %
22. As males get older, there is usually a decrease in the frequency of sexual activity.	233	69 %
23. There is a greater decrease in sexual activity in men as they age than in women.	173	51 %
24. One very important factor in maintaining male sexual responsiveness in old age is maintaining regularity of sexual activity throughout life.	65	19 %
25. Fear of not being able to respond properly sexually can lead to sexual unresponsiveness in the elderly.	255	75 %
26. The cessation of sexual activity in the elderly is usually primarily due to psychological and social factors rather than biological and physical causes.	140	41 %
27. Frequent masturbation can accelerate dementia and mental confusion in the elderly.	235	69 %
28. There is an inevitable loss of sexual satisfaction in women after the menopause.	114	34 %
29. Secondary impotence increases in men after 60 years of age.	117	34 %
30. In the absence of severe physical illness, men and women can maintain sexual interest and activity into their 80s and 90s.	231	68 %
31. Masturbation in older men and women has beneficial effects on the maintenance of sexual responsiveness.	219	64 %

Note: N= Number of cases that responded correctly.

We observe that the items with the least knowledge are 3, 6, 17, 19 and 24, all of them below 30 % of correct answers. The majority are associated with false beliefs about sexuality in old age and the changes experienced in the sexual physiology of both men and women.

The mean number of correct answers is 57.4 %, the average number of incorrect answers is 20 % and the mean "Don't Know" answer is 22.6 %. Therefore, 42.6 % of the total responses reveal a lack of knowledge about sexuality in old age. The items with more than 80 % of correct answers

were: 1, 8, 13 and 20. Items associated with needs and factors that condition sexuality in old age. We found the overall knowledge score, with a mean of 17.66 (SD = 4.5), a minimum value of 3 and a maximum value of 27. Note that each correct answer counted as one point, the maximum achievable score being 31 points. In this sense, in our study, no one reached the maximum level of knowledge or the total absence of knowledge.

In addition, we performed a Kruskal-Wallis one-factor ANOVA test (K samples) with the set of correct answers for the knowledge variable and age range (19-25, 26-35, 36-45, 46-55, 56-65, 66-78 years) to analyse the presence of significant differences in the various age ranges. The results confirmed the existence of statistically significant differences between the age range 16-25 years (mean = 133.29; $p < .05$) and the age ranges 56-65 years (mean = 185.40; $p < .05$) and 66-78 years (mean = 210.65; $p < .01$), so that the older population seems to have more knowledge about sexuality in old age than the younger population. Differences were also found between the group belonging to the 36-45 years age range (mean = 143.41; $p < .05$) and the group aged 66 to 78 years (mean = 210.65; $p < .05$).

3.2. Analysis of attitudes towards sexuality in old age

A descriptive analysis was performed for each of the variables that make up the scale of attitudes towards sexuality in old age (Table 2).

Table 2. Attitude toward sexuality in old age

	X	SD
37. If two residents have been showing themselves to be a couple for some time (even if they are not married) and ask the management that they wish to share a room, they should be allowed to.	5.68	1.54
14. I would support sex education courses for the elderly who are in a nursing home.	5.65	1.48
17. Institutions should have beds large enough for couples who wish to sleep together.	5.63	1.53
20. Nursing homes should provide opportunities for social interaction between men and women.	5.62	1.52
13. Would support sex education courses for staff working in nursing homes.	5.50	1.59
18. Nursing home staff should be trained or educated regarding the sexuality of the elderly.	5.41	1.60
15. Masturbation in older males is acceptable behaviour.	5.39	1.56
16. Masturbation in older women is acceptable behaviour.	5.37	1.59
10. I would like to know more about changes in sexual function in older people.	5.32	1.48
22. Institutions should provide privacy conditions so that residents who wish to engage in sexual activity can do so.	5.30	1.72
28. The most liberal seniors should be given the nod and sexual freedoms advocated in residential care homes.	5.03	1.64
26. Older men living in a nursing home should be able to invite a female friend from outside to share their room and have sex with them.	4.66	1.68
30. Older women living in a nursing home should be able to invite a male friend from outside to share their room and have sex with them.	4.64	1.71
35. In nursing homes, seniors should be able to have any pornographic material they want in their rooms.	4.61	1.51
34. If any resident criticises the alleged sexual behaviours of others, the criticism should be encouraged.	3.11	1.68
7. If a relative of mine who lives in a residence had sexual relations with another resident, I would react by changing residence or complaining to the management.	2.93	.56
1. People over 65 years of age have little interest in sexuality.	2.92	1.52

19. Residents in institutions should not engage in any type of sexual activity.	2.91	1.87
33. Access by the elderly to any pornographic material should be prohibited in nursing homes.	2.82	1.52
11. I think I know everything I need to know about sexuality in the elderly.	2.72	1.49
24. Sexual relations outside marriage are always bad.	2.67	1.77
23. If the family objects to a widowed relative engaging in sexual activity with another resident, it is the obligation of the management to make every effort to prevent such sexual relations.	2.40	1.49
36. If two elderly residents wish to spend the night together without being a stable couple, this should not be allowed.	2.38	1.56
5. The residences are not obliged to provide places where the privacy of those who wish to be alone or in a couple is preserved.	2.33	1.54
3. Institutions, such as nursing homes, should not encourage or support sexual activity by their residents in any way.	2.29	1.46
31. Old women who are in a nursing home should not be allowed to leave the home.	2.27	1.52
6. When you get older than 65, your sexual interest inevitably disappears.	2.19	1.34
27. Old men in a nursing home should not be allowed to leave the home to visit a female friend and have sex.	2.19	1.41
25. Sexual relations between elderly male homosexuals should be prohibited in nursing homes.	2.16	1.43
8. If I knew that a particular residence allowed and supported sexual activity for residents who wished to have sex, I would not take a family member to that residence.	2.14	1.46
29. Sexual relations between elderly lesbians should be prohibited in nursing homes.	2.09	1.40
12. I would complain to management if I knew there was sexual activity among the residents of a facility.	2.01	1.36
28. The most conservative seniors should be given the nod and sexual freedoms prohibited in residential care homes.	1.97	1.30
21. Masturbation is harmful and should be avoided in the elderly.	1.86	1.24
4. Men and women in a residence should be separated on different floors or in different wings of the building.	1.73	1.16
2. A person over 65 years of age who expresses sexual interest dishonours himself/herself.	1.71	1.14
9. It is immoral for people over 65 to engage in sexual activities.	1.64	1.15

Note: X= Mean; SD= Standard Deviation

It is observed that the highest mean scores were concentrated in those items related to the relationships and social interactions of the elderly within the residences, to training in sex education for both residents and staff, and to providing facilities and conditions of intimacy for couples.

The items that are categorised as neutral or undefined are related to sexual practices of residents with people outside the residence, both men and women, as well as having access to pornographic material in the rooms. And the lowest scores were concentrated in the most conservative items. In this sense, the overall mean score for a more liberal attitude (reversing the conservative items) was 6.06 with a standard deviation of .84 (median = 6, mode = 6, minimum = 3, maximum = 7). So, considering the overall average of the scale, the participants show that they are quite in agreement with a liberal attitude towards sexuality in old age.

Significant differences were found in the liberal and conservative attitudes with respect to age ($p < .05$), between the 66-78 age range (liberal average = 95.15; conservative average = 125.68) and

the 16-25 age range (liberal average = 152.32; conservative average = 182.85). In other words, the older the person, the more conservative their attitude towards sexuality in old age becomes.

3.3. Relationship between knowledge, sociodemographic variables and attitudes towards sexuality in old age

First, a Spearman's rho bivariate correlation study is conducted to explore the possible relationships between knowledge, sociodemographic variables and attitudes (liberal and conservative) towards sexuality in old age (Table 3). The correlations showed that knowledge is positively related to liberal attitude ($r = .371$; $p < .01$) and negatively related to conservative attitude ($r = -.371$; $p < .01$). In other words, the more knowledgeable the person is, the more liberal their attitude tends to be. Age is another variable that seems to be related to attitude: negatively to liberal attitude ($r = -.206$; $p < .01$) and positively to conservative attitude, i.e. the older the person, the less liberal their attitude is towards sexuality. Having children is another variable that is negatively related to the liberal attitude ($r = -.164$; $p < .01$) and positively related to the conservative attitude, so the interpretation is that having children is related to a more conservative attitude. Having an elderly person in the family seems to be related to a liberal attitude ($r = .121$; $p < .05$), as is having an education ($r = .319$; $p < .01$). Religious choice is a variable that is positively related to conservative attitude ($r = .238$; $p < .01$), i.e., the more religious beliefs the person harbours, the more conservative their attitude towards sexuality in old age.

Table 3. Correlations between knowledge and attitudes towards sexuality in old age and personal characteristics

Variables	Attitude	
	Liberal	Conservative
Liberal	1	-1**
Conservative	-1**	1
Knowledge	.371**	-.371**
Gender	.098	-.098
Has partner	-.053	.053
Age	-.206**	.206*
Has children	-.164**	.164**
Has an elderly person in the family	.121*	-.121*
Education level	.319**	-.319**
Religious choice	-.238**	.238**

** . Correlation is significant at the .01 level (bilateral).

* . Correlation is significant at the .05 level (bilateral).

Following the exploratory analysis of correlations, a multiple regression analysis is performed to study the influence of the variables that correlate significantly with attitude (liberal or conservative). In this sense, the regression analysis (Table 4) includes as independent variables: overall correct knowledge score; age; sex; having children; having an elderly person in the family; level of education and religious choice.

Table 4. Prediction of liberal attitude based on sexual conditioning factors in old age

	<i>B</i>	<i>SE</i>	<i>B est.</i>	<i>t</i>	<i>p</i>	<i>VIF</i>
Liberal Attitude: (Constant)	4.700	.387		12.131	.000	

Knowledge	.073	.010	.406	7.007	.000	1.163
Gender	.132	.098	.078	1.348	.179	1.173
Has partner	.051	.110	.027	.465	.643	1.212
Age	-.014	.005	-.283	-2.610	.010	4.077
Has children	.231	.179	.139	1.292	.198	4.036
Has an elderly person in the family	-.019	.098	-.011	-.198	.843	1.159
Education level	.255	.063	.245	4.054	.000	1.272
Religious choice	.155	.076	.117	2.040	.042	1.142

Note: B= Unstandardised coefficient; SE= Standard error, B est.= Standardised coefficient; t= Student's t test , p= Significance; VIF= Variance inflation factor

The outcomes of the regression analysis partially corroborate the results of the correlation analysis. Thus, we observe that gender and having a partner have no influence on the liberal attitude. In addition, having children or having an elderly person in the family is also found to have no influence on the prediction of a liberal attitude towards sexuality in old age. Knowledge, educational level and religious choice, all with a positive beta, as well as age, with a negative beta, significantly explain the emergence of a liberal attitude towards sexuality in old age ($R = .54$; $R^2 = .30$; Durbin Watson = 1.98 recommended value between 1.5 and 2.5; $F = 12.99$, $p < .000$). Consequently, the conservative attitude is predicted in the opposite direction by the same variables: knowledge ($B = -.073$); educational level ($B = -.255$); religious choice ($B = -.155$); age ($B = .014$).

4. Conclusion

The purpose of this work was to analyse the knowledge and attitudes that young people, students of the degree in social education, and older people attending the Experience Classroom at the University of Huelva, have towards sexuality in old age. In this sense, the results of our research indicated that the older population has more knowledge about sexuality in old age than the younger population. This may be due to one's personal and close experiences with the elderly (García-Villanueva et al., 2020; Morell-Mengual, 2018).

In general, the percentage of correct knowledge exceeded more than half of the total number of responses, although there is still a fairly high percentage of lack of knowledge. The knowledge that our sample has seems to be more related to needs and factors that condition sexuality in old age, hence it is the older population who has more knowledge, which may be based on their own experiences. Meanwhile, less knowledge is observed in those aspects that have to do with false beliefs about sexuality in old age and with the changes in the sexual physiology of both men and women. These findings corroborate the findings of Ramos and Melguizo (2017), who stated that the lack of knowledge about this issue invites the emergence of prejudices that make this need in older people invisible.

With respect to attitude, a more conservative stance is observed in the older age group, while the younger ones are in favour of a liberal attitude towards sexuality in old age, coinciding with the findings of other studies (Orozco, and Rodriguez, 2006; Ramos, Melgizo, 2017). Consequently, we are struck by the fact that the older population, which in turn has more knowledge about sexuality in old age, shows a more conservative attitude towards sexual practice. The explanation may be found, perhaps, in the type of knowledge they possess, as the lack of knowledge is associated, in our study, with myths and false beliefs (Fajardo, 2017) inciting the proliferation of stereotypes and prejudices that stigmatise this group (Ramos, Melguizo, 2017) and which treat sexuality in old age as a taboo subject. We have also identified other types of sociocultural factors that are associated with attitude (Medina et al., 2019; Vivaldi, Barra, 2012). In this sense, the regression analysis indicated that age, knowledge and level of studies (Orozco, Rodriguez, 2006; Ramos, Melgizo, 2017) would have an important explanatory potential regarding attitude, where the religious option would have a lesser influence. In line with the above, younger people,

people who are more knowledgeable about sexuality in old age, those with a university education and those who hold no religious beliefs seem to be more likely to have a liberal attitude towards sexuality in old age. In this study, the variables such as sex, having children, having a partner and having an elderly person in the family do not support the prediction of the model.

These results may be useful to take into account in the development of programmes to help improve attitudes towards sexuality in old age, reconsidering certain attitudes focused on myths about sexuality in old age, both in older and younger people. In this sense, the academic training of future social education professionals should include sex education programmes for the elderly to raise awareness among these professionals and help prevent the proliferation of certain prejudices and stereotypes towards this group (Limón et al., 2021). These types of studies help contribute to a more positive conception of the elderly, normalise certain sexual behaviours and practices, and increase knowledge about sexuality in old age, providing greater wellbeing for the elderly.

Regarding the study limitations, the results obtained should be considered with a certain degree of confidentiality due to the nature of the data and the study sample. Since this is a cross-sectional research design, we cannot generalise these results as causal. In this sense, it will be interesting as a future line of research to carry out a longitudinal study that enables us to observe the explanatory potential that these factors that condition sexuality in old age have on the attitude towards sexuality in old age.

We are aware that the results obtained could have varied significantly if a random sampling had been applied to ensure the representativeness of the population, which we suggest for future studies.

Finally, an in-depth study of these findings would be interesting using other types of qualitative techniques that allow us to gain a deeper understanding of the phenomenon, such as, for example, personal stories that help us understand why certain factors favour a conservative attitude towards sexuality.

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Cross-Border Youth Interaction: Importance and Experience of the EU

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Abstract

The aim of this paper is to explore the experience of young people cross-border mobility development and support programs. Cross-border interaction is one of the most important factors that develops and strengthens the commitment of young people – both as employees of an organization and as citizens of a state – to participate in public life and share cultural experiences. The mobility of young people can have a variety of motivations, but mobility for educational purposes is the most researched because of its potential transformative impact.

At the same time, researchers and enthusiasts have not sufficiently reflected on how these processes help the young generation to associate their decisions and demands from the standpoint of a stronger national identity and a positive attitude towards their country, as well as a vision of organizational and public policy. By applying elements of hindsight, induction and deduction methods, the authors update the significance of the cross-border youth interaction phenomenon and highlight the particularities of its development programs implementation.

Moreover, of particular relevance to the present research is global experience, which includes practices and programs aimed at fostering cross-border youth interaction. In this regard, the authors consider the key attributes of the methodologies of educational and socio-cultural institutions and organizations to provide young people with opportunities for multinational communication and assimilation.

Keywords: cross-border interaction, cultural transformation, national identity, youth, social mobility.

1. Introduction

Cross-border mobility refers to physical mobility within the EU countries, which, unlike migration, takes place for an intentionally limited period of time, after which its participants return

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home. This type of mobility may include, for example, interaction with peers and friends, conferences and conventions attendance, participation in educational exchange programs and international creative activities (Biermaier, 2019).

The possible results of cross-border experiences during such an important period of personal development are very broad and cover many areas, such as learning outcomes, linguistic competences, and career guidance. Moreover, there is some evidence that mobility promotes autonomy and adequacy in achieving goals and gaining control - typical developmental tasks of young people, which prevents feelings of isolation and alienation.

In recent decades, the mobility of young people and their interaction with each other through involvement in educational programs and organizational projects have increasingly been studied in terms of the further development of a national identity in young people. Most researchers refer to theoretical approaches that share an emphasis on the importance of communication and interaction between people of different national and cultural backgrounds.

German social communication theory provides valuable insights into the process of community and group identity formation: transactionalists emphasize the importance of "social communication" as a mean of identity formation both within the nation state and within transnational communities. By "social communication" or "transactional communication" the authors mean the development of sustained and widespread personal interaction between different groups. Thus, networking that connects people in multiple ways is important for the formation of a common identity and sense of belonging to the community in which one lives and develops (Mazzoni et al., 2017).

It is important to note a number of studies focusing on students' cross-national experiences in order to explore the role of mobility in reinforcing aspects of European citizenship, positive attitude towards the EU and the formation of a European identity. For example, British students who studied in continental Europe for a year were more pro-European and had a stronger European identity than students who did not study abroad (Oboruna, 2013).

In this context, it is necessary to designate Europe as a region in which cross-border cooperation programs are not limited to local initiatives and activities, but are reflected in national documents and strategic social and economic development plans. The European Union (EU) authorities actively support mobility within its borders, resulting in significant increase of the number of students participating in some comprehensive forms of education abroad in recent decades. Young people are consequently more likely to relocate to another country and adopt different cultural norms.

The borders and territories of small countries are structured in such a way that most of the European territory can be considered a border region. According to the definition of the European Commission, border regions are territorial units located directly on a state's land border. According to this definition, 21.5 % of the territory of the European Union can be considered a border region (Regions, 2018).

Throughout history, borders and border regions have played different roles by expanding and limiting European territory. The function of modern borders can be understood in different ways: as barriers, corridors, opportunities for mobility and attributes of national identity.

Regarding the first function of borders as barriers, the formation of the single European market made the limitations of state borders as economic barriers to the single market operation more evident than before. The removal of obstacles and restrictions to the free mobility of labor, capital, goods and services did not mean the end of borders – it rather involved various forms of regulation and re-regulation at both EU and global levels. The fall of the Iron Curtain marked a rapid growth of the cross-border network even along the external EU border and facilitated the role of borders as corridors providing opportunities for mobility and cross-border interaction.

At the same time borders are also a source of economic and socio-political opportunities for states and many other interest groups and social institutes. In this sense, borders can act as a source of certain resources.

The borders of the current EU states still differ between heterogenous national and regional economic systems, welfare regimes, legal, political, and cultural traditions. Borders remain optimal locations for large multinational investors due to lower labor costs, environmental regulations specifics and subsidies availability, although European integration policy aims to counter many of these trends.

In this context, cross-border cooperation is the interaction of different cultures that leads to mutual learning and integration. This environment of intercultural dialogue is an area where societal innovation is inevitably born.

Cross-border cooperation in general refers to institutionalized partnership between contiguous sub-national authorities across national borders. Cross-border cooperation is an essential element for overcoming the barriers of national borders and achieving economic, social, and territorial cohesion.

Based on the above it is advisable for the present study to consider the correlation between the export of educational services as part of non-resource exports and economic development by proving the following hypothesizes:

H1: The level of national economic development shapes the status of a foreign students recipient country;

H2: Transplantation of economic development level through cross-border educational activities in a developing economy causes a gauge effect in the development of the country as a recipient of foreign students;

H3: The education services import rate by recipient states with emerging economies is specifically accelerated by cross-border student interactions in advanced economies through recipient-donor agency relationships.

2. Materials and methods

The development of European cross-border cooperation is almost impossible to describe without the European Territorial Cooperation (ETC), better known as the Interreg initiative. The Interreg was launched in 1990 with the aim to involve border regions in "strengthening economic and social cohesion within the European Union by promoting cross-border, transnational and interregional cooperation and the balanced development of the European Union territory". Thus the Interreg program is focused on borders and border area related actions and projects implemented by the EU, its member and non-member states.

Since 1995, the Interreg Community Initiative has evolved to its current configuration consisting of three strands. Strand A for cross-border cooperation exists for the longest time and focuses on cooperation between neighbor regions and aims to develop cross-border social and economic centres through common development strategies. Strand B, which is devoted to transnational cooperation, emerged at the end of the 1990s, while the Strand C interregional cooperation programs were launched in 2000.

Conversely the Interact program has been part of the Interreg Community Initiative since 2002 and is built on the outcomes and lessons of past years to improve efficiency in subsequent decisions of future programming periods (Table 1). The core of the Interact program is the establishment of information and communication networks, defining information frameworks and flows, actively disseminating information and stimulating the exchange of experiences. Another EU funded initiative in this field is the European Spatial Planning Observation Network (ESPON), which unites the Member States for national spatial planning with a particular focus on territorial and regional development trends in Europe.

Table 1. Evolution of the Interreg initiative (INTERREG, 2021)

Criterion	Interreg I (1990-1993)	Interreg II (1994-1999)	Interreg III (2000- 2006)	Interreg IV (2007-2013)	Interreg V (2014- 2020)
Legal status	Public Initiative	Public Initiative	Integrated into the Structural Funds legislation	Integrated into the Structural Funds legislation	Own regulatory framework
Beneficiary Member States	11	15	25	27	28

(internal borders)					
Financial liabilities (current prices)	€1.1 billion	€3.8 billion	€5,8 billion	€8,7 billion	€10,1 billion

Interreg has outlined a kind of classification to lay out priorities activities and achieve the cross-border development goals and objectives. This classification outlines areas of high importance for the program and includes the following areas ([30 years of INTERREG, 2020](#)):

- Transport;
- Information Technologies (ICT);
- Power Industry;
- Environment/Quality of life;
- Threats;
- Cultural and cross-border social interaction;
- Growth, employment and competitiveness;
- Knowledge sharing/Innovation/Research;
- Education/Vocational training;
- Remote and rural development.

In the context of cross-border youth interaction, it is important to pay particular attention to such areas as "Cultural and cross-border social interaction", "Knowledge exchange/Innovation/Research" and "Training/Vocational training".

Cross-border cultural and social interaction activities and programs are considered to play significant role within the border regions. The ideas of culture and cross-border social interaction define and complement the most of the Interreg projects topics. The attractiveness of cultural and cross-border social interaction projects does not depend on factors such as the size of the population. Moreover, areas with a lower level of cultural development are also oriented towards cultural and cross-border social interaction.

The concentration of culture and social interaction is partly concentrated on the border between the old and new Member States in Central Europe, possibly due to the border regime changes due to the accession to the EU, which provides opportunities for population of these countries to participate in exchange programs more actively.

Moreover cross-border cultural and social projects can be popular precisely in areas where social, political and economic cultures do have fundamental differences and interesting features. As the example of the Finnish-Russian and Finnish-Estonian programs shows, Estonia was much closer to Finland culturally and historically than Russia. This probably explains why in the case of Finland-Russia cultural and social projects were relatively more popular: they were aimed at overcoming cultural exclusion, as in the case of Finland this was not an issue. The Finnish-Russian example also demonstrates the high popularity of economic projects. This is clearly the result of a significant gap in the levels of economic development between Eastern Finland and Russian Republic of Karelia. This gap serves as a stimulus for the development of cross-border business relations ([SEFR CBC, 2014](#)).

The "Knowledge Exchange/Innovation and Research" dimension is the second largest thematic area addressed within Interreg projects. Knowledge exchange has indirect impact on building intellectual and technology capacity in the regions. The emphasis on networking, research, innovation, knowledge exchange and institutional learning is one way to develop social and human capital through cross-border cooperation and to encourage regions to try to take a leading position in the global information society.

Thus, the experience of the Erasmus+, the European Union's non-profit student and staff exchange program between higher education institutions located the EU member states, as well as Iceland, Liechtenstein, Northern Macedonia, Norway and Turkey, contributes to changing attitudes to the concept of United Europe by highlighting the level of EU support.

About 10 % of all Interreg projects can be classified as the "Education/Training" track initiatives. Projects belonging to this direction usually deal with different types of education and

training ranging from university level courses to vocational education and training of civil servants. The importance of this theme can also be reflected in education and training as a method used to achieve cross-border integration (Cross-border cooperation, 2007).

3. Results

In December 2017, EU leaders proclaimed creation of a European Education Area as a priority for the period until 2025. The key features of this area include the following positions:

- academic mobility in learning should be the norm and the benchmark;
- universities should be able to work across borders without hindrance;
- bilingualism in addition to mother tongue should be encouraged;
- school and university degrees should be automatically and mutually recognized;
- creating conditions for everyone to feel they belong regardless of their background;
- Europe as a continent of excellence in the field of education and training.

However, these goals achievements will depend on the initial state and readiness of the national education systems in the EU Member States and external partners (Figure 1) (Erasmus 30th Anniversary, 2017).

The European Universities Initiative, which was launched in November 2019 with 17 European universities alliances and a budget of almost 85 million euros, is intended to contribute to existing problems resolution. The program paves the way for universities of the future by increasing the quality and attractiveness of European higher education and intensifying cooperation between institutions, their students and staff, thereby developing cross-border interaction between young people. The project participants list includes a wide range of the EU higher education institutions from universities of applied sciences, schools of engineering and fine arts to universities with resource-intensive research projects.



Fig. 1. Educational polarization of European Education Area program countries (Järviemi, 2016)

The selected European universities are fundamentally transforming their institutions, becoming tightly intertwined, more competitive and attractive, sharing common long-term educational strategies with stronger links to research, innovation and service to society. These education institutions as such aim for a systemic, structural and sustainable impact on society.

While some alliances comprehensively cover many fields of study, others focus on particular topics as urban coastal sustainability, social sciences or global health. Each alliance consists of an average of seven higher education institutions from across Europe, leading to new partnerships.

A kick-off event with ministers responsible for higher education, rectors and students took place in Brussels on 7 November 2019, with more than 1,000 people in the field and 7,000 people online ([Erasmus+ Annual Report, 2019](#)).

The European Commission has also launched the European Student Card program. In its first phase, it has affected more than 2,200 higher education institutions. The full buildup of this initiative in cooperation with CEF (Connecting Europe Facility) is awaited within upcoming Erasmus+ program initiatives. With financial support from the CEF, work is underway to ensure the secure identification and authentication of European students for the mobility purposes when applying for events aimed at cross-border interaction of young people as well as accessing the creation of a strong and visible European student identity ([European Solidarity Corps Report, 2019](#)).

Particular attention needs to be paid to the EU Youth Strategy, adopted at the end of 2018, based on three key objectives: engaging, uniting and empowering young people as part of cross-border youth engagement. The 2019 European Youth Week, which brought together some 120,000 young people across Europe, provided a valuable opportunity for youth engagement within the EU Youth Strategy platform.

The Youth Week was held under the motto "Democracy and Me" being focused on youth participation in decision-making and the participation of young people in society as a whole. An expert group of the conference carried out activities to review and develop the policies of selected areas of EU legislative bodies relating to youth, with the aim of creating a monitoring system for the EU Youth Strategy. About 20 Member States joined the "Future National Activities Planners" platform, providing an opportunity to share and coordinate their policy priorities in the youth field and identify cooperation needs ([Youth Strategy, 2019](#)).

The European Commission and the Council of Europe youth partnership creates proper framework for common actions on the priorities in social sphere, including youth participation and youth work. More than 174,000 young people and youth workers have benefited funding from the Erasmus+ program: either through academic exchanges or through development opportunities for youth workers. Within the ambit of these actions, the Erasmus+ program has reached a significant number of young people who would normally have had lower access to such opportunities.

Erasmus+ focuses on the principles of equal opportunities, inclusion and equity promotion. More than 67,500 people with disabilities have been part of activities aimed at developing effective communication skills through cross-border interaction practices with a wide range of cultural ideas.

The budget allocated to youth mobility projects and youth workers in 2019 reached a total of €107 million. The number of contracted projects related to youth exchanges and youth workers increased by 13.5 % in 2019 compared to 2018, and the number of participants who received funding continued to grow, reaching almost 175,000. With an average €25,000 grant per project to 25,000 institutions involved in all kinds of actions, the program demonstrates its ability to reach and assert influence over a large number of young participants and organizations.

Youth exchanges bring young people from different countries together to study outside their national education system. With an initial budget increase of more than € 70.5 million in 2019, the Erasmus+ Mobility of Students and Staff Key Action has enabled appr. 120,000 young people to take part in cross-border projects and events and develop new skills and competencies.

Youth exchanges are particularly suited to inclusive education, as evidenced by the large number of young people with special needs. Since the launch of the Erasmus+ program in 2014, more than 15,000 projects have been funded, involving 670,000 participants from program participating and partner countries with different backgrounds, proving the success of this mobility opportunity and the sustained interest of youth organizations in promoting and disseminating the principles of cross-border interaction.

Since the start of the Erasmus+ program, almost 240,000 young workers have been provided with opportunities to develop key skills and competencies through transnational training courses and seminars including cross-border interaction between participants, joint events, study visits and work shadowing by prominent business representatives, large business entities, thanks to the mobility projects for youth workers. More than 7,600 projects focusing on topics relevant to youth work and youth policy were funded, including active citizenship, democratizing young people's views and developing their aspirations to promote inclusion and equality.

The number of Erasmus+ program activities and participants continued to increase in 2019, with almost 1,700 activities involving more than 45,000 young people, compared to 1,400 activities and 37,600 participants a year earlier. The success of the campaign is also evidenced by the high satisfaction rate among participants, which was almost 95 %. Young people reported an improvement in their competencies and high satisfaction with the development of their professional (88.6 %) and personal qualities (95 %), which had been achieved through cross-border interaction and exchange of cultural and professional experiences ([Erasmus+ Annual Report, 2019](#)).

Moreover, positive feedback on participation in the Erasmus+ credit mobility program was linked to the development of cross-border contacts. Comparing incoming and returning students to the EU, it was noted that the dichotomy of passive and active citizens would be defined precisely by their mobility level, dividing citizens into active as those who are mobile and have an EU civic identity, and passive as those who stay in the country but have a strong cultural national identity.

Nevertheless, the cross-border mobility and youth interaction in the context of strengthening European civic mobility may also provoke some negative feelings among the program participants. The analysis of the experience of the Erasmus+ students from the UK and European students, who decided to spend a semester abroad in the UK, shows that long-term mobility can cause homesickness and therefore result in distress ([Downsides, 2017](#)).

The Erasmus+ program in general is oriented towards promoting the internationalization of the education, renewal, relevance and accessibility of higher education in the partner countries, as well as cooperation and exchange between program participating countries and partner countries in the field of cross-border youth development. In 2019, particular attention was paid to geographical representation diversity and least developed countries priority, as well as to the inclusion of people from disadvantaged socio-economic backgrounds and participants with special needs.

The budget for this action reflects EU external priorities and is supported by appropriate financial instruments. Capacity Building in Higher Education (CBHE) projects are multi-stakeholder partnerships between higher education institutions (HEI) from program countries and partner countries. They can also involve non-academic institutions (NGOs, enterprises, associations etc.).

There are two types of CBHE projects, each lasting for two to three years. Joint projects aim at upgrading and reforming higher education institutions, developing new curricula, improving governance and management principles, and building relationships between higher education institutions and the wider economic and social environment. Structural projects can also address policy themes and issues, paving the way for reform and change in higher education as well as in specific areas, in cooperation with national authorities and representatives of the private sector.

In 2019, 163 out of the 840 applications received were selected for funding with 142 joint projects and 21 structural projects among them. More than a third of the applications were submitted by partner countries. Islamic Republic of Iran, Iraq and Yemen submitted the largest number of applications, followed by Asia, largely due to intensive and focused regional promotion as well as online activities.

The increased involvement of higher education institutions serving not only as partners but also as facilitators in least developed countries (LDCs) is also worth noting. Good progress was also recorded in the Western Balkans and Southern Mediterranean countries, while in the other regions the situation remained largely comparable to previous years.

Almost a half of the joint projects were aimed at updating the teaching system by developing new and innovative courses and methodologies in higher education institutions in the partner countries. The most preferred disciplines in the HEIs were Engineering, Education and Environment, which accounted for about 50 % of the total number of curriculum development projects. The project partners have made great efforts to develop curricula that are better suited to the labor market offers in the partner countries. As a result, the participation of industry and socio-economic actors in project partnerships is increasing.

In 2019, ongoing CBHE projects selected under the 2016, 2017 and 2018 calls for proposals were closely monitored by the European Commission with the support of Erasmus+ national offices in the partner countries which were formerly part of the Tempus program. In addition to desktop and local monitoring of particular projects, cluster meetings between representatives of ongoing projects were organized, institutional field monitoring visits were conducted and modern online tools were used to ensure high quality project implementation and close control over these

processes. The monitoring activities have inter alia showed that multi-country and multi-regional projects tend to be more ambitious and face serious challenges due to differences between national education systems and regulatory frameworks.

Moreover, special attention is given by officials and private sector representatives to youth organizations operating in Erasmus+ participating countries and other partner countries worldwide. Such organizations share good practices and address the more professional and career needs of young people by equipping them with the skills and knowledge they need to tackle challenges and build resilience. These activities also contribute to the external objectives of EU activities through projects in four areas including the ACPALA area (ACP countries, Asia and Latin America), the Western Balkans area, the Eastern Partnership area and the Southern Mediterranean area.

In 2019, a total funding amount of €14.3 million was distributed among 121 projects, 55 of which were selected in Africa, the Caribbean, the Pacific, Asia, Latin America (ACPALA). These projects allowed participants to exchange good practices in non-formal learning methods, volunteering and youth work. They facilitated policy dialogue, collaboration, networking and the development of methods, tools and materials for working with young people ([Joint Evaluation, 2018](#)).

Another efficient way to ensure cross-border interaction of people of all ages within the framework of Erasmus+ program is creation of knowledge alliances which are structured partnerships that bring together businesses and higher education institutions to develop new ways to create, disseminate and share knowledge. These are collaborations in the development and implementation of new curricula that encourage creativity, employability and entrepreneurship and contribute to the European innovative development potential ([Youth Strategy, 2019](#)).

Knowledge alliances cover a wide range of fields of study as well as economic and social activities. The main advantage of such projects is their focus on innovative excellence and responsiveness to social needs. They stimulate and facilitate interdisciplinary and cross-border activities for the benefit of both academia and the business sector.

The projects funded in 2020 have good potential for achieving a robust level of university-business cooperation and thereby outstanding results in various areas such as agriculture, health, education, social innovation, which also relate to green entrepreneurship.

As a general objective, a number of projects will develop innovative concepts in response to the challenges faced by Europe due to digitalization, technological revolution and globalization. Furthermore, in order to face the disruptive effects of a dynamic and unstable economy, specific approaches must be implemented to enable young people to be competent, creative, flexible and entrepreneurial.

European universities alliances established within the European Universities Initiative are transnational clusters of higher education institutions from across the EU that share a long-term strategy and promote European values and identity. The initiative aims to significantly enhance student and staff mobility and to contribute to the quality, inclusiveness and competitiveness of European higher education.

The selected European universities alliances include a variety of different types of higher education institutions not limited to continent-leading research centres, but also institutions with a particular focus on applied sciences, technical fields of study and artistic specializations. These alliances have proved their willingness to change by developing their partner ties, sharing the same values and development goals in higher education with proper links to research, innovation and service to society. As a result, their joint actions will lead to systemic, structural and sustainable impact on their activities and European educational system as a whole.

Higher education institutions are capable of building an integrated system of European universities. Their long-term vision is to become the universities of the future for the graduates of the future, and to this end they are committed to constantly upgrade their teaching, learning and research methods in order to produce and disseminate innovation.

Such projects opt for finding a proper balance between education on the one hand and research and innovation on the other. To make their vision a reality, European universities are working on specific interdisciplinary challenges. They will address these issues through transnational and transdisciplinary teams of students, professors, researchers, public bodies and businesses.

In terms of the Russian Federation's participation in cross-border educational mobility, it is worth noting that, in accordance with Decree of 07.05.2018 No. 204 of President of the Russian Federation it is necessary to double the numbers of foreign nationals studying at higher education institutions and scientific organizations, as well as to implement a set of measures to employ the most talented of them in the Russian Federation.

Moreover, the goal of educational export increase has been set on the governmental level within the comprehensive plan to attract foreign nationals to study in Russian higher education institutions. This point has found its reflection in the Export of Education federal project, which is as part of the Education national project, approved by the Presidium of the Council under the RF Ministry of Education and Science in 2018.

In this context, Melikyan A.'s opinion in her paper "Internal Factors of Education Export Performance in Russian Universities" acquires a particular value. The author believes that in order to enhance their export performance, universities must develop market orientation, be ready for innovations, expand alliances with foreign universities that are active in the market, and take a professional approach to promotion of educational services by attracting marketing professionals and integrating various education marketing strategies (Melikyan, 2018).

An econometric model of the export of educational services, focusing on economic development, as well as conditions on the time lag and structure of the influence of factors, has been generated to test these hypotheses:

$$\left(\frac{FS_t^j}{FS_{t-1}^j}\right) = \beta_j \cdot \frac{GDP_{t-lag}^j}{GDP_{t-lag-1}^j} + \gamma \cdot \sum_{i=1}^n \left(\alpha_i + \beta_i \cdot \frac{GDP_{t-lag}^i}{GDP_{t-lag-1}^i}\right)$$

$$lag: R^2 = \frac{\sum_{i=1+lag}^{n-lag} \left(\left(\frac{FS_t^R}{FS_{t-1}^R}\right)_i - \left(\frac{FS_{t-1}^R}{FS_{t-1}^R}\right)\right)^2}{\sum_{i=1+lag}^{n-lag} \left(\left(\frac{FS_t^R}{FS_{t-1}^R}\right)_i - \left(\frac{FS_{t-1}^R}{FS_{t-1}^R}\right)\right)^2} \rightarrow 1$$

$$\beta_R + \gamma \rightarrow 1$$

where FS_t^j – the number of foreign students in country j in period t, GDP_t^j – is the gross domestic product (hereinafter referred to as GDP) in country j in period t, β_j, γ – composition ratio, α_i, β_i – extra factors.

The presented model has been tested during the analysis of situation in the Russian Federation and Federal Republic of Germany, which are considered as exporting educational services countries with high level of students taking part in cross-border interaction.

The following trends have been identified for the countries studied. The number of foreign students in Germany in 2020 equals 287,100, which is 366 % higher than in 2000. The number of foreign students in Russia averaged 57,400 and 330,600 in 2000 and 2020 respectively (Figure 2). At the same time it is necessary to mention that two data sources, which can be used to estimate the number of foreign students in Russia, provide contradictory data: according to the report of the Russian Ministry of Education and Science there were 324,000 foreign students in Russia while the Education in Figures statistical collection of the Higher School of Economics amounted their number as 337,100. For the purpose of the present study, it was decided to use the average value.

The second exposure for the model proposed was the GDP values of Russia and Germany, which are presented in current prices in local currency in order to ensure the most accurate economic development level definition, as the aggregate determining the cross-border mobility of students as agents of educational imports (Figure 3).

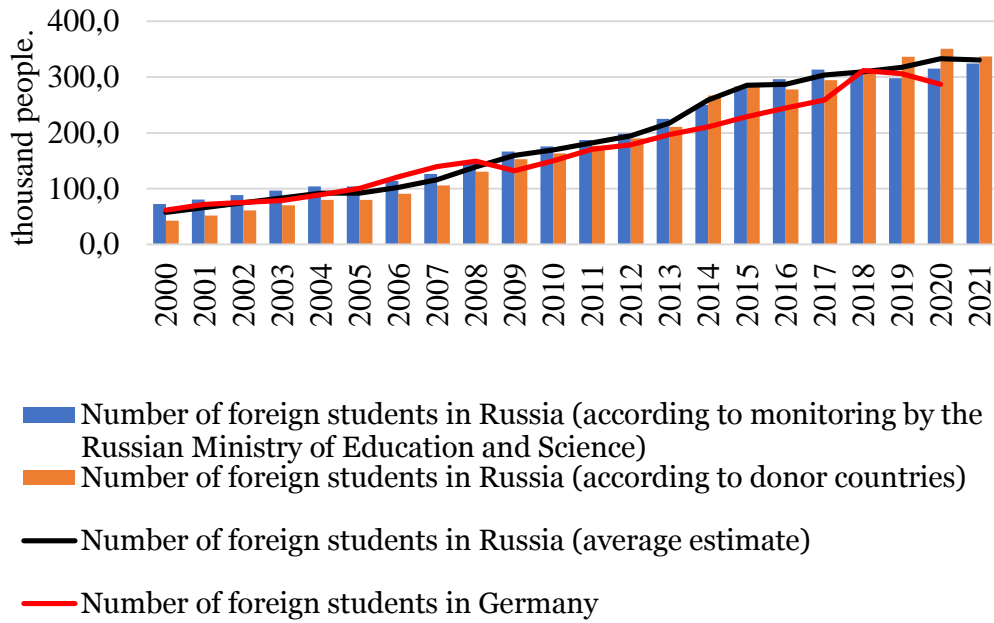


Fig. 2. International students numbers in Russia and Germany
Source: Compiled by authors

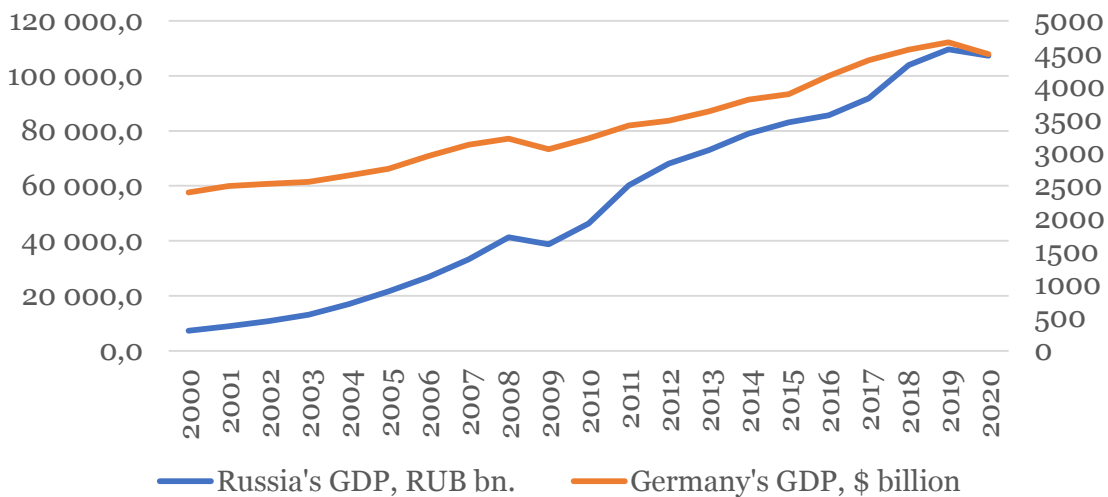


Fig. 3. GDP in Russia and Germany
Source: Compiled by authors

The average annual GDP growth rate for these countries under these conditions between 2000 and 2020 was 15.19 % and 3.36 % for Russia and Germany respectively (Figure 4).

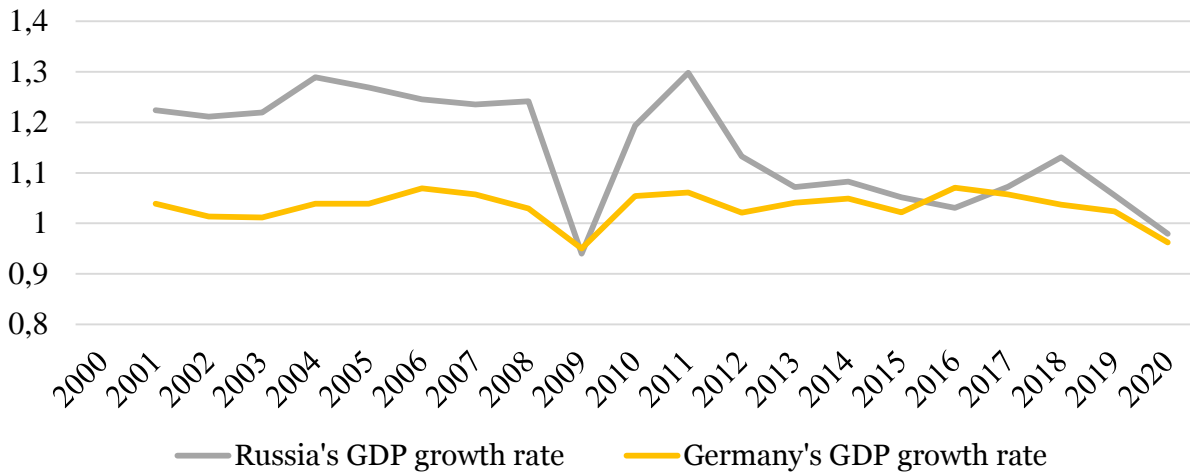


Fig. 4. GDP growth rates for Russia and Germany
Source: Compiled by authors

Thus, based on the data presented, the following model approximation results were obtained:

$$\begin{aligned} \left(\frac{\widehat{FS}_t^R}{\widehat{FS}_{t-1}^R}\right) &= 0,425 \cdot \frac{GDP_{t-4}^R}{GDP_{t-5}^R} + 0,537 \cdot \left(\frac{\widehat{FS}_{t-4}^G}{\widehat{FS}_{t-5}^G}\right) \\ \left(\frac{\widehat{FS}_t^R}{\widehat{FS}_{t-1}^R}\right) &= -0,574 + 0,425 \cdot \frac{GDP_{t-4}^R}{GDP_{t-5}^R} + 1,120 \cdot \left(\frac{\widehat{GDP}_{t-4}^G}{\widehat{GDP}_{t-5}^G}\right) \\ \text{lag} &= 4: R^2 = 0,9946 \\ \beta_R + \gamma &= 0,425 + 0,537 = 0,9615 \end{aligned}$$

The time lag for Russia is defined as 4 years based on the standard duration of a bachelor’s degree study program in Russia delivered in a face-to-face mode. The determination coefficient reaches its maximum value (0.9946) with the specified value of the time lag.

The qualitative characteristics of the generated model are presented in the [Table 2](#) below.

Table 2. Characteristics of the evaluated model

Factors	γ	β_R	β_G	α_G
Value	0,537	0,425	2,085	-1,070
Standard error	0,187	0,133	0,375	0,387
t-statistics	2,872	3,195	5,565	-2,764
F-statistics	1300		31	
Degree of freedom	14		18	

Source: Compiled by authors

Furthermore, in order to prove the hypotheses assigned, it is possible to use the developed model to analytically approximate the growth rates of foreign students in Russia and Germany ([Table 3](#)) taking into account a forecast for the lag period, i.e. 4 years for Russia.

Table 3. Model approximation results

Time period	The approximated growth rate of the number of foreign students in Russia	Growth rate of foreign students number in Russia	GDP growth rate in Russia	The approximated growth rate of the number of foreign students in Germany	Growth rate of foreign students number in Germany	GDP growth rate in Germany
t	$\left(\frac{FS_t^R}{FS_{t-1}^R}\right)$	$\frac{FS_t^R}{FS_{t-1}^R}$	$\frac{GDP_{t-4}^R}{GDP_{t-5}^R}$	$\left(\frac{FS_{t-4}^G}{FS_{t-5}^G}\right)$	$\frac{FS_{t-4}^G}{FS_{t-5}^G}$	$\frac{GDP_{t-4}^G}{GDP_{t-5}^G}$
2001	N/A	1,150	N/A	N/A	N/A	N/A
2002	N/A	1,130	N/A	N/A	N/A	N/A
2003	N/A	1,115	N/A	N/A	N/A	N/A
2004	N/A	1,103	N/A	N/A	N/A	N/A
2005	1,109	1,000	1,224	1,097	1,165	1,039
2006	1,075	1,115	1,211	1,044	1,052	1,014
2007	1,076	1,132	1,220	1,039	1,041	1,011
2008	1,137	1,201	1,289	1,097	1,137	1,039
2009	1,128	1,147	1,269	1,096	1,124	1,039
2010	1,152	1,063	1,246	1,161	1,206	1,070
2011	1,134	1,075	1,235	1,136	1,151	1,057
2012	1,105	1,067	1,242	1,077	1,071	1,029
2013	0,889	1,121	0,940	0,912	0,884	0,950
2014	1,113	1,188	1,193	1,128	1,135	1,054
2015	1,165	1,104	1,298	1,143	1,141	1,061
2016	1,050	1,005	1,133	1,060	1,046	1,021
2017	1,046	1,058	1,072	1,100	1,102	1,041
2018	1,060	1,019	1,083	1,118	1,071	1,049
2019	1,016	1,025	1,051	1,061	1,087	1,022
2020	1,062	1,049	1,030	1,163	1,069	1,071
2021	1,065	N/A	1,073	1,134	1,058	1,057
2022	1,067	N/A	1,131	1,093	1,204	1,037
2023	1,020	N/A	1,055	1,065	0,982	1,024
2024	0,919	N/A	0,979	0,938	0,938	0,963

Source: Compiled by authors

Based on the data on the number of foreign students in Russia growth rate, it is possible to estimate the indicator absolute variation. Thus, according to the forecast 358,300 students will study in Russian education institutions in 2022, in 2023 their amount will be 365,400 thousand learners, and in 2024 it will decrease to 335,900 people (Figure 5).

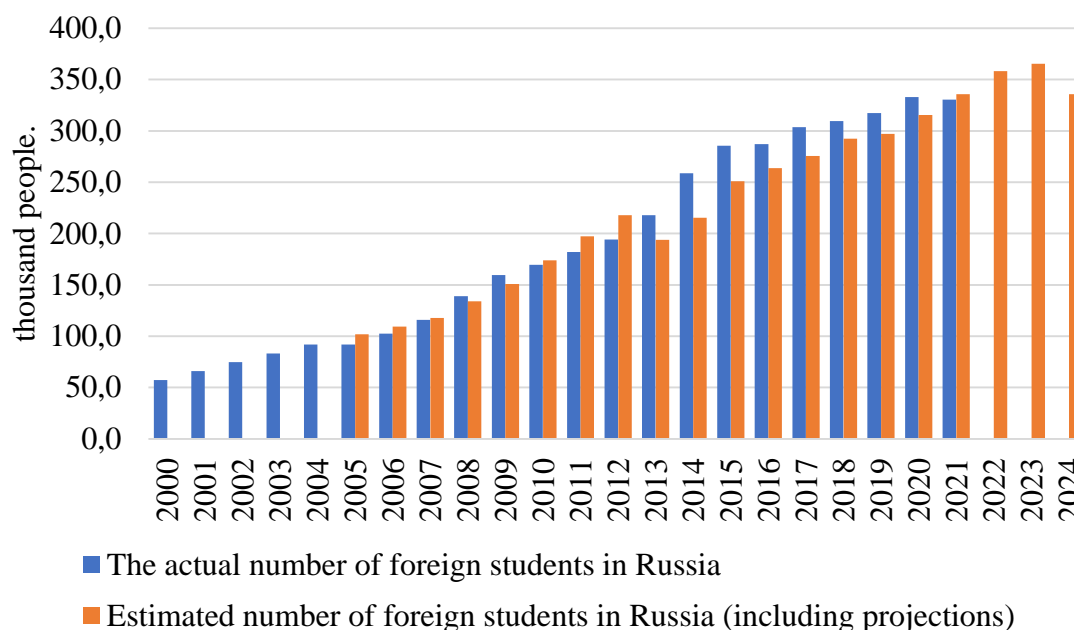


Fig. 5. Current and estimated numbers of foreign students in Russia from 2000 to 2024
Source: Compiled by authors

A less accurate forecast for the period to 2030 sets the number of foreign students in the Russian Federation at 458,300 with a standard deviation rate of 110,700. This forecast is made on the hypothetical average annual growth rate of foreign students of approximately 4.24 % from 2020 to 2030 (NB: from 2000 to 2020 the average growth rate was 9.69 % per annum).

Besides that, according to the Export of Education federal project, the number of foreign nationals studying in Russian higher education system should reach 425,000 by 2024, which is 7.27 % lower than the predicted indicator value and could approve the estimate made within the framework of the present study.

4. Discussion

Having regard to the above, it is possible to conclude that all formulated hypotheses have been verified.

Firstly, the two countries (Russia and Germany) GDP growth rate study shows a directly proportional correlation between these indicators and the foreign student number growth rate. In other words, national economic development of a country ensures its sustainable position in the international education market.

Secondly, the effect of economic development is short-term in developed countries (with a time lag of 0 to 1) and preventive (with a time lag of less than 0) for countries with expectations for accelerated socio-economic development (Figure 6).

The effect of economic development on education services export in developing countries is determined with a time lag of more than 1, i.e. more than one year is needed for cross-border mobility. This shortcoming is based on such external conditions as unstable character of national economy and high level of geopolitical externalities influence.

Thirdly, the recipient-donor agency relationship is able to condition economic development transplantation according to the size of the structural coefficient in the model presented, which is carried out through the transfer of socio-cultural values, specific mentality, as well as the quality of primary and secondary education.

Among the challenges faced by contemporary young people in cross-border and regional cooperation, the following aspects should be noted:

- Lack of knowledge and awareness on cross-border and regional cooperation, including participation in projects such as the Erasmus+ program or Council of Europe youth projects;

- Problems related to higher education institutions enrolment, lack of information and mechanisms for youth participation in policy development and its implementation on local and regional levels;
- Lack of youth engagement and motivation to participate in cross-border and regional cooperation.

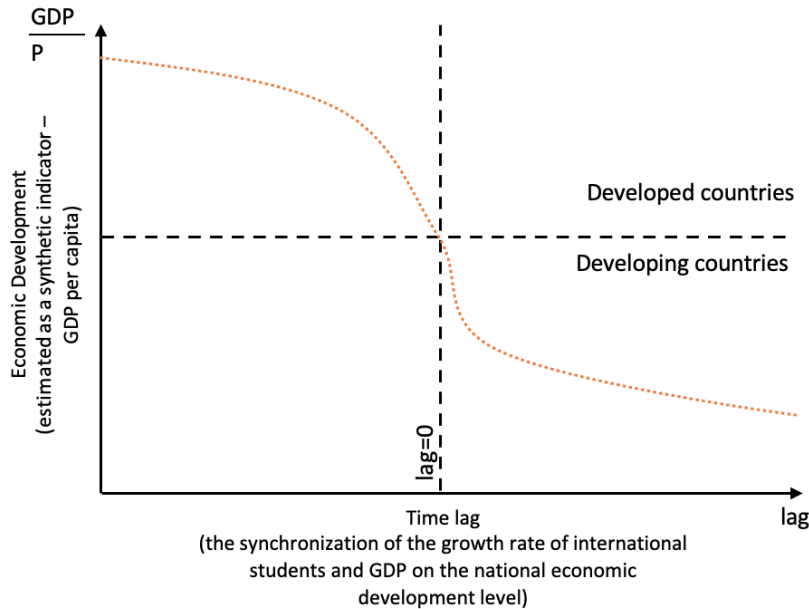


Fig. 6. Time lag graph in the synchronization of the international students and GDP growth rate on national level

Source: Compiled by authors

Economic development strengthening through the autocorrelation impact of exports of educational services within the framework of the presented model is possible through the implementation of the Formation of an educational export support and development program by reference groups of partner countries and territorial and sectoral segments of the global market in order to effectively provide export-oriented sectors of the Russian economy with highly qualified personnel key action of the Export of Education federal project within the framework of providing grants in the form of subsidies from the federal budget based on the Decree of the Government of the Russian Federation No. 569 dated 08 May, 2019.

Thus, plurality of national affiliation within cross-border student mobility is driven both by economic development itself and by imbalances in economic development between donors and recipients, but also has the potential to renew and strengthen the process complex of educational exports.

5. Conclusion

Mobility becomes the key to the young people success in the context of social change and societal change. Being the most open to solving the problems of stereotypical attitudes, which prevent society from making the most effective decisions in its most diverse fields, this population group is also more flexible and adaptive to different social and cultural experiences.

In order to overcome existing challenges, it is necessary to develop a set of measures able to cover the limitations of cross-border interaction of young people not only when implementing programs abroad, but also in the context of promoting the principles of cross-border youth interaction in Russia by adoption of the EU best practices. The following actions and measures could be included into the potential list of problem-solving tools:

- Encourage youth networking with a view to regional and cross-border cooperation;
- Supporting youth-oriented regional and cross-border ideas and activities, initiating a platform for the exchange of ideas and a dialogue between youth and experts, empowering youth to initiate and implement cross-border, regional and transnational cooperation;

- Shaping new ways of ideas and projects dissemination.

To sum up, young people themselves predetermine the uniqueness and success of many projects in the international sphere, including the development of cross-border interaction being the exact social group to effectively use the contact function of the border for interaction with representatives of different cultural and political backgrounds. In this connection young people play a decisive role in the implementation of cross-border interaction and cooperation projects developing intrinsic motivation and personal involvement in the solution of state tasks by increasing the level of involvement in the transboundary interaction processes. This factor will encourage the society as a whole to reach a new level of interaction, through which the goals and objectives towards improving the quality of life of the population and strengthening relations between countries will be finally achieved.

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Enhancement of Digital Literacy of Students with Disabilities

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Abstract

Digitalization has affected all spheres of life, including education. Modern didactics and methods of digital education are designed to solve problems related to the use of digital technologies, tools and resources in the education, upbringing and development of children with disabilities. The aim of the study was to develop a model of the components of digital literacy and in practice to assess the level of development of digital literacy of students with hearing impairment. The process of forming and improving the components of digital literacy of hearing impaired students was carried out on the basis of the scientific substantiation of the content of the special course in addition to computer science. The study was conducted in Kazakhstan between the years 2019 and 2021 among 127 students of special (correctional) schools. We have proposed the author's two-component model of digital literacy of hearing impaired students: (1) digital user component and (2) digital correction-intellectual component. In the first component students with hearing impairments will be able to know the basic Engineering training. For example, installing, starting, removing and updating software; installing the operating system; increasing the speed of a computer; working with drivers, peripheral devices and etc. On the basis of the collected data, we have noticed the following: digital user component of digital literacy is an important for hearing impaired students because the respondents possess the lowest level of knowledge in the area of engineering training and have the ability to create digital content. This led to create the second component as Digital correction-intellectual component. According to this component, students will be able to improve their cognitive, logical, critical, creative, systems thinking, memory, attention, speech, communication skills through learning adopted additional course. Thus,

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facilitating the development of Digital literacy of students with hearing impairments has become one of the key challenges faced by special (correctional) schools today.

Keywords: digital literacy, students with hearing impairments, components of digital literacy of students with hearing impairments, computer science, additional course.

1. Introduction

The problem of adaptation of schoolchildren with disabilities in society, creating conditions for them to receive a quality education, increasing their creative abilities, integration into society as a full-fledged member of society can be considered one of the most important issues that is currently being intensively carried out in many countries of the world. In the era of digital technology development, improving the digital literacy of schoolchildren with disabilities is the aim of today's school curriculum especially in the computer science course.

Modern educational practices and pedagogical systems of developed and developing countries are undergoing changes necessary for society, making the transition to new educational concepts and technologies. International organizations recommend inclusive education as a priority direction for the development of the educational system, aimed at realizing the right of citizens to receive quality education and social integration. Let's give an example on the International legal framework for teaching, upbringing and education of children with disabilities, such as:

Universal Declaration of Human Rights (1948) – Adopted by the UN General Assembly on 10.12.1948. Article 26.2: "Education should be directed to the full development of the human personality and to increase respect for human rights and fundamental freedoms (UDHR, 2015). Education should promote mutual understanding, tolerance and friendship among all peoples, racial and religious groups, and should contribute to the activities of the United Nations in maintaining peace."

The UN Convention on the Rights of the Child (1989) – Adopted by UN General Assembly resolution 45/25 of 20.11.1989 – The UN Convention on the Rights of the Child enshrines the right of all children to receive education without discrimination on any basis, the right of the child to respect for his dignity, living in a family, the right of disabled children to social integration (UN CRC, 1989).

World Declaration on Education for All (1990) – The World Declaration on Education for All was adopted by the participants of the World Conference "Education for All" in Jomtien, Thailand, on March 5-9, 1990, with the aim of meeting the basic educational needs of all people. Article 3 – the so-called "making access to education universal and promoting equality" states that the educational needs of persons with disabilities deserve special attention. It is necessary to take measures to ensure equal access to education for all categories of persons with disabilities as an integral part of the educational system (UDHR, 1990).

The Standard Rules on the Equalization of Opportunities for Persons with Disabilities (1993) – the objectives and content of the Standard Rules on the Equalization of Opportunities for Persons with Disabilities: the Standard Rules on the Equalization of Opportunities for Persons with Disabilities were developed based on the experience gained during the United Nations Decade of Persons with Disabilities (1983–1992). States should recognize the principle of equal opportunities in primary, secondary and higher education for children, youth and adults with disabilities in integrated structures. They should ensure that the education of persons with disabilities is an integral part of the general educational system (UN SREOPD, 1993).

The Salamanca Declaration: on Principles, Policy and Practical Activities in the field of education of Persons with special needs (1994) – On principles, policy and practical activities in the field of education of persons with special needs: 'persons with special educational needs should have access to education in ordinary schools, which should create conditions for them on the basis of pedagogical methods focused primarily on children in order to meet these needs' (UNESCO SDPPPA, 1994).

As well as UNICEF, which carries out activities to protect the rights of children with disabilities throughout Europe and Central Asia: from spreading the best possible ways of caring for such children to supporting their education and participation in local life (Children with disabilities, UNICEF).

Based on the above-mentioned International legal framework, it can be concluded that every child has a fundamental right to education and should be able to receive and maintain an

acceptable level of knowledge, each child has unique characteristics, interests, abilities and educational needs, despite their disability.

In order to give the students the opportunity to receive and maintain an acceptable level of knowledge, it is necessary to use digital technologies in their educational process.

Digitalization is transforming societies, providing new opportunities to improve education in the classroom, enhance the management of education systems, but also to consider innovative models of delivery (OECD, 2021). One of the main elements of the digitalization of education is digital literacy. Digital literacy is the main priority of modern education, it is the ability to design and use the content using digital technologies such as computer programming, graphic visualization techniques, computer graphics, multimedia development of online courses, etc., search and exchange of information and communication with other learners (Petrov, Bondareva, 2019).

Digital literacy is an important learning area for all learners who can participate in learning, recreation and work in the 21st century (OECD, 2015). This could enable students with disabilities to use modern digital technology as a creative learning tool. The term digital literacy has been given much attention in various sectors of the sphere, including in education, problems from the digitalization of education to the formation and development of digital literacy of teachers and students have been studied, but limited attention has been paid to teaching students with disabilities and various educational needs. Digital literacy opens up opportunities for all students, especially those with disabilities. For example, the use of a number of assistive tools such as a web application as an online Internet tool in the classroom provides students with disabilities with new ways to interact with educational content, perceive the material and express their understanding of this content.

1.1. Digital literacy capability

Digital literacy capability is important for students with disabilities, as it can enable access to learning and to self-improvement. Difficulties in understanding what this ability means for students with disabilities and how their learning in this area is progressing have created difficulties for teachers in developing digital literacy for students with disabilities. To solve this problem, this study attempted to define the concept of digital literacy development for students with hearing impairments in order to form and develop the components of digital literacy. The school computer science course is responsible for the formation of a wide range of meta-subject educational results in the field of information and communication technologies that meet the realities of the time and are constantly changing in accordance with these requirements. But, unfortunately, if we talk about the formation of digital literacy of a student with hearing impairments, the existing educational and methodological complexes in computer science are not adapted to fully reflect all its components.

Digital literacy occupies the most important place in the list of basic skills that are in demand in the XXI century in almost any position.

2. Materials and methods

2.1. Research goal, implementation and the methodological basis

Digitalization has affected all spheres of life, including education. Modern didactics and methods of digital education are designed to solve problems related to the use of digital technologies, tools and resources in the education, upbringing and development of children with disabilities.

There is a problem of developing digital literacy based on the creation of additional educational content, learning technologies necessary for the formation of digital literacy of students with disabilities.

In this paper, two major problems are considered.

Firstly, it is necessary to replenish and improve the methodological support of the educational process, focusing on the development of educational and cognitive sections of adapted programs, to increase the digital literacy of students with disabilities. Secondly, it is necessary to develop additional training courses in computer science, for correction and in the development and effective socialization of students with disabilities.

The purpose of the study is to create an additional educational course in computer science aimed at improving the level and formation of digital literacy of students with hearing impairment, taking into account the trend of creating and applying a digital resources in pedagogical practice, scientific development of teaching methods and description of its application in practice.

The implementation of this goal involves solving the following tasks:

- to formulate a definition of the concept of "digital literacy of students with disabilities, namely with hearing impairments";
- to determine the components and build a model of digital literacy of students with hearing impairments;
- to develop an additional educational course for the formation and development of digital literacy of students with hearing impairments in addition to the main course of school informatics;
- to substantiate the results obtained and check the effectiveness in practice.

The methodological basis of the authors' research was formed by the ideas of a personality-oriented approach of students with hearing impairments. The main research methods were chosen theoretical analysis of educational and methodological, scientific literature and Internet resource on the formation of digital literacy of students with disabilities, generalization of practical experience in the formation and development of digital literacy, questionnaires to identify the dynamics of the formation of digital literacy of students with hearing impairments.

2.2. Review of digital literacy sources for students with disabilities

A review of numerous scientific sources on digital literacy has shown that digital literacy is defined as the ability to correctly use information and communication technologies to search, evaluate, create, retrieve and transmit information, content that requires both cognitive and technical skills not only in the professional sphere, but also in everyday life.

Various researchers have presented definitions of digital literacy and conducted a number of studies on this issue (e.g., see Gilster, 1997; Neumann et al., 2017; Porat et al., 2018; Lankshear, Knobel, 2008; Bawden, 2001) and research on digital literacy skills for students through improved pedagogical methods (e.g., see Sahu, 2019; Kuznekoff et al., 2019). After analyzing digital literacy, the authors noted the use of digital technologies that have great pedagogical potential, students will be able to confidently use them in their studies and in life. According to Martin (2008), Digital Literacy: "is the awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyze and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon this process". At the beginning of the 21st century, Eshet-Alkalai, (2004) in his research telling that "Digital literacy includes a wide range of complex cognitive, motor, sociological and emotional skills that users need to function effectively in a digital environment" proposed a new conceptual system for the concept of digital literacy, joining five types of education: (a) photovisual literacy; (b) reproduction literacy; (c) information literacy; (d) branching literacy; and (e) socio-emotional literacy. According to the authors, these types of digital literacy cover most of the cognitive skills used when using the digital environment. As a result, this conceptual framework can improve understanding of how users perform tasks that require the use of different types of digital skills.

The study by the researcher, Professor P Hagel (2015) showed that 'digital literacy' integrates three literacies: information literacy, media literacy, and information and communication technologies (ICT) literacy. These literacies have become "legacy" perspectives that continue to influence conceptions of digital literacy (see in Table 1). In addition to this concept, research by Martin, Grudziecki, 2006 – Martin, A., Grudziecki, (2006) distinguish other "digital literacies": Technological literacy; Visual literacy; Communication literacy (see in Table 1). According to the authors these "literacies of the digital" mostly from the pre-digital era, but presented as a way of understanding phenomena that have become more important or even transformed in the digital context.

Table 1. A brief overview of the contribution to digital literacy, according to P Hagel (2015) and Martin, Grudziecki, 2006 – Martin, A., Grudziecki, (2006)

Hagel, Pauline (2015)	Allan Martin and Jan Grudziecki (2006)
Information literacy: skills of independent search, analysis, critical understanding of information data;	Computer, IT or ICT literacy: Computer literacy concepts are divided into three phases: - Mastery phase: Obtaining special knowledge

	<p>and skills for mastering the computer. "Computer Basics", whatever they are called, consists of how a computer works and how to program it i.e. using whatever languages were in use at the time.</p> <ul style="list-style-type: none"> - Application Phase: In this phase, the computer is considered as a tool that can be applied in education, work, leisure and home. The use of software applications has become a major focus of literacy activities, and the definition of computer or IT literacy focuses on practical skills rather than specialized knowledge. - Reflective phase: In the Reflective phase IT could be a vehicle in pedagogy focused on students.
<p>Media literacy relates to the creation, production, reading, communication and critical evaluation of media and texts.</p>	<p>Technological literacy: Technological literacy has emerged as a response to a variety of concerns: increasing awareness of the enormous potential danger of technological development to the environment and humanity; and the growing fear that a lack of understanding about technological developments will cause the workforce.</p>
<p>The ICT Literacy Panel (cited in Mackey, Jacobson, 2011: 65) defined this literacy as: "...using digital technology, communications tools, and/or networks to access, manage, integrate, evaluate, and create information to function in a knowledge society".</p>	<p>Information literacy includes knowledge of information problems and needs and the ability to identify, retrieve, evaluate, organize, and effectively create, use and communicate information to solve current problems or problems. It is a prerequisite for effective participation in the information society and is part of a fundamental human right to lifelong learning.</p>
	<p>Media literacy focuses more on the characteristics of different media genres and how messages are constructed and interpreted. From this perspective, the characteristics of the author/sender and recipient are important to understanding the meaning and content of the message. Information literacy tends to focus on how to access information and evaluate content.</p>
	<p>Visual literacy originated in art criticism and art education and was originally concerned with cognition and how artists and designers use perspective, proportion, light, color, and other methods of visual communication.</p>
	<p>Communication literacy, in fact, emphasizes the importance of communication as a human activity as the basis of social interaction and is regarded as a primary personal attribute, whether verbal or digital.</p>

In the studies of Berman (2017) it is noted that the concept of "digital literacy" includes three components: digital competencies, digital consumption and digital security. And also Digital literacy includes the personal, technical and intellectual skills that are necessary in order to live in a digital world. As digital technologies become mainstream in society, the understanding of digital competence has expanded from technical aspects to a broader understanding of the application of

digital technologies. For example, digital competencies include: proficiency in Internet search technologies. Digital consumption reflects the level of availability of various digital technologies, both hardware and software. Digital security includes the possession of skills for safe working in the network, both technical and socio-psychological.

We agree with the opinion of Hobbs et al., 2018 – *Hobbs, R., Coiro, J. (2018)* that digital literacy is an extended concept of literacy that responds to the current changes in information and communication technologies that are part of everyday life.

Describing the state of digital literacy and emerging articulations, Connolly et al., 2018 – *Connolly, N., McGuinness, C. (2018)* note that they are more focused on the contextual and social aspects of this term, pointing out the need for models that would be immersive, meaningful and related to the life experience of young people. And the state of digital literacy can be seen through participation in digital culture, social responsibility, ethical consciousness and digital citizenship.

When forming digital literacy among students, Potupchik, 2017 – *Potupchik, E.G. (2017)* pays special attention to network security and ethics of working on the Internet. According to the author, "remote network interaction in distributed groups within the same school contributes to the formation of personal and meta-subject educational results in younger schoolchildren, ensuring the further development of elements of their digital literacy".

2.3. Analysis of the development of digital literacy for students with hearing impairments

Various researchers have conducted numerous studies on the formation of digital literacy among students with disabilities (e.g., see [Park, Nam, 2014](#); [Lowenthal et al., 2020](#); [Conley et al., 2019](#)).

A changing perspective on education for hearing impairment students in the 21st century must incorporate a focus on digital literacy. Digital literacy refers to the skills required to digitally work with information to use Internet-based tools and to present information clearly. To be competitive in the workplace, students with hearing impairments should know not only basic computer skills, but also how to use and care for personal assistance products and hearing aids. Learning to deal with digital technologies and using them for learning can be seen as an aspect of digital literacies. The combination of teaching students with disabilities and especially digital literacy training is difficult for many teachers, as it requires the provision of additional support and methods.

Thanks to digital literacy skills, students could show how intellectually developed they are through various means. Students with disabilities often lack the skills that create a transitional bridge for access to the general education program and successful study at school.

Students with hearing impairments, unlike students without hearing impairments, have a number of features that create difficulties in mastering educational content, therefore, when organizing the educational process, the content, pedagogical methods, teaching forms and means of teaching should be adapted depending on the degree of hearing impairment.

The peculiarities of the psyche of a child with impaired hearing develop differently in comparison with hearing children (there is a disparity in the development of visual-figurative and verbal-logical thinking; written speech in all forms-impressive (reading) and expressive (writing) acquires a greater role compared to oral; the impressive form of speech prevails over expressive. This feature should be taken into account when organizing the education and training of children with hearing disorders.

According to the World Health Organization over 5 % of the world's population – or 430 million people – require rehabilitation to address their 'disabling' hearing loss where 34 million are children. ([WHO, 2021](#)). Various studies have been carried out with various authors on the intelligence of students with hearing impairments (e.g., see [Ebrahim, 2006](#); [Bogdanova, 2009](#); [Topal, 2017](#)).

According to M. Marshak (1997), the intellect and speech development of children with hearing impairments are not completely independent of each other. We also agree with the opinion of Emad E. Abdallah and Ebaa Fayyumi that: "some people think that intelligence of deaf and dumb people are less than normal people, but this idea is not true. Deaf and dumb people have sharp intelligence that makes them equal with normal people".

Children with hearing problems initially have an intersection of the lines of development of thinking and sign language. This has a beneficial effect on the formation of visual-figurative

thinking, since the main feature of this type of speech is its visual and expressive nature. For the transition to the next stage – conceptual thinking – a higher level of generalization and abstraction is required, which only sign speech, without verbal speech, cannot provide. When deaf children of this group are taught verbal speech in all its forms (oral, written, dactyl), it begins to influence both sign speech and the development of the cognitive sphere as a whole.

2.4. Formation of digital literacy components for hearing impaired students

Before forming the components of digital literacy, the pedagogical and psychological features of students with hearing impairments were identified in this research. Let's consider the features of the hearing impaired that affect their educational activities in educational processes:

(i) The main burden of information processing falls on the visual analyzer. Visual perception is the main tool for communication and knowledge acquisition. The main basis of information perception is visualization. Constant concentration of the facial expressions and gestures of the speaking person requires a strain of attention, which in turn leads to fatigue and loss of stability of attention. Therefore, hearing-impaired children have difficulties communicating and switching attention. This, in turn, leads to a decrease in the performance of any tasks in the educational process.

(ii) Reduced ability to receive information, as well as its storage, i.e., problems with memorizing, processing and using information;

(iii) Slowing down the process of forming concepts;

(iv) Children with hearing impairments have a slower recognition of objects compared to hearing children;

(v) Complex phrases are very difficult to perceive, distorts the grammatical structure of the sentence during speech, lack of vocabulary;

(vi) It takes more time to highlight the informative features of the subject.

The intellectual sphere of the hearing-impaired, as a delayed development of mental operations, in particular the operations of analysis, synthesis, abstraction, they have difficulties in identifying and understanding the goal. In the process of working and mastering professional skills, they strive to get a result as soon as possible, i.e. get there. However, they have a lack of concentration, the ability to correlate the image of the future result with the resulting product and analyze the causes of difficulties. Problems in mastering professional skills are usually associated with the fact that students, in an effort to get results faster, neglect important labor operations. In addition, people with hearing impairments tend to be unaware of the imperative to achieve their goals. Thus, in addition to the task of teaching, teachers are faced with the task of educating the hearing impaired with a positive attitude to work and the formation of appropriate motivation for them.

In order to form and develop digital literacy of children with hearing impairments, we should determine the components of digital literacy, by taking into account their psychological, pedagogical and physiological abilities.

We have analyzed various components of digital literacy. There are different criteria in the components of digital literacy development. In research Doug Belshaw, 2014; Jenkins, 2006; Łukasz, 2020; Sharpe, Benfield, 2012; Sharikov, 2016 different components of digital literacy are offered. As shown in Table 2, most of the authors proposed components for working with digital technologies and security components.

Table 2. Comparison Table of Digital Literacy Components

D. Belshaw (2014)	Henry Jenkins (2006)	Łukasz Tomczyk (2012)	R. Sharpe, G. Benfield (2012)	A.V. Sharikov (2016)	T.A. Boronenko, et al. (2019)
1. Cultural	1. Skills of working with a computer and other devices	1. Ergonomics of using ICT	1. Increasing digital competence	1. Technical and technological capabilities	1. Technical aspect
2. Cognitive	2. Skills of working with programs	2. Assess the reliability of information	2. Use of digital media	2. Content and communication opportunities	2. Information on the Internet

3. Constructive	3. Skills in working with digital technologies	3. Safe online communication	3. Digital transformation	3. Technical and technological threats	3. Communication on the Internet
4. Communicative		4. Anonymity in the digital world		4. Sociopsychological threats	4. Digital consumption
5. Confident		5. Secure access to the system			
6. Creative		6. Intellectual property			
7. Critical					
8. Civic					

Renowned media scientist Henry Jenkins (2006) believes that digital literacy includes the ability to work with a computer as "hardware", understanding the characteristics of the device and distribution of digital information, understanding the structure of the network community and the characteristics of social media. And also H. Jenkins et al. they believe that digital literacy depends on the formation of the following skills:

- skills in interacting with a computer and any other electronic devices;
- skills of interaction with software;
- skills in working with digital technologies.

Further in the research of the famous scientist in the field of education and digital literacy researcher Doug Belshaw (2014) in his research, which testifies to the presence of various models of this digital literacy and made eight components (see in [Table 3](#)) as the basis for the qualitative interaction of a person with the digital world:

Table 3. Components of digital literacy by D. Belshaw, 2014

Components of digital literacy	Definition
Cultural	«...the Cultural element of digital literacies is best acquired by being immersed in a range of digital environments. These environments should include those where different issues, norms and habits of mind are present. This ensures individuals have to modify their approach. Development can therefore be seen by the extent to which individuals can move increasingly quickly and seamlessly between these different digital environments.»
Cognitive	«...the Cognitive element of digital literacies is developed by encouraging sound 'habits of mind'. Exposure to various ways of conceptualizing digital spaces and ways of interacting within them certainly helps. Additionally, reading around such practices helps crystallize understanding».
Constructive	«...developing the constructive element of digital literacies involves knowing how and for what purposes content can be appropriated, reused and remixed. It is as much about knowing how to put together other people's work in new and interesting ways as it is about understanding the difference between the digital and physical worlds».
Communicative	«...the Communicative element of digital literacies is always closely aligned to the Constructive element as it involves making something – a thing some may term a social object. Having the knowledge, skills and understanding to do this constitutes the nuts and bolts of literacies in digital networked environments.»

Confident	«...Developing the Confident element of digital literacies involves solving problems and managing one’s own learning in digital environments. This can be encouraged by the kind of practices that work well in all kinds of learning experiences. Namely, self-review focusing on chievement and areas of development, paired with mentoring.»
Creative	«...the creative element of digital literacies is about doing new things in new ways that somehow add value. It is about using digital technologies and techniques to create or achieve things previously impossible – or at least out-of-reach to most people.»
Critical	«...becoming more advanced in the Critical element of digital literacies involves thinking about your own literacy practices. It involves reflecting on how they have come about, what has influenced you, and how your actions affect others.»
Civic	«...if literacies are always for a particular purpose, if they’re always about reading and writing something, then, to my mind, the Civic element is that ‘something’ that is being read and written. Preparing both ourselves and others to participate fully in society should, to my mind, be the goal of literacies.»

The authors of different concepts of digital literacy agree on only one understanding of how digital reality works, which can teach a person to control the information environment and make interact with digital technologies.

In addition to the researchers, we consider the components of digital literacy from the point of view of world organizations in the field of education (see in [Table 3](#)).

Table 4. Comparison of the components of digital literacy according to the different World Organizations

JISC (2014) – Joint Information Systems Committee	UNESCO (2011) – United Nations Educational, Scientific and Cultural Organization	AECT (2014) – Association for Educational Communications and Technology
1. Media literacy	1. Access to information	1. Search
2. Communication and collaboration	2. Information management	2. Placement
3. Career and personality management	3. Evaluation of information	3. Accessibility
4. ICT literacy	4. Integration	4. Management
5. Reading skills	5. Formation of new knowledge	5. Integration
6. Digital learning experience	6. Communication	6. Evaluation
7. Information literacy		7. Analysis
		8. Synthesis

JISC – (Joint Information Systems Committee) has identified that Digital literacy: “is the capabilities that fit an individual for living, learning and working in a digital society. Digital literacy looks beyond functional IT skills to describe a richer set of digital behaviours’, practices and identities. What it means to be digitally literate changes over time and across contexts, so digital literacies are essentially a set of academic and professional situated practices supported by diverse and changing technologies” (JISC, 2014).

UNESCO – According to the working definition, agreed at the UNESCO June 2003 Expert Meeting in Paris, “literacy is the ability to identify, understand, interpret, create, communicate, compute and use printed and written materials associated with varying contexts. Literacy involves

a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society.” (UNESCO, 2011).

AECT (2014) – Association for Educational Communications and Technology – has identified that: “Digital literacy is the use of high technology in everyday life. A digitally literate person may use specific hardware such as a computer, a cell phone, or other digital resource in combination with communication software, such as the Internet, to interact with society at large, thus becoming a digital citizen or e-citizen and improving social and economic opportunities”.

Summing up this section, we can give the following definition of digital literacy of students with hearing impairments: Digital literacy: “is a set of knowledge and skills necessary for the effective use of digital technologies in everyday and professional activities, regardless of their psychophysical characteristics”.

3. Results

3.1. Two-Component Model of Digital Literacy of students with hearing impairments

In the course of the study, taking into account the author's recommendations of various scientists on the components of digital literacy, we formulated our two-component model of digital literacy of students with hearing impairments to improve digital literacy in an additional computer science course (see Figure 1):

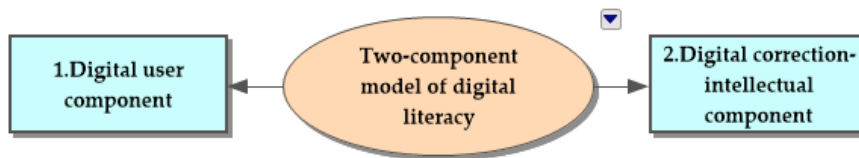


Fig. 1. Two-component model of digital literacy of students with hearing impairments

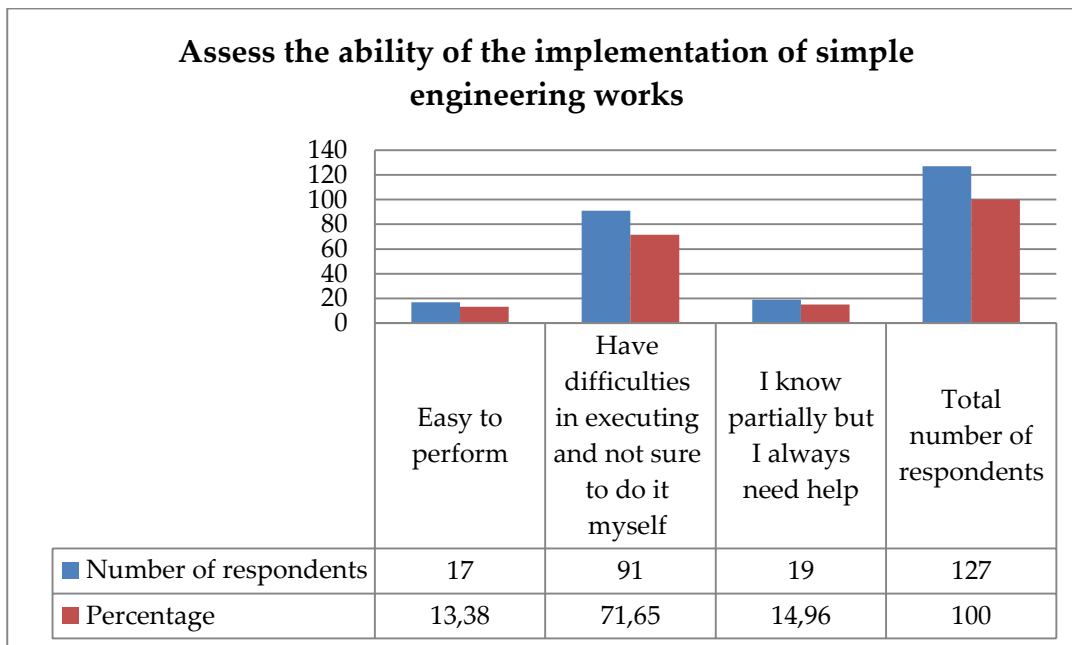


Fig. 2. A survey of students conducted before the start of training on the implementation of engineering activities

As shown in Figure 1, the first component is called digital user component. In this component students will be able to know the Engineering training. For example, installing software, uninstalling, updating, cleaning, etc. This is due to the fact that without the full development of engineering skills, students will not be able to achieve full digital literacy, and during the investigation, we noticed that the

basic school computer science course in the Republic of Kazakhstan did not fully reflect the exact Engineering skills. In addition, the results of the questionnaire survey of students conducted before the study on the implementation of engineering activities served as the basis for the compilation of this component (see Figure 2). The survey was taken from schools where hearing-impaired students study.

As shown in Figure 2, only 17 out of 127 respondents have the ability to independently solve the engineering problems. About 72 % of respondents have difficulty performing simple in engineering. After evaluating the possibility of performing engineering work, we received another survey of students with hearing impairments about their needs in the area of engineering (see Figure 3).

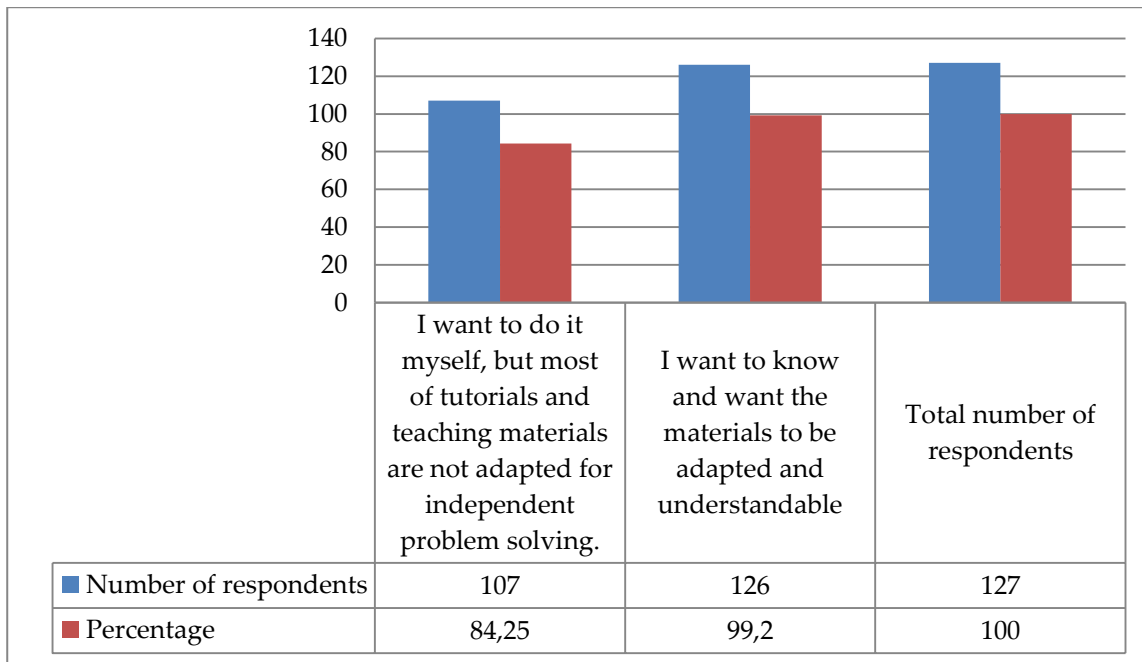


Fig. 3. A survey of students with hearing impairments about their needs in the field of engineering

According to the survey results which are shown in Figure 3, we see that almost all respondents want to get some knowledge about engineering activities through an additional course in school computer science.

The second component is digital correction-intellectual component. In this component students will be able to improve their cognitive, logical, critical, creative, systems thinking, memory, imagination, attention, speech, communication skills through learning adopted additional course.

Our approach to the formation and improvement of digital literacy of students with hearing impairments is based on correctional cognitive pathways. Based on the proposed two components, we have developed the adapted the curriculum of the course. This course is designed for 34 hours per year for students in grades 9-10. During the course, students can experiment with digital platforms, tools and learn about research and program development in digital literacy. In developing the program, we have focused on the interaction the two components. The course program consists of 4 modules. As shown in Table 5, the first component consists of 1 module and the second component consists of 3 modules.

Table 5. Course module

Component	Module
Digital user component	Engineering and technical training
Digital correction-intellectual component	Computer graphics and 3D modeling
	Creating a mobile application
	Digital research project

When developing the course, new educational methods and technologies were used:

- Information and Communication Technologies;
- Design Technologies;
- Technologies for the Development of Critical Thinking.

We will discuss the course module in the Discussion and conclusion section.

4. Discussion

4.1. The importance and general characteristics of the course

The strategy for the formation of digital literacy of students with disabilities should include to work to reduce inequality in access to digital technologies by developing an additional educational course. In the school course, the task of forming and developing digital literacy of students was considered as part of the subject Informatics. The educational process, organized in informatics classes, should ensure the formation of students' readiness for creative self-development and the acquisition of new knowledge. For the development of digital literacy in the subject of computer science, it is important to organize additional courses. Therefore, the authors have compiled curriculum of the additional courses on Computer Science with educational materials that cover all of the above components of digital literacy. As part of the additional course in computer science, special attention is paid to the development of "hearing and speech skills" as well as their creative, cognitive-visual skills, for example, related to computer graphics, creating a 3D model, developing mobile applications, creating projects in the MS Project environment, as well as the configuration and settings of a computer, work in different applications, work with information resources of the network, application Internet services. So, our course was developed on the basis of modular technologies and is divided into four main modules (see [Table 6](#)).

Table 6. Course description and teaching methods

Module	Description	Teaching methods
1. Engineering and technical training	Installing, starting, removing, updating programs. Installing the operating system. Increasing the speed of a computer. Working with drivers and peripheral devices. Remote computer control	Method for solving engineering and design problems
2. Computer graphics and 3D modeling	Explanation of the concept of computer graphics. Types. Areas of application. Significance. Software for working with computer graphics. Description of 3D modeling. Examples.	Creation and design of objects
3. Creating a mobile application	Origin, history, interesting facts about mobile technologies and applications. Ways to create mobile applications.	Method of projects
4. Digital research project	Students use computer programs on a variety of topics and develop projects using different methods.	Individual, group work

Let's describe the learning elements of each module. For example, in the first module there are 5 learning elements: (1) Installing, starting, shutting down, and updating programs. Installing the operating system. (2) Increasing the speed of a computer. (3) Working with the control panel. (4) Working with drivers and peripherals. (5) Computer remote control. The method of solving engineering and design problems is used as a method of teaching how to perform tasks. The first

module is specially designed so that (a) students have the opportunity to independently solve problems with computers and other digital devices (b) deepen their appreciation for the joint solution of technical problems; and (c) focus on how the students achieved expected results.

The second module provides an excellent opportunity to improve the visual and graphic skills of students. In this module, students are introduced in detail to the concept, types, significance of computer graphics and types of programs for processing computer graphics. In addition, in order to increase the creative abilities of students, they will work with 3D modeling, which is considered the most important type of computer graphics. In particular, in Sweet Home 3D they will create projects of a house and a buildings. The methods used in this module include: the design method, methods for creating and designing objects. In Sweet Home 3D, students experience collaborative inquiry as they collaborate and discuss, create and take action, and analyze and reflect. By working with a partner in Sweet Home 3D, students spend a lot of time talking about the decisions they make as designers.

In the third module, students will develop a mobile application. To develop the application, we chose the Thunkable platform for developing native mobile applications for Android and iOS. Using this constructor, students will be able to learn how to create a convenient mobile interface and develop their own mobile applications for Android and iOS. This module uses the project method to develop a mobile application. Upon completion of this module, students will gain practical skills in creating applications and will effectively use the capabilities of the platform and resources. Through the development of mobile programming, students develop computational thinking. Computational thinking helps students develop problem solving skills, creative thinking, learning, and teamwork skills.

The fourth module is called the Digital Research Project. This allows students to develop cognitive interest, independence, culture of educational work, systematize, generalize and deepen knowledge in the research area and apply it in practice. Preparing students for research involves several stages:

(a) Choosing a research problem: Discussion of possible research topics. Research topics can be any topic, for example, methods of information protection, the construction of intelligent systems, automated control systems, etc.

(b) The study of scientific literature: Compiling a bibliography on the topic; different types of reading, highlighting the main idea, taking notes; discussion of the scientific papers read.

(c) Formation of research skills: Consulting on the formulation of the research topic, hypothesis, understanding of the goals and objectives of the work.

(d) Collection and processing of the received material: Planning and conducting an experiment, collecting material and systematizing and summarizing the results of the work

(e) Presentation of the results of the work: presentation of the results in the form of tables, diagrams, etc. Analysis of the work done, discussion of long-term plans.

Moving from stage to stage, students learn:

- See the problem;
- Ask questions;
- Plan and implement verification of the expected result;
- Analyze the results of the study;
- Give definitions
- Develop and conduct an experiment;
- Draw conclusions;
- Structure the material;
- Prove and defend your ideas and research results;
- Work with digital technologies.
- Learn project management in MS Project.
- Can compile Deming Cycle, PERT, SWOT, PEST analyzes and Gantt diagrams for the management and design of IT projects
- Know how to work with Agile, Scrum, Kanban techniques

After performing each task in the classroom, each student will report on its work to improve their speaking skills. The skill of speaking in front of the group increases.

Preparing and conducting a lesson

Each lesson has a specific place in our investigation. Accordingly, its organization is determined by the tasks of the entire topic and a specific stage in the study of the topic. The general patterns of building a lesson are as follows:

(i) Initial stage:

- Organizational stage: characterizing the psychological readiness of students for the lesson; repetition of previous material.

- Corrective stage: improvement of speech and hearing skills; working with words according to the topic of the new lesson.

(ii) Main stage:

- Setting the goal of the lesson for students;

- Explanation of the lesson;

- Initial check of comprehension and giving tasks.

(iii) Final stage:

- Control over the results of educational activities, carried out by the teacher and the student, knowledge assessment;

- Reflection and self-assessment of students.

For inclusion in the educational process of each student with hearing impairment, we have generalized the methods of correctional work (see Table 7). The methods described in the Table 7, the use of each method, contributes to the implementation of the didactic principle of visibility, practicality, cognition, intellectuality in teaching, adds diversity teaching methods, increases the efficiency and productivity of the lesson, develops observation in children, visual-figurative thinking, cognitive-intellectual thinking, visual memory and attention.

Table 7. Methods of correctional work

Training method	Method correction in	Directions	Description
Perceptive	Verbal-communicative methods	Conversation, narration, discussion, etc.	Development of speech and hearing: "what do you think about this program?...", "Difficulties in completing the task...", "How did you do it, explain the algorithm...»
	Visual methods	Illustrations, demonstrations, etc.	Multimedia presentations, video tutorials made by screencast, infographic instructions with an exact algorithm
	Experimental methods	Exercises, project activities, tasks, etc.	Preparation of practical exercises on each topic with a pre-compiled algorithm
Logical	Cognitive methods	Independent search, replenishment of knowledge, correction of errors, effective organization of activities, analysis, comparison	Search, study, differentiate, correct, and compare errors that are necessary for completing the task.
Creative	Intellectual	Creating your own products	Production and assembly of products according to the given task.

When explaining the lesson, didactic materials for students are used, i.e. presentations, video explanations, handouts. Classes are conducted using the "minimum theory, maximum practice" approach to make the lesson interesting. To improve the communicative abilities of students, they will be given group tasks, and at the end of the lesson they will defend the tasks that they

performed in a small group. To improve the leadership skills of each student, group leaders are replaced at each lesson. The task of the group leaders is to highlight the task given by the teacher to each member of the group, follow the process of completing the work, discuss, and at the end show the completed task as a mini-presentation. Thus, the division of students into groups allows to increase the speech abilities of each student, the ability to communicate with each other.

As for the assessment of the tasks completed by the students, the teacher never gives an assessment of the student's work. Instead, the student evaluates himself, looks critically, analyzes and compares each work performed. To improve speech development, at the end of the lesson, students are asked several questions, for example, "what did you learn in today's lesson?", "what was difficult, what did you do to solve it?", "evaluate your work yourself", "conduct a comparative analysis of the previous work done", etc. In addition, during reflection, students will get used to asking questions to each other not only to the teacher, but also to the students.

The most common difficulty for in children with disabilities is the lack of understanding of the educational material by the student, which is connected, first of all, with the insufficiently adapted material of any school discipline. In the modern educational field, in order to increase the digital literacy of hard-of-hearing students in computer science lessons, along with the main one, it is necessary to conduct additional classes. This is due to the fact that teaching digital resources, which are widely used at present, makes it necessary to create an additional course separately from the main computer science lesson.

In our research work, in order to increase the digital literacy of students with hearing impairments, we should prove this in an experiment by creating an adaptive training course and focusing on their features. We received a positive result during the correctional work.

In the course of studying all the topics covered by the additional curriculum, we interviewed students and found that as a result, students' digital literacy increased, their speaking skills, hearing, comprehension, communication skills and cognitive thinking improved using the correction methods used during the lesson.

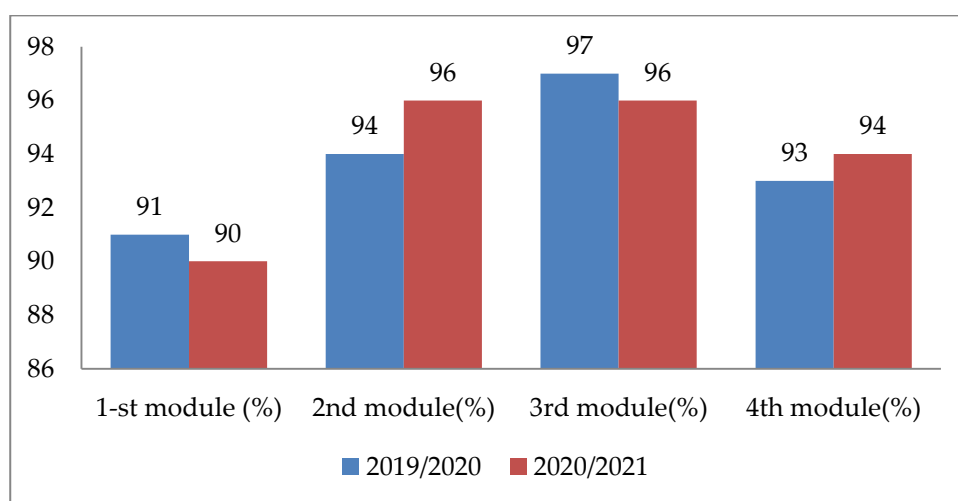


Fig. 4. Evaluation of the course by modules

Considering that the topics we have proposed have never been mastered by students before, the level of mastering of the curriculum we have proposed by them at the end of the course in the 2019–2020 academic year, for example: the average for the first module is 91 %, for the second module 94 %, for the third module 97 %, for the fourth module 93 %. And in 2020–2021, 90 % were shown on average for the first module, 96 % for the second module, 96 % for the third module, and 94 % for the fourth module. Our study was conducted by 127 students of grades 9-10 studying in special correctional schools. We made these calculations by obtaining an average calculation of the results of indicators given by students between 0-100 %. That is, each student showed a certain percentage of understanding of the program for each module. For example, here 0-49 % is not clear, 50-74 % is moderately clear, 75-89 % is clear, 90-100 % is completely clear.

In order to evaluate the effectiveness of the research and improve digital literacy, as a result of student feedback, we received answers to the following questions. Students had to answer each of the 9 questions asked with numbers from 1 to 5. Where 1 is – «strongly disagree»; 2 – «disagree»; 3 – «quite agree»; 4 – «agree»; 5 – «strongly agree». As a result, as can be seen from [Table 8](#), the average response rate of each of the 127 students who took part in the study showed a level of 4.6.

Table 8. Average rating

No	Questions	Average rating
1	The course was interesting for me	4,9
2	I can use the digital resources from the course in my daily life and in the future	4,9
3	During the course, engineering and technical skills were developed	4,5
4	I was able to create digital content in the course	4,6
5	During the course, my creativity has increased.	4,8
6	My thinking skills have increased in the course	4,2
7	After completing the course, I was able to create a mobile application on my own	4,7
8	The course has improved the skills of project development and research	4,8
9	During the course, I improved my hearing, speech, and communication skills	4,5
Average value		4,6

To indicate statistically significant difference in our experiment the Wilcoxon test was used. We accepted two hypotheses: So, H_0 states that the learning outcomes of the proposed course and level of digital literacy of students do not statistically differ from the results obtained before the course. H_1 states that the learning outcomes of the proposed course and the level of digital literacy of students are higher than the results obtained before the start of the course.

The level of students who completed adapted course using modular technologies in order to improve digital literacy was compared with the level of their knowledge and skills before studying the course.

Students independently assessed the effectiveness of the proposed course through a questionnaire. The questionnaire contained four sections, so that each participant in the study answered them with one of the options on a scale from 2 to 5 points in accordance with the following distribution:

5 points – I know very well, I can do it completely and I have experience;

4 points – I know partially, I can do it and I have enough experience;

3 points – I do not know much, I can't do it well and I don't have enough experience;

2 points – I do not know, I can't do it and I don't have experience.

The questions were related to the learning elements of the course module. For example:

First section: Skills in the field of Engineering. Installing, starting, removing, updating software. Installing the operating system. Increasing the speed of a computer. Working with drivers and peripheral devices. Remote computer control.

Second section: Computer graphics and 3D modeling skills. Working with computer graphics software. 3D Model Creation.

Third section: Knowledge and skills in mobile application development.

Fourth section: Digital research project skills. Efficient literature searching, data management and data analysis tools (for example Deming Cycle, PERT, SWOT, PEST analyzes and Gantt diagrams), communication and collaboration skills, and the ability to learn and reflect using digital tools (for example, Agile, Scrum, Kanban techniques).

An example of students' responses before and after the experiment is presented in [Table 9](#).

Table 9. Students' responses before and after the experiment

Student No.	Questions (sections)	Before experiment	After Experiment
Student 1	First section	2	4
	Second section	3	5
	Third section	2	4
	Fourth section	2	4
Student 2	First section	3	5
	Second section	3	5
	Third section	2	4
	Fourth section	2	5
Student 3	First section	2	4
	Second section	4	5
	Third section	3	5
	Fourth section	2	4
Student 4	First section	2	3
	Second section	3	5
	Third section	3	5
	Fourth section	2	4
Student 5	First section	4	5
	Second section	3	5
	Third section	3	5
	Fourth section	2	4
....			
Student 127	First section	3	5
	Second section	4	5
	Third section	3	5
	Fourth section	2	4
Statistical test values and significance level (p)			
	VAR00002 – VAR00001		
Z	-10,34254007		
Asymptotic Significance	4,52382E-25		
a	Based on negative rank		
b	Wilcoxon Signed Ranks		
p-value (p value)	p < 0,001		

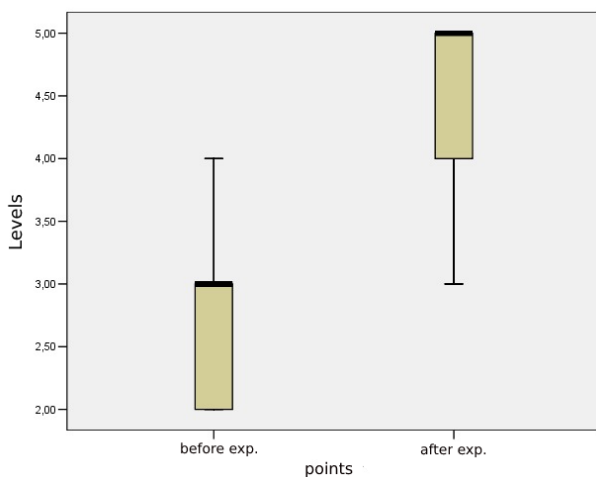


Fig. 5. Indicators at the beginning and at the end of the experiment

The calculation of the Wilcoxon criterion was made using the SPSS program. From the results, we can conclude that in our case, $p < 0,001$, that is, the criterion is significant, which means that we remain within the H_1 hypothesis. A box plot chart was constructed to visualize the results. See [Figure 5](#).

The graph clearly shows that the results after the end of the course have a higher average value than the results before the start of the course (see [Figure 5](#)).

5. Conclusion

Upon completion of the specialty course, students will be interested in professions such as computer designer, IT manager, IT engineer, architect, and software developer. This means that, despite the peculiarities of students, in the future they will be able to become specialists, find their place in society and develop the socio-economic situation. The use of research results in practice is possible with the improvement of adapted training programs, the exchange of international experiences and further research in the field of digital and inclusive education.

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Teacher Leadership within the Learning Co-creation with Students: School Administration Attitudes

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Abstract

Teacher leadership cannot be implemented without support from the school administration. This implies the need to identify preconditions that are related to the school administration support for teacher leadership and the implementation of it through learning co-creation with students. The aim of this study was to reveal the attitudes of the school administration towards teacher leadership in the context of learning co-creation with students. An Exploratory Factor Analysis with Varimax rotation was performed to determine whether the statements of the research tool based on the results could be assigned to the scales they contain according to the primary logic of the school administration leadership and learning co-creation model. The research findings manifested the following preconditions for school administration to support the teacher leadership within the learning co-creation between teachers and students: fostering teacher authority, trusting teacher competence, maintenance of mutual respect, maintenance of positive socio-emotional climate, and encouraging teachers to take responsibility students' learning.

Keywords: learning co-creation, school administration, school potential, student, teacher leadership, exploratory factor analysis

1. Introduction

Teacher leadership in empirical literature is defined differently and it shows that there is a rather limited consensus on how to define this concept. The lack of consonance exists due to the notion that teacher leadership is an umbrella term that covers a variety of teacher roles and characteristics that teachers assume in their daily practices at school. Whether a teacher-leader is leading formally or informally, s/he influences and contributes to improving teaching and learning, while performing various roles (Uribe-Flórez et al., 2015).

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Scholars provide research-based evidence on conditions that enhance teacher-leadership at school: maintenance of respect to teachers and mutual respect at school (Miller et al., 2008), supporting teacher authority at school (Esmaeili et al., 2015), trusting teacher competence (Nguyen et al., 2020), maintenance of positive socio-emotional climate in school (Cherkowski, 2018; Cheng et al., 2021), encouraging teachers to take responsibility for the quality of student learning (Consenza, 2015; Tschannen-Moran, Gareis, 2015), school potential to support teacher leadership (Henderson, 2008; Wieczorek, Lear, 2018), leadership values (Frost, 2008; Killion et al., 2016; Suhaila et al., 2018), leadership skills (Harrison, Killion, 2007; DeHart, 2011; Angelle, DeHart, 2016), school culture (Yusof et al., 2016; Turan, Bektas, 2013; Morris et al., 2019), school improvement (Moore-Steward, Whitney, 2000; Murphy, 2005; Smylie et al., 2005), working with others (York-Barr, Duke, 2004), leadership initiatives (Katzenmyere, Moller, 2001), teacher-student learning co-creation (Bergmark, Westman, 2014; Bovill et al., 2016; Bovill, 2019a, Bovill, 2019b; Potkin, 2019; Resh, 2019).

Teachers through leadership develop teaching and learning by modelling inclusion practices (Barry, 2013) with their students in classrooms (York-Barr, Duke, 2004). Thus, teacher leadership is connected to their self-confidence (Shimmer, 2014) and self-awareness (Von Dohlen, Karvonen, 2018) within the class and school, and it increases their commitment towards improving learning. And here the learning co-creation emerges as the purpose and/or context of teacher leadership within interactions with students in a classroom and beyond (Könings et al., 2020). Thus, teacher leadership as an influence on student learning and learning co-creation as a collaboration and partnership between teacher and students are interrelated factors and/or processes (Mora-Ruano et al., 2019).

Given these aspects, it becomes apparent that teacher leadership cannot be implemented without support from the school administration. This implies the need to identify preconditions that are related to the school administration support for teacher leadership and the implementation of it through carrying out of learning co-creation with students. Consequently, if the school administration supports teacher leadership, it also enhances teaching and learning (Gigante, Firestone, 2007). In this context, a research question arises that is relevant to the study: “What preconditions reflect the school administration support for teacher leadership within the learning co-creation between teachers and students?”

The aim of this study was to reveal the attitudes of the school administration towards teacher leadership in the context of learning co-creation with students.

Relationship between teacher leadership and learning co-creation with students at school

The term teacher leadership refers to that set of skills demonstrated by teachers who continue to teach students but also have an influence that within their own classrooms and beyond by engaging others in complex work. It entails mobilizing and energizing others with the goal of improving the school's performance of its critical responsibilities related to teaching and learning (Danielson, 2006) through co-creation.

Teacher leadership is the process by which teachers work collaboratively with the school community members to improve teaching practices that enrich the learning environment and lead to higher achieving classrooms. Teacher leaders may stay in the classroom where they feel they can make the greatest impact (Consenza, 2015). Teacher leadership is not necessarily about power, but about teachers extending their presence beyond the classroom by seeking additional challenges and growth opportunities, and sharing best practices, working with students (Stein, 2020) within the learning co-creation. Teacher leadership divides the work of teaching into four categories – collaborating, advocating, modelling, and providing resources (Cheung et al., 2018).

Descriptions of teacher leadership – both theoretical and empirical – are united by a key concept – the influence (York-Barr, Duke, 2004; Fairman, Mackenzie, 2015). However, the influence is not in itself an autonomous concept in teacher leadership practices. It is implemented in harmony with other concepts such as through mobilising, energising (Wilson, 2016), stimulating intellectually (Bolkan et al., 2011), expertise, engagement (Killion et al., 2016), collaboration, sharing best practices (Angelle, DeHart, 2016), taking action, role modelling (professional dispositions, positive character, mentoring students) (Consenza, 2015), implementing formal roles (traditionally appointed roles) (Rahim et al., 2020), transforming (Carrion, 2015), being a servant (Crippen, Willows, 2019), being authentic

(Bezzina, Bufalino, 2019), being persuasive (Killion et al., 2016), being purposive (Hunzicker, 2017), confronting obstacles (Johnson, Donaldson, 2007), and etc.

Thus, the teacher leader as an individual and expert, influences students as individuals and learners who strive to their learning outcomes (Carrion, 2015; Hunzicker, 2017). Thus, both parties – a teacher and students – are participants and actors of learning community within the school as multi-layered organisational structure and community (Bolkan et al., 2011; Wilson, 2016) and both sides are a part of the school mission of teaching and learning (Wieczorek, Lear, 2018). That means that concepts of interacting, togetherness, collaboration, cooperation, and partnership become crucial. These are key concepts in the co-creation of learning between the teacher leader and students in a classroom and beyond (Bovill, 2019).

Learning co-creation is “a collaborative, reciprocal process through which all participants have the opportunity to contribute equally, although not necessarily in the same ways, to curricular or pedagogical conceptualisation, decision making, implementation, investigation, or analysis” (Cook-Sather et al., 2014: 6-7). In learning co-creation students are partners with the teacher, learning and teaching are co-created through student engagement. This refers to a broad range of activities teachers as leaders in the profession and education, and schools as educational organisations, employ to motivate and interest students, as well as the time and effort students give to meaningful learning activities (Bovill, 2019b). This partnership in learning and teaching as the space in between student engagement and partnership, suggests a meaningful collaboration between teachers and students, where they are becoming more active participants in the learning and constructing understanding with each other (Ribes-Ginera et al., 2016). In learning co-creation implementation variables, such as communicative participation and satisfaction, interact (Cook-Sather, 2014). Leadership allows the teacher to connect with students in a significant co-creative way. Thus, teacher leadership within the learning co-creation with students at school means the teacher’s influence on students’ learning through partnership, cooperation, collaboration, collegiality, equality, and meaningful teaching and learning activities. The sources of meaning, most essential in the teaching and learning experiences, draw from the teacher’s yearning for connection with students. The teacher’s leadership can give meaning to students (Heifitz, Linsky, 2002).

2. Methodology

Sample

The data were collected between January 10, 2020, and June 30, 2020. The school administration staff involved in the study were selected using targeted and convenient selection sampling method(s). The total of 217 invitations to participate in research were sent by email to the targeted schools in the three largest cities (A – to 65 schools, B – to 30 schools, C – to 113 schools) of Lithuania. The questionnaires were completed in full by 137 respondents – administrative staff of schools:

- Age. Most respondents (24,8 %) were in 51-55 age group, 20,4 % in age from 56 to 60 years old, 17,5 % of participants were in age group from 41 to 45 years old, 15,3% in a group from 46 to 50 years old, and 13,9 % – in the group from 61 to 65 years old. In the age group under 25 years old the sample was represented by 1 person (0,7 %). There were no participants in the age group from 26 to 30 years old. The age group from 31 to 35 years old included 2,9 % (4) participants and 3,6 % (5) respondents represented the age group from 36 to 40 years old. In the group over 66 years old there were 1 employee (s) (0,7 %).

- Gender. The study participants’ distribution according to gender was the following: 21 (15,3 %) men and 116 (84,7 %) women.

- School type. The participants of the study represented various school types: gymnasiums (68,6 %), general schools (17,5 %), progymnasiums (7,3 %), primary schools (4,4 %), secondary schools (1,5%) and multifunctional centres (0,7 %).

- Employment status in the school administration. 50,4 % of the sample participants are school heads/principals, 49,6 % are deputy principals for education.

- Level of education. 24,1 % (33) of participants acquired a bachelor's degree, 74,5 % (102) of participants were with master’s degree, and 2,5 % (2) participants were with PhD’s. In addition, 96,4 % (132) of employees had pedagogical qualification and 3,6 % (5) participants had non-pedagogical education; all participants were educated at universities.

- Administrative work experience at school. Participants' administrative work experience varied from several months to 41 years, with an average of 16,4 years. (Standard deviation 8,9).

Methods

The software package SPSS 21.0 program was used to calculate internal consistency reliability coefficients (Cronbach's α) and perform Exploratory Factor Analysis.

Exploratory factor analysis: Assumes that any indicator or variable may be associated with any factor. This factor analysis is not based on any prior theory (Shapiro et al., 2002). Exploratory factor analysis is a statistical technique that is used to reduce data to a smaller set of summary variables and to explore the underlying theoretical structure of the phenomena. It is used to identify the structure of the relationship between the variable and the respondent. Exploratory factor analysis was performed by using the R-type factor analysis, when factors were calculated from the correlation matrix (Fabrigar et al., 1999).

Assumptions (conditions) for using exploratory factor analysis were met (Pett et al., 2003): i) no outlier: assumed that there are no outliers in data; ii) adequate sample size: the case was greater than the factor; iii) no perfect multicollinearity: factor analysis is an interdependency technique; there should not be perfect multicollinearity between the variables; iv) homoscedasticity: since factor analysis is a linear function of measured variables, it does not require homoscedasticity between the variables; v) linearity: factor analysis is based on linearity assumption; non-linear variables can also be used; after transfer, however, it changes into linear variable; vi) interval data: interval data are assumed; vii) no extreme outliers should be detected, i.e., values higher or lower than three SDs from the mean were not found.

The resulting initial factor weight matrix does not unambiguously describe the solution (the same variable can be related to several factors of at least 0.4 weights) (Fornell, Larcker, 1981). In order to facilitate the differentiation of factors and give them an easier-to-interpret form, linear combinations of the obtained factors are formed, which do not correlate with each other. The purpose of this procedure for determining combinations of factors, called rotation, is to simplify the structure of the matrix of factor weights, to achieve that each variable has only a few non-zero factor weights (Watkins, 2018). The most popular of the rotations is the Varimax method, which was used in this study. As a rule of thumb, the variable should have a rotated factor loading of at least 0,4 (meaning $\geq +0,4$ or $\leq -0,4$) onto one of the factors in order to be considered important (Watkins, 2018; Pohlmann, 2004). Therefore, for factor analysis while working with SPSS, the value of was set to absolute value, which corresponds to 0.4 score on the standardized loading factor score. The study followed the rule that each factor should have at least three variables with high loadings (Fornell, Larcker, 1981). In our research every factor consists of more than three variables.

An Exploratory Factor Analysis with Varimax rotation was performed to determine whether the statements of the research tool based on the results could be assigned to the scales they contain according to the primary logic of the school administration leadership and learning co-creation model. The analysis revealed that 5 instrument factors explain 31 % variances of variables (KMO = 0,754, Bartlett criterion $p = 0.000$). Principal Components Analysis was used as extraction method. Principal components analysis method makes the assumption that there is no unique variance, the total variance is equal to common variance. Recall that variance can be partitioned into common and unique variance. If there is no unique variance then common variance takes up total variance. Additionally, if the total variance is 1, then the common variance is equal to the communality (Hutcheson, Sofroniou, 1999).

Varimax with Kaiser Normalization as rotation method was applied. Rotation converged in 9 iterations. 78 (with factor weights over 0,4) of the 91 statements fell into the 5 factor analysis factors. The remaining 13 statements with factor weights of less than 0,4 in all 5 factors were not included in the further analysis.

The internal consistency of instrument statements coefficients (Cronbach's α) was calculated. Based on the sample data, the internal consistency (Cronbach's α) coefficients of the statements of all 5 study factors were calculated (see Table 1). It shows, how closely is related a set of items that are as a group in every factor. The results show that the values are high, exceeding the value of 0,7, so the data are reliable.

Table 1. School administration attitudes towards teacher leadership within the learning co-creation in a classroom and beyond: internal consistency reliability coefficients and percent of variance explained

Factor	Cronbach α	% of variance explained
F1: Supporting teacher authority at school	0,906	62,40 %
F2: Trusting teacher competence within the teacher-student interactions in a classroom and beyond	0,911	76,96 %
F3: Maintenance of mutual respect in school culture	0,897	63,32 %
F4: Maintenance of positive socio-emotional climate within the teaching and learning at school	0,841	75,82 %
F5: Encouraging teachers to take responsibility for the quality of student learning	0,730	75,46 %

The tool

An original questionnaire “School administration attitudes towards teacher leadership within the learning co-creation with students” (Zydzianaite et al., 2019: n. p) was used in the survey.

The questionnaire was based on the following constructs: i) a construct of teacher leadership, developed from Models of Teacher Leadership (Angelle, DeHart, 2016; Suhaila et al., 2018), Teacher Leader Model Standards (Consenza, 2015), Four Frameworks of Teacher Leadership (DeHart, 2011); ii) a construct of co-creation in teaching and learning (Bovill, 2019a, Bovill, 2019b; Bovill et al., 2015; Resh, 2019; Willis, Gregory, 2016); iii) a construct of teacher leadership for school improvement (Moore-Steward, Whitney, 2000; Murphy, 2005; Smylie et al., 2005; Wieczorek, Lear, 2018); iv) a construct of teacher leadership capacity and school culture (Turan, Bektas, 2013; Yusof et al., 2016; Morris et al., 2019); v) a construct of co-creating curriculum (Bergmark, Westman, 2014; Potkin, 2019).

The tool consisted of two parts – demographic and content. Both parts of questionnaire were composed of closed-ended statements and questions of the content part included matrix-type questions. Every separate matrix with items/statements represented content variables (in total nine content variables with 91 item/statement). Items were assessed on scales, such as “yes, for sure”, “yes”, “neither yes nor no”, “no”, “no, for sure”.

In the demographic part six questions, representing six variables were presented: age, gender, level of education, type of school, administrative work experience at school, employment status in the school administration (principal or deputy principal). In the demographic part, multiple-choice questions were presented, and respondents could choose only one of the presented answer options in every question. The content part consisted of nine variables: working with others (teachers, parents) at school (6 items/statements); the school improvement (4 items/statements); the school culture (6 items/statements); the school potential to support teacher leadership (29 items/statements); applied leadership skills (12 items/statements); leadership values (9 items/statements); leadership of initiatives (10 items/statements); trends of co-learning (7 items/statements); teacher-student co-creation (9 items/statements).

Study limitations

The sample of respondents was not random (respondents were selected using targeted and convenient selection sampling method), therefore, data cannot be generalized for the entire school administration staff population.

The mean values and standard deviations of the variables are not indicated in the article, which makes the conclusions of the study insufficiently substantiated and reliable.

3. Results

Research findings manifested the following preconditions for the school administration to support the teacher leadership within the learning co-creation between teachers and students: fostering teacher authority, trusting teacher competence, maintaining mutual respect, maintaining positive socio-emotional climate, and encouraging teachers to take responsibility students' learning.

F1: The fostering teacher authority at school factor F1 incorporates 28 statements that relate to the following indicators: school potential to support teacher leadership (7 statements), applied leadership skills (7), working with others at school (5), school culture (3), school improvement (3), leadership values (2), leadership of initiatives (1). The number of statements representing the indicator in the factor F1, and the factor weights of these statements suggest that the school's potential to support teacher leadership, the leadership skills applied by the school administration, and working with others are the leading elements contributing to maintaining teacher authority in the school. Collaboration, listening and understanding, mutual help, shared problem solving, openness, diversity of opinion, trust, care, feedback, recognition are the predominant concepts in factor statements regarding the school administration attitudes towards teacher leadership at school.

Table 2. F1: Fostering teacher authority at school

Statements	Factorial weight
1. It is more important for the school administration to work with teachers than to compete (indicator: school potential to support teacher leadership)	,684
2. The school administration listens and strives to understand the needs and attitudes of teachers (indicator: leadership values)	,666
3. The school administration is respectful to the teachers (indicator: school potential to support teacher leadership)	,647
4. The school administration is respectful to the students (indicator: school potential to support teacher leadership)	,628
5. The school administration discusses the problems with the teachers and at the same time discusses their possible solutions (indicator: applied leadership skills)	,621
6. The school administration respects the opinions of the teacher (indicator: school culture)	,620
7. It is safe at the school to openly oppose the school administration in meetings and /or appointments (indicator: school culture)	,612
8. The school administration cares about teachers' problems, so their complaints are listened to carefully (indicator: applied leadership skills)	,594
9. The school administration takes the view that the teaching activities carried out by the teacher in the classroom contribute to the improvement of the school (indicator: school improvement)	,589
10. The school administration supports teachers who improve the school (indicator: working with others at school)	,577
11. To achieve the goal of the school, the school administration advises teachers on the improvement of their education (indicator: school improvement)	,570
12. The school administration collaborates with teachers when it comes to solving problems (indicator: working with others at school)	,559
13. The school administration cares about the students' problems, so they listen carefully to their complaints (indicator: applied leadership skills)	,547
14. The school administration follows the attitude that teacher cooperation has an impact on educational practices at the school (indicator: school potential to support teacher leadership)	,534

15. The school supports the professional development of teachers (indicator: school potential to support teacher leadership)	,510
16. The school administration encourages teachers to work together as a team to solve problems (indicator: applied leadership skills)	,506
17. The school administration has a good relationship with the students (indicator: applied leadership skills)	,504
18. Every teacher is respected in the school (indicator: school potential to support teacher leadership)	,499
19. The students respect school administration (indicator: applied leadership skills)	,487
20. The school creates an atmosphere of caring for each other (indicator: applied leadership skills)	,482
21. The school administration builds trust and openness in communication with teachers (indicator: leadership of initiatives)	,479
22. The school administration collaborates with teachers striving to share responsibility for students' learning success (indicator: leadership values)	,473
23. The school encourages teachers to work together by giving them mutual help and / or support (indicator: working with others at school)	,470
24. The school administration boldly asks teachers for help or advice in solving specific problems in the educational process (indicator: working with others at school)	,448
25. At school, it is safe for teachers to openly oppose each other in meetings and / or meetings (indicator: school culture)	,442
26. Teachers at the school can provide feedback to each other (indicator: school potential to support teacher leadership)	,434
27. The school administration is committed to playing an important role in building a professional community in the school (indicator: school improvement)	,425
28. Where possible, school administration increases parental involvement in school change and improvement (indicator: working with others at school)	,401

F2: The trusting teacher competence at school factor F2 includes 20 statements that relate to five indicators: leadership of initiatives (7), teacher-student learning co-creation (5), school potential to support teacher leadership (3), leadership values (3), learning co-creation trends (2). The number of statements representing the indicator in the factor F2, and the factor weights of these statements manifest that the leadership of initiatives and teacher-student learning co-creation are core elements which are related to the trust of teacher competence within the teacher-student interactions. Communication transparency and clarity, planning and coordinating teaching /learning interventions, students' learning achievements, reflecting, learning atmosphere, cooperation/collaboration, feedback, assessment/evaluation, engagement/inclusion, decision-making, and educational effectiveness emerge as essential concepts in factor content and manifest school administration attitudes towards teacher leadership at school.

Table 3. F2: Trusting teacher competence at school

Statements	Factorial weight
1. The school administration takes the position that when working with students, teachers must state their expectations clearly, describe learning activities and argue why they will be done in class (indicator: teacher-student learning co-creation)	,631
2. The school administration supports the idea that teachers must plan and coordinate their educational interventions based on students' learning achievements. (indicator: leadership of initiatives)	,618
3. Teachers at school are involved in professional development decision-making (indicator: school potential to support teacher leadership)	,613

4. The school administration takes the view that teachers should encourage students to anticipate and manage their personal learning goals when working with them (indicator: teacher-student learning co-creation)	,611
5. The school administration analyses and reflects on student achievement data according to the goals pursued by the school (indicator: leadership of initiatives)	,609
6. The school administration analyses the context and sets educational / learning priorities (indicator: leadership of initiatives)	,594
7. The school administration takes the view that teachers must create an atmosphere in which students with higher and lower levels of learning achieve collaboration (indicator: teacher-student learning co-creation)	,581
8. The school administration takes the view that in each lesson students should be given the opportunity to reflect on the teaching / learning methods used and how they helped them to learn (indicator: learning co-creation trends)	,565
9. The school administration adapts clear measurements and instruments to monitor student learning progress (indicator: leadership of initiatives)	,537
10. School administration initiates meetings with teachers and parents for better student achievement (indicator: leadership of initiatives)	,509
11. The school administration takes the view that when working with students, they should involve students in joint decision-making (indicator: learning co-creation trends)	,507
12. The school encourages teacher collaboration in curriculum development (indicator: school potential to support teacher leadership)	,507
13. The school administration is adapting clear measurements and instruments to monitor the effectiveness of teacher education (indicator: leadership of initiatives)	,484
14. The school administration team systematically provides feedback to teachers (indicator: leadership values)	,479
15. The school administration takes the view that the interaction of students in their group learning contributes to their learning achievement (indicator: teacher-student learning co-creation)	,476
16. Teachers at school are involved in decision-making on pupil assessment (indicator: school potential to support teacher leadership)	,468
17. The school administration team systematically asks for feedback from the teacher (indicator: leadership values)	,436
18. The school prioritizes the needs of the student (indicator: leadership values)	,434
19. The school administration encourages teachers to respectfully share personal and professional stories with the school community (indicator: leadership of initiatives)	,424
20. The school administration is committed to providing teachers with a summary of the feedback in each lesson (indicator: teacher-student learning co-creation)	,417

F3: Maintaining mutual respect at school factor F3 includes 15 statements that relate to two indicators: school potential to support teacher leadership (14) and applied leadership skills (1). In the factor F3 the leading indicator is the school potential to support teacher leadership, which is the prerequisite to maintain the mutual respect at school. Respect, loyalty, trust, help and support, responsibility, professionalism, volunteering/free will, discussing, personal values and solidarity/unity are cornerstone concepts in factor statements, which express the school administration attitudes towards teacher leadership at school.

Table 4. F3: Maintaining mutual respect at school

<i>Statements</i>	Factorial weight
1. School teachers respect students 'parents (indicator: school potential to support teacher leadership)	,741
2. Teachers are loyal to the values of the school (indicator: school potential to	,723

support teacher leadership)	
3. School teachers trust the school administration (indicator: school potential to support teacher leadership)	,720
4. School teachers are trusted professionals (indicator: school potential to support teacher leadership)	,719
5. School teachers respect each other (indicator: school potential to support teacher leadership)	,695
6. School teachers respect students (indicator: school potential to support teacher leadership)	,672
7. School students help each other (indicator: school potential to support teacher leadership)	,623
8. At school, teachers feel respect for their parents (indicator: school potential to support teacher leadership)	,598
9. School teachers are responsible professionals (indicator: school potential to support teacher leadership)	,579
10. School teachers voluntarily devote extra time and attention to students with special educational needs (indicator: school potential to support teacher leadership)	,537
11. At school, teachers openly discuss personal values and expectations related to education with fellow teachers (indicator: school potential to support teacher leadership)	,517
12. At school, teachers feel respect for the student (indicator: school potential to support teacher leadership)	,515
13. The school administration and teachers have a unified vision for the school (indicator: school potential to support teacher leadership)	,472
14. Young teacher mentoring is the responsibility of every experienced schoolteacher (indicator: school potential to support teacher leadership)	,416
15. For teachers, school administration advice is important (indicator: applied leadership skills)	,409

F4: Maintaining positive socio-emotional climate at school factor F4 integrates 13 statements, which are connected to six indicators: teacher-student learning co-creation (4), learning co-creation trends (4), applied leadership skills (2), school improvement (1), school culture (1), leadership of initiatives (1). In the factor F4 co-creation and leadership are elements, which create opportunities to maintain positive socio-emotional climate at school.

The school administration attitudes towards teacher leadership at school is manifested through learning achievements/goals, communication, feedback, encouragement, emotions, motivation, collaboration, decision-making, attitudes are notions that manifest to essence of factor's F4 statements' content.

Table 5. F4: Maintaining positive socio-emotional climate at school

Statements	Factorial weight
1. The school administration takes the view that positive emotions in the student are a primary component as they encourage students to learn and create (indicator: learning co-creation trends)	,736
2. The school administration takes the view that teachers should pay attention to their emotions and motivation when working with students (indicator: teacher-student learning co-creation)	,671
3. The school administration takes the view that when working with students, teachers must maintain a balance between emotions and thinking, so lessons should be based on problem solving and discussion of student ideas (indicator: learning co-creation trends)	,669

4. The school administration takes the view that teachers must apply collaborative, research-based learning in every lesson (indicator: teacher-student learning co-creation)	,621
5. The school administration takes the view that students' positive expectations about personal learning are the basis for their learning achievements and self-confidence (indicator: teacher-student learning co-creation)	,620
6. The school administration takes the view that in classes, working with students is determined by the context, the ideas and questions of the students, and the discoveries of what they do not know (indicator: learning co-creation trends)	,576
7. When teachers solve problems, the school administration encourages them to look for different solutions (indicator: applied leadership skills)	,552
8. The school administration clearly communicates the vision of success to students and teachers (indicator: leadership of initiatives)	,482
9. The school administration takes the view that teacher education activities contribute to the success of all students in the school (indicator: school improvement)	,475
10. When teachers solve problems, the school administration encourages them to look at the problems based on different attitudes (indicator: applied leadership skills)	,462
11. The school administration is committed to providing students with feedback at the end of each lesson on what has contributed to their personal growth and development (indicator: teacher-student learning co-creation)	,454
12. The school administration takes the position that in the classroom students define learning goals, plan, and organize their own learning (indicator: learning co-creation trends)	,446
13. The school administration takes the view that the most important factor in student achievement is the teacher's relationship with them (indicator: school culture)	,425

F5: Encouraging teachers to take responsibility for student's learning factor F5 consists of five statements that relate to four indicators: applied leadership skills (2), leadership values (1), school culture (1) and school potential to support teacher leadership (1). There is no leading indicator, but the main trend is oriented towards leadership, which is represented by two leadership-related indicators. Encouragement, recognition, innovation, learning, educational outcomes are concepts, which express the core aspects of statements of the factor F5. These concepts show the school administration attitudes towards teacher leadership at school.

Table 6. F5: Encouraging teachers to take responsibility for students' learning

Statements	Factorial weight
1. The school administration expresses high expectations for teachers about their work (indicator: applied leadership skills)	,636
2. The school administration expresses high expectations for students about their learning (indicator: applied leadership skills)	,627
3. The school administration takes the position that the teacher is responsible for the (un)success of students' learning in the classroom (indicator: school culture)	,556
4. The school administration encourages teachers to take responsibility for educational outcomes (indicator: leadership values)	,471
5. School teachers are recognized as innovators in the classroom regardless of their (un)success (indicator: school potential to support teacher leadership)	,416

4. Discussion

The school administration expresses support to teacher leadership within the learning co-creation with students, when the teacher's authority is fostered, teacher's competence is trusted, mutual respect and positive socio-emotional climate is maintained, and teachers are encouraged to take responsibility for the student learning.

The research provides evidence that school administration takes the attitude that fostering teacher authority in school culture contributes to the implementation of teacher leadership within the learning co-creation with students, when teachers' leadership skills and leadership values are applied, and leadership initiatives of teachers are not denied. This requires from teachers to collaborate with others (students, colleagues, students' family member and school administration) in school. These components contribute to the strengthening of teacher authority at school. Teacher's leadership in the classroom needs to be supported by the authority to be able to accomplish tasks regarding learning co-creation with students (Pace, Hemmings, 2007). Teacher's authority is inseparable of high level of special knowledge and skills, and ability to develop this knowledge and skills for students. The teacher role encompasses certain legislative authority, which means that the teacher has the power of decision-making regarding the implementation of learning co-creation with students in a classroom (Esmaeili et al., 2015).

Findings of the research revealed that school administration views the trust to teacher competence as a part of the school culture, which indicates the school potential to support teacher leadership at school. Building the school culture of trust is an intentional act that brings benefit to principals, teachers, and students. The simple and yet a significant act is that the school administration needs to communicate with teachers by expressing their trust in teachers' professionalism (Lasater, 2016). Teachers who are trusted take risks and collaborate with their colleagues and they work longer hours (Modoono, 2017). When teachers are trusted at school, they create a collaboration-based teaching and learning culture (Hong et al., 2020). This is an important aspect in teacher leadership within the learning co-creation with students.

The research-based evidence showed that the school administration supports the maintenance of mutual respect in school, and this manifests the school potential to support teacher leadership and applied leadership skills by teachers within the mutual respect-based school climate. Respect as a part of school climate and component of relationships in school community creates the atmosphere of safety in which connectedness, engagement, social support, and leadership are components of the school potential to support the teacher leadership at school (Kutsyuruba et al., 2015). When teachers are respected for their own teaching capabilities by the school community and especially by the school administration and fellow teachers, they display optimism about teaching and learning, what is at edge in teacher's leadership within the learning co-creation with students (Lee-Piggot, 2014). When teachers experience respect in the school culture, they respect students and believe in their intellectual abilities (Harris, 2003).

The research results disclosed that school administration takes the attitude that maintenance of positive socio-emotional climate within the teaching and learning at school supports teacher-student learning co-creation and provides possibilities to apply leadership skills for teachers. Harvey et al. (2016) accentuates teacher's responsibility for professional development and improvement of socio-emotional skills. Researchers provide evidence that teachers who improve their emotional practices, are recognised as leaders at schools by school administration, fellow teachers, and students. These teachers created atmosphere of helpfulness, friendliness, understanding, student responsibility and freedom, student admonishing and strictness in a classroom, what is a part of learning co-creation with students (ibid).

The research findings uncovered the school administration attitudes towards teacher leadership at school: they relate it to encouragement of teachers to take responsibility for the quality of student learning and see it as a part of school culture in which the school potential to support teacher leadership is incorporated. Such findings are both – inconsistent and consistent with empirical evidence of other researchers on student learning responsibilities. According to Haberman (1996), teachers are not responsible for their students' learning. But Cook-Sather (2010) stresses that teachers' responsibility is to create the opportunity for learning by influencing, encouraging, and enriching students. To be responsible is to act based on one's sense of connection and answerability to the self and to others. Students are responsible for both more fully engaging in and transforming learning. Students who acting on their interest in taking responsibility for their

learning quality and achievements, they contribute to the transformation of their own and other's learning, and they help to redefine their accountability within the teaching-learning context (Tucker, Stronge, 2005). This means that learning is a teacher-student co-creation in which the teacher puts his/her leadership skills and competencies into practice by involving students in a responsible and self-accountable way, i. e. conscious learning.

5. Conclusion

School administration attitudes towards the teacher leadership within the learning co-creation with students disclose five factors of school potential to support the teacher leadership: fostering teacher authority, trusting teacher competence, maintaining mutual respect, maintaining positive socio-emotional climate at school, and encouraging teachers to take responsibility for student's learning. These factors are connected to school culture in which leadership values, initiatives and skills are empowered, working with others through engagement, collaboration and cooperation in teaching and learning is developed. Trust, care, feedback, inclusion, support, encouragement, professionalism, and recognition are leading concepts in school administration attitudes towards the teacher leadership within the learning co-creation with students in a classroom and beyond.

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Adaptation of Teaching Approaches Scale to the Kosovo Culture – A Validity and Reliability Analysis

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Abstract

Investigating the teaching approaches that teachers adopt in the education process has gained significant importance. Various scales have been developed to determine teachers' teaching approaches. Cultural differences may cause the scales to yield different results. Therefore, adapting the scales to different cultures contributes to the use of such scales by those cultures. Accordingly, the Teaching Approaches Scale developed by Michael Prosser and Keith Trigwell (2006), which was adapted into Turkish by Tezci (2017), was adapted to the Kosovo culture. In the present study, whether the Albanian, Bosnian and Turkish versions of the scale support the same factor structure was investigated using the quantitative research method. Firstly, the Teaching Approaches Scale was translated into Albanian and Bosnian and the opinion of an expert was taken. The scale was applied to 200 teachers working in schools where the teaching languages are Albanian, Bosnian and Turkish. The scale comprised 22 items and 2 factors. The present study was carried out in Kosovo, therefore linguistic equivalence was particularly prioritized. Confirmatory Factor Analysis was utilized to confirm the suitability of the two-factor structure of the scale. Analyses were carried out separately for each language and acceptable fit indices were determined. The reliability analysis yielded satisfactory results.

Keywords: teaching approaches, adaptation, teachers.

1. Introduction

Qualified teaching is associated with the knowledge gained by the students. Teaching that facilitates students to achieve the quality and quantity of their learning can be expressed as qualified teaching (Ramsden, 2003). Teaching preferences used by teachers, which enable students

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to reach desired and expected learning outcomes, are the most essential elements. Chan and Elliott (Chan, Elliott, 2004: 818) have stated that the concept of teachers' understanding of teaching and learning refers to "teachers' beliefs about their preferred ways of teaching and learning." It indicates that these beliefs include the meaning they attribute to the concept of teaching and learning and the roles of teachers and students (Kervan, 2017). The term, which we refer to as the teaching understanding, but described as the teaching approach in teaching, is the teacher's beliefs in the classroom (Aypay, 2011; Cheng et al., 1992; Tang, Cheng, 2009). Various classifications related to the teaching approach have been discussed in the literature. In the literature review, it has been seen that the most common classifications include teacher-focused/student-focused, subject-focused/student-focused, teacher-focused/interactive, objectivist/constructivist, disciplinary/integrated, individual/cooperative, indirect or directed/direct (Chan, Elliot, 2004; Gow, Kember, 1993; Kember, 1997; Trigwell, Prosser, 1996, Trigwell, Prosser, 2004).

The approach that forms the basis of this research was the classification made by Trigwell and Prosser (2006). In this classification, information transmission is a teacher-focused approach while conceptual change is the student-focused approach. Based on this understanding, it can be argued that there are five different approaches to teaching developed by Trigwell, Prosser, and Taylor (1994: 78). These include (1) a teacher-focused strategy that aims to convey information to students, (2) a teacher-focused strategy that intends students to acquire (disciplinary) concepts in a particular field, (3) a teacher-student-interaction-based strategy that aims to enable students to acquire (disciplinary) concepts in a particular field strategy, (4) the student-focused strategy aimed at developing students' concepts, and (5) the student-focused strategy aimed at changing students' conceptual understanding. Knowledge-based-teacher-focused strategy is based on traditional objectivist understanding. It can be argued that the student-centered-conceptual change-focused strategy is based on the constructivist approach (Tezci, 2017).

A traditional teaching approach is a teacher-focused approach, and the teacher decides what to teach and how to evaluate the student (Gök, 2006). In traditional classrooms, the student is seen as an empty bucket (Genç, 2004) and there is an understanding of transferring information by the teacher, filling the empty bucket, and the student memorizing the transferred information. Johnson and Johnson and Smith (1995) stated that the teacher-focused teaching method is based on John Locke's assumption that the untrained student mind is like a blank piece of paper waiting for the teacher to write something on it. Therefore, the content is structured by the teacher. Student differences are not taken into account. Every student is born a clean slate, whatever is written on the first pages substantially influences the further pages. Students' readiness, experiences, cultures, genders, learning strategies are not taken into account (Gibbs, Coffey, 2004; Jonassen, 1999; Tezci, 2017; Tezci, Gürol, 2003).

On the other hand, student-focused approach, is based on a constructivist understanding. Constructivism "adopts an approach to how students construct" (Erdem, Demirel, 2002: 82). Constructivist learning is a key concept defined as "constructing knowledge, taking a more active role in creating and developing the knowledge that students have" (Erstad, 2002: 429). "Acquiring knowledge is an adaptation process that regulates the life of the individual. Knowledge constructs individually and socially" (Olssen, 1996: 276).

It has been thought that the physical characteristics of the classroom environment in schools where knowledge is structured and teaching is carried out are important in terms of cultural diversity as well as in terms of constructivist learning. In terms of constructivism, the physical characteristics of the classroom should be student-focused and include flexible learning environments. Students from a multicultural society "come to the classroom with characteristics such as different learning styles, beliefs, values, and social preferences". These features affect students' knowledge structuring (Özer, 2001: 164).

Teachers who adopt the constructivist approach can apply different designs while organizing the classroom environment. Accordingly, students from different cultures interact, collaborate, and share. Also, the Constructivist teacher should be a person who acts as a guide to the students.

"School and learning-teaching environments should prepare students for real-life so that individuals can solve the problems they will encounter in life" (Duckworth, Julyan, 1996: 56). Therefore, learning environments should be arranged in a way that resembles real life. Considering that individuals living in a multicultural society will encounter cultural differences in the society since the main purpose of education is to prepare individuals for real life, it is possible with the

teaching strategies they use to create awareness about cultural differences in schools, to organize activities to get to know different cultures and to ensure that all kinds of characteristics of different cultures are respected.

Therefore, it is seen that a series of scales, both field-dependent, and field-independent, have been developed to determine the teaching approaches adopted by teachers. One of the commonly used scales in the field is the "Teaching Approaches Scale" developed by Michael Prosser and Keith Trigwell (2006), which was adapted into Turkish by Tezci (2017). The scale consists of 22 items in a 5-point Likert structure. The scale consists of two factors: "teacher-focused approach" and "student-focused approach".

Ensuring the validity of the scales in different cultures is important for the use of the scale. Accordingly, the present study aimed to adapt the Teaching Approaches Scale to Kosovo culture, which was developed by Michael Prosser and Keith Trigwell (2006) and adapted into Turkish by Tezci (2017). The answer to the question, "Does the Teaching Approaches Scale, which was adapted to Turkish culture by Tezci (2017) in the research, produce similar valid and reliable results in Kosovo culture?", was sought. Adapting the scale to the Kosovo Culture will contribute to the use of the Turkish version of the scale in countries with different cultural structures. In Kosovo, a scale adaptation that can be used to measure teachers' approaches to teaching in multicultural education has not been previously made. Kosovo is a country where different cultures live together (Koro, 2008; Yildirim 2016). In Kosovo, Albanians, Serbs, Bosnians, and Turks reside as well as citizens with ethnic identities such as Askali and Gorani. As official languages, Albanian, Serbian, Bosnian, and Turkish are widely spoken languages, especially in regions with a predominant population. Depending on the density of the population, Albanian, Turkish and Bosnian languages are taught in schools (Yildirim, Yildirim, 2012).

2. Method

2.1. Sampling

The Teaching Approaches Scale developed by Michael Prosser and Keith Trigwell (2006), adapted into Turkish by Tezci (2017), was applied in Turkish, Albanian, and Bosnian in Kosovo. As Kosovo is a multilingual country, the scale was first translated into Albanian and Bosnian languages and an expert opinion was sought for the study to determine the teaching approaches of teachers. Then, it was applied to a total of 200 teachers working in schools that provide education in at least two different languages. Of the teachers, 60 were Turkish, 50 were Bosnian, and 90 were Albanian. Also, in terms of gender, 127 of the teachers were female and 73 were male. In terms of professional seniority, 35 teachers with 1-5 years, 39 teachers with 6-10 years, 20 teachers with 11-15 years, and 106 teachers with 16 years and above professional seniority participated in the study. Among the teachers participating in the application, 7 were preschool teachers, 75 were classroom teachers, and 118 were other branch teachers (6-9 classes). In terms of educational status, teachers attending associate degree, undergraduate, and graduate education participated. The number of teachers with associate degree education was 34, the number of teachers with undergraduate education was 152, and the number of teachers with postgraduate education was 14. Before the application, teachers were informed about the content of the scale and an application was made on how to answer it.

2.2. Data collection tools

The Teaching Approaches Scale was first developed by Trigwell and Prosser in 1996 (Trigwell et al., 1999). Subsequently, new items were added to the scale and a revised version consisting of 22 items was developed (Prosser, Trigwell, 2006). The scale was used to measure teachers' teaching approaches in different fields (Postareff, Lindblom-Ylance, 2008; Stes et al., 2010). The Teaching Approaches Scale developed by Michael Prosser and Keith Trigwell (2006), which was adapted into Turkish by Tezci (2017), was used to determine the teaching approaches of teachers. The scale is in a 5-point Likert structure with 1 = Never, 2 = Sometimes, 3 = Occasionally, 4 = Often, 5 = Always.

In the adaptation study carried out in different countries, different factor structures were determined. Firstly, the linguistic equivalence study of the scale, which was adapted into Turkish, was carried out. The linguistic equivalence and reliability validity analyses of the scale for the Turkish Sample were made by Tezci (2017). As a result of confirmatory factor analysis, it was determined that there is a scale consisting of four sub-dimensions, two-dimensional (teacher and

student-focused teaching approach) and two sub-dimensions of both dimensions (two factors). The scale had two dimensions as "teacher-focused/Information Delivery Strategy" and "Student-Focused/Conceptual Change Strategy" and each dimension had 11 items. The Teacher-Focused/Information Delivery Strategy had two factor structures: "teacher-focused strategy" consisting of five items and "Information Delivery Strategy" consisting of six items. In the "Student-Focused/Conceptual Change" dimension, there are two factor structures: "conceptual change" consisting of six items and "Student-Focused Strategy" consisting of 5 items. According to the result of the Cronbach's Alpha reliability analysis based on the four factor structure of the scale, the Teacher-Focused Strategy was 0.84, Information Transmission-Focused Approach was 0.89, the Student-Focused Strategy was 0.93, and the Conceptual Change-Oriented Strategy was 0.93. It was determined that the scale explained 49.911 % of the variance.

2.3. Data Analysis

The Confirmatory Factor Analysis (CFA) was performed on the data obtained from the application. It can be argued that CFA is the analysis used to determine the construct validity. This analysis can be used to determine whether the latent variables of a scale whose factors have been determined before, can be explained by the observed variables (Büyüköztürk et al., 2014). As a result of CFA, a series of fit indices are obtained. With the help of these indices, a decision can be made about the suitability of the structure revealed. In the present study, Confirmatory Factor Analysis was performed to test the Teaching Approaches Scale, which has two factor structures adapted into the Turkish Culture, into the Kosovo Culture with the determined factor structures (Ding et al., 1995; Gomez, Fisher, 2003). The results of the analysis require the examination of a series of indices (Bayram, 2010; Jöreskog, Sörbom, 1996; Tabachnick, Fidell, 2007). χ^2 Since the index is affected by the sample size, it was evaluated together with the degrees of freedom. Although the fit values in CFI (comparative fit index), GFI (goodness of fit index), and NFI (Normed Fit Index) NNFI (Non-Normed Fit Index) has been ideally desired to be close to 1, 0.90, and above have been regarded acceptable (Bentler, Bonett, 1980) while Hu and Bentler (1999) have stated that 0.95 and above indicate a good fit. RMSEA (root mean square error of approximation) 0.08 and below is sufficient, but a value of 0.06 indicates a better fit (Hu, Bentler, 1999).

For the reliability analysis of the scale, Cronbach Alpha, Omega Reliability, and Combined Reliability were calculated. Combined Reliability (CR) is used to measure the internal consistency of factors and 0.70 and above is accepted as a good value (Hair et al., 2010). The Cronbach Alpha analysis in the context of inner consistency is not considered sufficient when there is more than one factor structure. It is also recommended to calculate the Omega Confidence coefficient (Dunn et al., 2014).

In the reliability analysis, Cronbach's Alpha Coefficient was used since the scale was the Likert type. As a result of the analysis, the results of the scale's item-total correlations and averages were also observed.

3. Results

3.1. Findings Related to the Linguistic Translation Process

Since the validity and reliability of the scales were made in the Turkish Culture and the present research was carried out in Kosovo, firstly, a linguistic equivalence was ensured. The linguistic equivalence of the Turkish-Bosnian and Turkish-Albanian versions of the scale were examined since the research included Albanian and Bosnian teachers besides Turkish teachers. The scale forms prepared in Turkish were translated into Bosnian and Albanian languages with the help of experts. After taking the opinions of Bosnian and Albanian language experts, it was applied to 10 teachers who spoke and wrote Turkish-Albanian, Turkish-Bosnian, Bosnian-Albanian. The application was made face to face to each teacher and it was observed whether there were necessary corrections and they were asked to read the scale aloud and mark it. The correlation obtained from the Turkish-Albanian version was 0.90, the correlation obtained from the Turkish-Bosnian version was 0.92, and the correlation obtained from the Albanian-Bosnian version was 0.91. Also, the percentage of adaptation was found to be 90 % and above. In the present study, no correction was made in any item and it was concluded that the scales could be applied to other languages.

3.2. Findings Related to Confirmatory Factor Analysis of the Teaching Approaches Scale

As a result of the translation of the scale into other languages, Confirmatory Factor Analysis was performed to test the accuracy of the factor structures. The scale was applied to 200 teachers. As a result of the Confirmatory Factor Analysis performed on the data obtained from the application, it can be used to determine whether the implicit variables of a scale whose factors were determined beforehand can be explained by the observed variables (Büyüköztürk et al., 2014). The fit indices obtained as a result of the analysis are given in Table 1.

Table 1. Confirmatory Factor Analysis Fit Indices

X ²	SD	RMSEA	NFI	NNFI	CFI	IFI	SRMR	GFI	AGFI
350.09	204	.060	.93	.97	.97	.97	.052	.86	.83
Perfect	X ² /sd=1.71	Perfect	Good	Good	Good	Good	Good	Low	Low

As a result of the analysis, a perfect fit index was obtained with X²/Sd= 1.71. A Good fit index was obtained in the RMSEA, NFI, NNFI, CFI, IFI, IFI, SRMR indices. A low level of fit index was observed in the GFI and AGFI indices. The proposed modifications did not improve any fit index. It can be argued that the low level of coefficients obtained in some of the fit indices may be due to the fact that the sample consists of a different culture.

Confirmatory factor analysis is illustrated with a path diagram. This diagram is given in Figure 1.

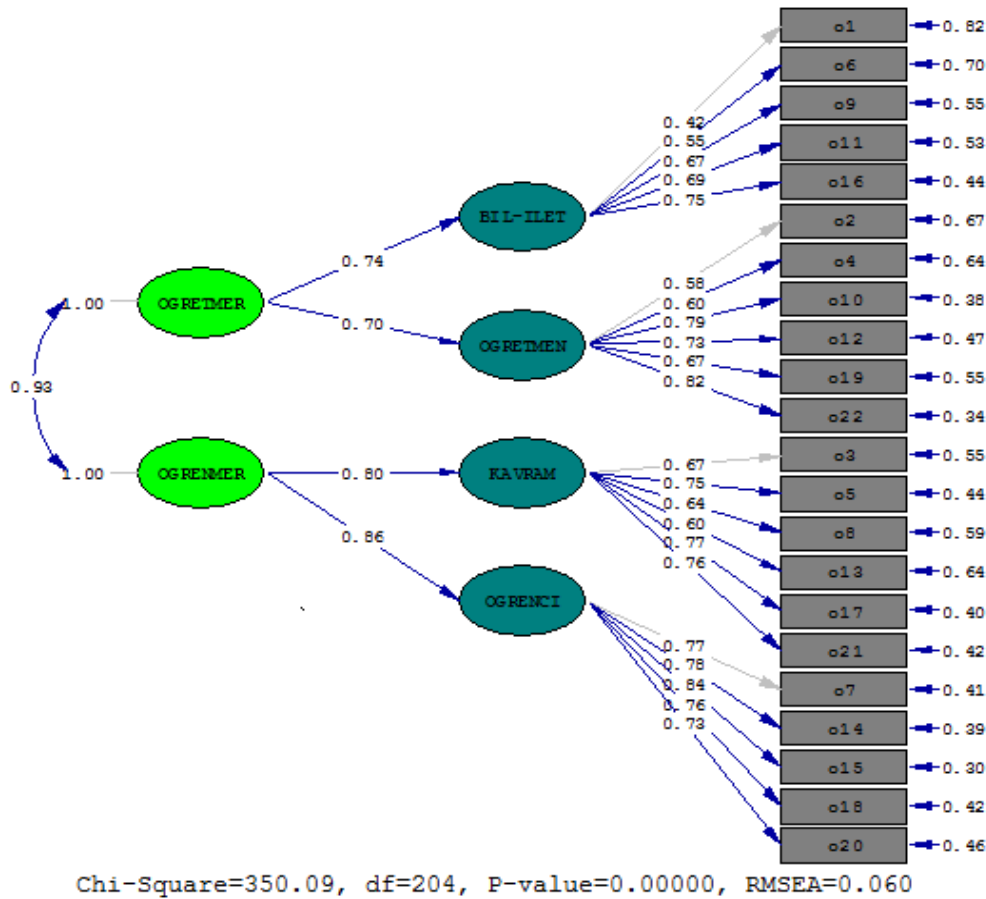


Fig. 1. Confirmatory Factor Analysis of the Teaching Approaches Scale Standardized Path Analysis Diagram

According to the results of the confirmatory factor analysis of the Teaching Approaches Scale, item 16 in the Information Transmission factor of the teacher-focused approach dimension had the highest factor load with 0.75 whereas the lowest factor load was determined to be in item 1 with 0.42. In the teacher factor of the Teacher-Focused Approach, item 22 had the highest factor load with 0.82 whereas the lowest factor load under this factor was found in item 2 with 0.58. Item 17 in the Conceptual Change factor of the Student-Focused Approach had the highest factor load with a value of 0.77. The lowest factor load in the third factor was in item 13 with 0.60. Item 15 in the Student-centered factor of the Student-focused Approach had the highest factor load with a value of 0.84. The lowest factor load in the third factor was in item 20 with 0.73.

3.4. Findings Related to the Reliability Analysis of the Teaching Approaches Scale

The reliability study of the scale, which was prepared to adapt the scale of teachers' approaches to teaching in multicultural education, was determined based on the findings obtained from the group of 200 people. In the reliability analysis, Cronbach's Alpha Coefficient was used since the scale was a Likert type. The analysis results of the findings obtained from the teaching approaches scale are given in [Table 2](#).

Table 2. Teaching Style Scale Cronbach Alpha Reliability Analysis Results

Sub-dimensions	Number of Items	Cronbach Alpha
Teacher-focused approach	11	.84
Student-focused approach	11	.90
Entire Scale	22	.90

When the analysis results in [Table 2](#) are examined, the Alpha reliability coefficient of 11 items in the Teacher-Focused Approach sub-dimension of the teachers was calculated as 0.84. The Alpha reliability coefficient of a total of 11 items in the Student-Focused Approach sub-dimension of the scale was determined to be .90. The Alpha reliability coefficient calculated for the overall scale consisting of 22 items was 0.90. With the coefficients obtained for both the sub-dimensions and the general scale, it was seen that the scale was perfect in terms of reliability. As a result of the analysis of the scale, the results of the item total correlations and mean values are presented in [Table 3](#).

Table 3. Results on Item Total Correlations and Mean Values

	Scale average when the item was deleted	Scale variance when the item is deleted	Item-total correlation	Scale reliability when the item is deleted
01	7.2350	6.794	.382	.760
06	7.1300	6.727	.464	.728
09	7.2750	6.170	.579	.687
011	7.4750	6.080	.588	.683
016	7.3450	6.368	.600	.682
02	9.5300	15.356	.587	.877
04	9.6450	15.466	.645	.866
010	9.8350	15.274	.752	.849
012	9.7500	15.394	.707	.856
019	9.6400	15.036	.657	.864
022	10.0000	14.593	.802	.840
03	9.6800	13.545	.634	.838
05	9.8250	13.482	.714	.825
08	9.4000	13.437	.593	.847

013	9.4850	13.457	.558	.855
017	9.7550	13.432	.723	.823
021	9.7550	13.563	.712	.825
07	8.0100	13.337	.776	.891
014	8.0600	13.876	.755	.895
015	8.1200	13.322	.814	.882
018	8.0250	13.713	.770	.892
020	8.0850	13.807	.754	.895

As a result of the reliability analysis, the highest correlation in the analysis of the correlations of the scale items was in item 15 with 0.814 Whereas the lowest was in the item was 1 with 0.382. Correlations of other items were between these values. Most of the item total correlations showed moderate correlation.

4. Results and discussion

The present study aimed to adapt the Teaching Approaches scale to Kosovo culture. The scale was first translated into Albanian and Bosnian and the linguistic equivalence was provided. No changes have been made to these languages. It is clear that when the scale is applied in a different culture and a different language if linguistic equivalence is not ensured, it may cause problems in the fit indices and model adaptation obtained as a result of CFA. Stes, De Mayer, and van Petegem (2010) have mentioned the problems caused by language and cultural differences in their adaptation studies on scale adaptation. Therefore, it was deemed appropriate to make linguistic equivalence to minimize the problems arising from linguistic problems (Kervan 2017). In the present study, it was stated that the scale, which was intended to be adapted from Turkish to Albanian and from Turkish to Bosnian, was translated by expert translators and then applied to 10 teachers who teach in Turkish, Albanian, and Bosnian versions in these languages. As a result of this application, it was determined that the linguistic meanings of the scale expressions of the experts were the same in all three languages. When the reliability analysis results based on the two factor structure of the scale were examined, the Alpha reliability coefficient of 11 items in the teacher-focused approach sub-dimension was calculated as 0.84. In the student-focused approach sub-dimension of the scale, the Alpha reliability coefficient of 11 items was determined to be 0.90. The Alpha reliability coefficient calculated for the overall scale, which consists of 22 items was 0.90. The coefficients obtained for the sub-dimensions of the scale and the overall scale reflected that the scale was perfect in terms of reliability. It was observed that the reliability coefficients obtained from the present study were similar to the reliability coefficients obtained in the research conducted by Tezci (2017). In some intercultural scale studies, different structures emerge in the scales in some cultures while similar structures are seen in some intercultural studies (Kervan, 2017). In the adaptation study of the scale to Kosovo culture, since the reliability coefficient of the 22-item scale was high, no item was removed and the scale was applied with 22 items. In general, such studies show that scale development and adaptation studies should be analyzed by considering cultural differences.

Confirmatory Factor Analysis DFA Fit Indices revealed that a perfect fit index was obtained with $X^2/Sd = 1.71$ in RMSEA. A good fit index was obtained in the NFI, NNFI, CFI, IFI, and SRMR indices. A low level of fit index was observed in the GFI and AGFI indices. The proposed modifications did not make any improvements in any of the fit indices. It can be argued that the low level of coefficients obtained in some of the fit indices may be due to the fact that the sample consists of a different culture.

It can be argued that the linguistic equivalence of the scale can be an important result in supporting the same results with the original factor structures in the Kosovo culture. In cases where linguistic equivalence cannot be achieved in studies conducted in different cultures, the probability of having different factor structures may increase. Stes et al. (2010) and Meyer and Eley (2006) examined the effect of language differences on scale factor structures. Beaton et al. (2000) discussed different approaches to scale adaptation in cross-cultural studies and pointed out the importance of adaptation for studies to be conducted in linguistically and culturally different countries. Even

though Kosovo culture is similar to Turkish culture in terms of some features, the fact that the languages of instruction of the teachers participating in the study are Turkish, Albanian, and Bosnian, it is considered very important that the factor structures do not change in the fit indices and sub-dimensions.

In this study, Tezci (2017) emphasized that the scales in which data are collected from teachers working in different disciplines can give different results in different measurements and at different times due to cultural and linguistic differences. Therefore, the school policy regarding the place where the teachers live, the culture they live in, the institution they work at, the type of education they receive, and the field of education they receive should be taken into consideration in the studies. This shows that the scale can be used in both pre-service and in-service training in Kosovo.

5. Conclusion

Considering that teaching approaches are very important from the philosophical perspectives of the teachers to the pre-service education to the methods and techniques they use in the service process, it is a fact that a culture can affect all the bases in the preparation of education policies and programs. Considering the programs prepared on the basis of the constructivist approach, which puts the student at the center in the programs in recent years, the successful implementation of these programs in the classroom environment showed that the teaching approaches used by teachers are of great importance (Brownlee et al., 2001; Tezci et al., 2016). In conclusion, it is suggested that such studies should be carried out by increasing the number of teachers participating in such studies.

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Forming Project Management Skills by Collaborating with Students in Smartsheet

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Abstract

Important requirements imposed on modern employees are project thinking, team work in order to solve a socially significant problem and the ability to apply principles of self-management. In addition, these supra-professional skills are fundamental in the concept of soft skills. The authors suggest using Smartsheet tools as a digital resource to form these in-demand skills.

The research methodology is based on the technology of collaborative learning, group work methods (comments, talks, providing cards, defending projects). The software tool is the Smartsheet service. The authors have used standard methods of mathematical statistics to process empirical data.

Research results. The authors describe features of organizing collaboration in the Smartsheet environment to form project management skills: determining the minimum required range of tools for mandatory use, including elements of mini-research, understanding the content of the task and options for its development, distribution to teams as a random event, etc. The authors evaluate levels of formation of project management skills and statistically significant differences in the qualitative changes that occurred in the pedagogical system.

Finally, they come to the conclusion that working with Smartsheet tools for exporting data from ready-made spreadsheets, delimiting access rights and allocating resources, tracking comments, adding files, and team introspection provide additional conditions for the formation of high-demanded competencies in the theory and practice of project management.

Keywords: employers' requirements, supra-professional competencies, soft skills, collaboration, teamwork, online interaction.

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1. Introduction

1.1. The relevance of the problem

The study is relevant due to the following factors:

1. The processes of globalization and automation of society have led to transforming forms and content of labor activity. Intellectual work, which implies using creativity, initiative, collaboration, information interaction, is becoming predominant in many sectors of the economy (Soboleva et al., 2020). There are new types of jobs, and flexible working hours become widespread. At the same time requirements for the timing of implementation and the quality of work performance also increase.

According to H. Kapoor, J.C. Kaufman, the situation with COVID-19 also makes its own changes. Organizations, including educational institutions, have to reorganize extremely quickly the usual form of activity into a new one, determined by sanitary and epidemiological conditions (Kapoor, Kaufman, 2020). The changes affect also official and professional duties and requirements for employees. Despite provisions in professional standards, the quasi-professional experience of an employee becomes important for the employer. L.N. Stepanova, E.F. Zeer determine that during an interview, employers often check not only professional skills but additional knowledge and skills that you cannot get at university. Scientists use the term “soft skills” to designate a complex of cross-professional skills (Stepanova, Zeer, 2019). I.A. Shcheglova notes that project management and collaboration are the most demanded competencies in the modern labor market (Shcheglova, 2019).

2. According to E.A. Neretina, A.B. Makarets (Neretina, Makarets, 2013), the basis of the project work is the system that satisfies the requirements for the quality of the results, limited time due to the limit of spending funds and resources, and the specifics of the system.

Project management in a digital society involves not only applying knowledge, skills, tools and management methods to collaboration activities. There are scientific, methodological and technical problems related to the choice of information technology for decision support, coordination of the work of all team members, tracking the deadlines for submitting subtasks, receiving feedback (Sergeeva et al., 2021). In other words, many scientists agree that using digital technologies is necessary for successful project management.

3. In a wide range of software tools, mobile services and platforms have a special place. In the educational space, m-learning is a priority (Klimentyev, Klimentyeva, 2018). The transition to remote work, online interaction in the “24/7” mode also contribute to the development of mobile learning methods and resources. Smartsheet is a didactic software tool that allows to combine the capabilities of mobile services for information communication, cognitive activity, interactivity, and the resources of traditional digital technologies for project management.

Thus, it becomes necessary to study the functionality of the Smartsheet software tool:

1) to apply them in the enrichment of methods, forms of project management as a significant direction in the modern digital economy;

2) to form competencies in the field of project management, organization of teamwork in online mode as demanded skills of the labor exchange.

1.2. Objectives and tasks of the research

The need to use innovative software tools for collaborative learning in order to improve the quality of training highly qualified specialists who are able to perform project activities as an important soft skills has determined the purpose of the research.

The objectives of the research are:

- to analyze the experience of using collaborative training tools while preparing specialists for implementing project activities;

- to clarify the concepts "educational project", "project management", "competencies in the field of project management" in order to describe the cycle of implementation of an educational project;

- to identify the didactic potential of mobile applications in order to provide joint online access within the framework of project management;

- to describe procedures and principles for measuring the formation of students' competencies when performing project activities by means of m-learning;

- to experimentally confirm the effectiveness of the proposed educational and cognitive activities for forming competencies in the field of project management, organization of teamwork in online mode.

2. Relevance

2.1. Literature review

2.1.1. Review of Russian scientific and pedagogical literature

According to L.N. Stepanova, E.F. Zeer, "soft skills" are personality traits that allow to effectively and harmoniously interact with other people (Stepanova, Zeer, 2019). G.P. Baibekova notes that we should understand transprofessional experience as the acquisition of such knowledge and skills that provide graduates with awareness of the process of their own education and real results (Baibekova, 2021).

I.A. Shcheglova highlights the following characteristics of "soft skills": multifunctionality; oversubjectivity and interdisciplinarity; intellectual development (abstract thinking, reflection, determination of one's own position, self-esteem, critical thinking, etc.); multidimensionality (various mental processes and intellectual skills) (Shcheglova, 2019).

A.M. Lukashenko offers the following classification of "soft skills" (Lukashenko, 2021): communicative (contributing to the development of relationships with people, helping to maintain a conversation, behave effectively in critical situations); social (helping to make one's own life and work as balanced as possible); self-management (allowing to control your condition and correctly allocate time); management and research. V. A. Chernov et al. understand a project as a purposeful activity of a temporary nature designed to create a unique product or service (Chernov, 2020). O.V. Dubinina, L.D. Hrytsiak highlight the following skills that, in their opinion, are most important for a project manager (Dubinina, Hrytsiak, 2018):

- understanding real needs of the customer or client;
- ability to plan, decompose and cascade large goals into understandable tasks that can be completed within a specified time frame;
- understanding principles of resource management: what resources (human, financial, time, etc.) are necessary to implement the project, and the ability to obtain them;
- risk management (the ability to predict possible scenarios for the development of events).

E.A. Neretina, A.B. Makarets note that with the help of special software, you can easily manage all tasks – both project and personal; control the activities of the team and achieve more with less time and resources (Neretina, Makarets, 2013).

Research data presented by O. V. Dubinina, L. D. Hrytsiak show that the practical use of electronic tools and information technologies in project management can significantly increase the effectiveness of the relevant activities. They describe the potential of MS Project (Dubinina, Hrytsiak, 2018). V. A. Chernov and similar studies actively use Scrum tools (Chernov, 2020).

According to A. A. Mikhailova, the introduction of a multifunctional and informative management system into project activities will provide a wide range of positive effects (Mikhailova, 2019).

E.V. Soboleva et al. underline that using mobile services and platforms in education provides a wide range of opportunities to improve the quality of education (Soboleva et al., 2020). Among these opportunities are resources for organizing teamwork, interactive interaction, and operational feedback. Their research presents a version of the project based on a mobile service for managing automated devices, developing skills in energy-saving production. Zh.E. Temirgaliev use mobile systems to calculate distances between objects, build a route, i.e. for behavior management (Temirgaliev, 2019).

According to D.D. Klimentyev, V.V. Klimentyeva, using m-learning technologies allows "updating students' knowledge, engaging them in an active dialogue, learning to express their point of view, demonstrating their skills and developing certain skills" (Klimentyev, Klimentyeva, 2018). This circumstance is especially important for training and practice of solving future professional problems, reaching the level of professional competence. While using m-learning tools in project activities, students learn to build effective partnerships (listen, ask and answer questions, resolve emerging problems, regulate interpersonal conflicts, overcome their complexes and barriers). Future specialists develop the skills of self-organization, purposefulness, strategic thinking.

2.1.2. Analysis of foreign studies

Research of S. Noor et al. in European countries show that 93 % of employers consider “soft skills” to be as important as their professional skills (Noor et al., 2018). The analysis of the questionnaires performed by the authors allows to conclude that a modern teacher needs to have the following supra-professional skills: communicative literacy, time management, project management, emotional intelligence, etc. A high level of development of these competencies leads to success and professional self-realization (Du, 2021).

According to M. Groten, S. Gallego-García, supra-professional skills are the ability to establish connections between knowledge and a real situation, to carry out the adoption of the right educational direction and develop an algorithm of actions for its implementation in conditions of uncertainty (Groten, Gallego-García, 2021).

Foreign literature describes the experience of preparing specialists who develop programs for developing individual cognitive skills (for example, memory, concentration, reading speed, mental arithmetic, etc.) (Noor et al., 2018). These projects are implemented with the help of special programs and devices that take into account the characteristics of the psychotype and the interests of the user. For example, on the basis of the Mind Fitness Training Institute, an intensive course was created to develop the competencies of systemic, analytical thinking. Essentially, innovative educators have designed and run a project to promote soft skills.

S. Tan, I. Huet indicate that a project is a set of time-limited activities with a common goal: creating a new product or service, achieving certain results (Tan, Huet, 2021).

According to Y. Tung, F. Chia, F.Y. Yan-Yan, project management is a way to organize work fulfilling all project requirements (Tung et al., 2021): for example, to do tasks, meet deadlines and meet budget. To be successful, a manager needs technical project knowledge, managerial skills, problem solving, and teamwork.

R. D. Vlahov, M. Klindžić, M. Radujković suggest using interactive technologies for project management technology (Vlahov et al., 2019). M. Elphik considers the possibilities of mobile technologies in terms of increasing the creative potential of students (Elphik, 2018). P. Cabrera-Solano et al. substantiate that when organizing active/interactive forms of learning using mobile applications, we should take into account the following requirements: respect for contextuality and realism, self-development and the diversity of students’ needs, participants’ activity, step-by-step and controllability of the educational process (Cabrera-Solano et al., 2020).

G. E. Putrawan, B. Riadi explore the potential of m-learning specifically for the modern educational space (Putrawan, Riadi, 2020).

At present, project management based on digital technologies becomes an independent direction of management activity. According to T.M. Algeo, C. Algeo, project management has its own methodology and tools (Algeo, Algeo, 2016). A.A. Ibrahim, M.S. Abdalla agree here and prove that it was the emergence of electronic systems that was of great importance for developing the art of project management (Ibrahim, Abdalla, 2017). In a single information space, the project manager receives qualitatively new resources for controlling all aspects of joint activities.

A.J. Gilbert Silvius, R.P.J. Schipper point out that the main possibilities of using such tools include: data analysis, correlation of the required data and selected information, distribution of roles for participants, selection of technologies for implementation, registration of the result of project activities (Silvius, Schipper, 2018). Digital tools help to define the boundaries of responsibility for each team member (Picatoste et al., 2018). At the same time, it is possible to control the workload and productivity of performers. The main thing that gives the project team the introduction of digital technology is the ability to obtain control mechanisms, feedback and management of all project tasks. As a result, the efficiency of the entire team increases, and, consequently, the work is more effective.

Therefore, in the system of supra-professional competencies, the skill of project management is of great interest. It is due to the circumstance of “double entry”: on the one hand, it is a structural component of the “soft skills” paradigm; on the other hand, project management is an effective methodology for the modern economy (Khanna, 2021). Digital technologies have the necessary potential to include mobile applications in the process of providing joint online access to project management systems, creating dashboards accessible through tablets, smartphones, and desktop computers.

3. Materials and methods

3.1. Theoretical and empirical methods

We used the following methods in our research: theoretical analysis and generalization of scientific literature on the problems of determining the importance of project skills for a professional of the future, organization of teamwork in a digital environment, and the use of mobile applications in education. The technology of collaborative learning is implemented when the participants plan the stages of work on the project, organize operational information interaction in the software environment, formulate the topics of projects for the distribution of roles and resources at the stage of additional study of Smartsheet tools, discussion of results and reflection.

We used group work methods (comments, conversations, providing cards, protecting projects) to organize constant access to up-to-date information, materials for solving a problem, and synchronization. The demonstration method allows to study the functionality of the service online, to form a general idea of the rules for working on project files. The method of frontal laboratory work is used at the stage of forming skills and abilities of information interaction with a collective virtual wall in solving specific educational problems. The method of independent laboratory work supports the organization of students' research activities.

We used empirical methods (observation, analysis of the results of work on the project using Smartsheet tools) to obtain up-to-date information about real qualitative changes in planning and goal-setting skills; management of emotions, stress, conflicts; information interaction in a team, interpersonal communication; initiative; reflection, use of feedback mechanisms; protection of the results of the decision.

Tests, as a research method, give an opportunity to assess the level of mathematical training of the subject's research with the help of specially selected exercises. An initial control was organized to form the experimental and control group.

An experimental study was conducted on the basis of the Vyatka State University while studying the course "Digital Technologies in Education". The experiment involved 89 first-second year students, the direction 44.03.02 Psychological and Pedagogical Education (bachelor's degree). The average age of the respondents was 20 years (80 % of girls and 20 % of boys).

When characterizing the relationships of the features, we used nonparametric statistical criteria, in particular, the Pearson's chi-square coefficient – χ^2 .

3.2. The base of research

The main goal of the experiment was to test the potential of Smartsheet tools to help students develop in-demand project management competencies. 89 students studied the course "Digital technologies in education", the direction 44.03.02 Psychological and pedagogical education (bachelor's degree). The average age of the respondents was 20 years (80 % of girls and 20 % of boys).

We used the Smartsheet service (<https://app.smartsheet.com/>) as a software tool to support online collaboration and project work. The tools of this service allow to manipulate tables, project files in shared access mode and support the mobile application format.

The sample was not random. With the help of the results of the entrance test, we collected the required initial data on students. To fulfill the rules of probabilistic selection, the same teacher supervised the practical activities of all students. He also formulated the systems of educational tasks, directed information interaction in the process of solving project management tasks using Smartsheet tools. Working with Smartsheet resources (in particular, exporting data from ready-made sheets, separating access rights and resource allocation, tracking comments, adding files, team introspection, and protecting projects) was in the same classrooms, on the same hardware and software. The authors developed materials for the test in accordance with the current standard of higher education in the field of study.

3.3. Stages of research

The experiment had three stages.

At the preparatory stage of the experiment, we considered and analyzed various digital technologies for project management (Todoist, Microsoft To Do, Google Tasks, Asana, Any.do, etc.). We studied the didactic potential of Smartsheet tools for systematic professionally oriented

student education, forming project management skills in organizing collective online activities. To assess the input conditions, we used materials specially developed for the test.

For the test the student could get from 0 to 19 points. According to the measurement results, the levels were the following: from 15 (inclusive) to 19 points – "high", from 6 (inclusive) to 14 – "average", for other cases – "low". Thus, it was possible to collect data on 89 students and to form the experimental (44 students) and control (45 students) groups. The sample was not random.

The second stage of the study was the determination of the directions for including Smartsheet tools in online information interaction, the collective activity of students.

The third stage included the experiential teaching and application of Smartsheet tools in student education to form in-demand competencies in the theory and practice of project management.

4. Results

4.1. Clarification of the essence of basic concepts

Within the framework of the present study, a project activity is participation in the labor process, which involves obtaining a result (material, intellectual, etc.), occurring at certain stages at a certain time interval, and supported by specific resources. This approach is consistent with the materials of M.C. Bekker (Bekker, 2015).

Considering the educational project, we adhere to the position that this is a complete cycle of pedagogical and educational innovations at any level - from a single lesson to the modernization of the entire digital educational environment. The goal of designing and implementing innovations is to solve a specific problem that is significant for all participants in the educational process (Morris, Gerald, 2011).

Project management is the process of planning, monitoring and controlling all aspects of solving a problem within time limits and resources, motivating those involved in achieving project goals. The cycle of implementing the educational project was carried out in accordance with all stages of management: from the development of the project concept for the provision of services and its justification to receiving feedback from the customer upon the fact of the decision. You can get the best results by choosing the appropriate project management technologies, composition, characteristics and assignment of resources for implementing educational projects. To manage resources, it is necessary to provide an effective organizational structure for project management, communication management, etc.

The formation of competencies in the field of project management is ability to apply knowledge, skills, tools and management methods in the process of joint activities on solving a common problem to meet the requirements for the project.

4.2. Educational and cognitive activity on using Smartsheet resources in order to get project management and teamwork skills

As we have noted in our research, mastering the functionality of Smartsheet for obtaining project management skills in organizing the teamwork plays a special role. Smartsheet is an online tool for collaborating on a project. The service has a form of spreadsheets. In addition, shared access to files is implemented in its environment. The application interface has a form of tables. You can attach files to projects, set up notifications, view diagrams, and so on. You can add attachments from your computer, as well as from cloud storage.

The students began their work on the project by determining the number of required tables, their content, and the links between them. The sheet is the main workflow element in Smartsheet. Moreover, it is a virtual storage space. How a user sets up a spreadsheet determines whether he can use a variety of Smartsheet features. By default, the table has a form of a familiar and understandable grid, where you can easily customize column types, set hierarchies, add attachments, and interact with collaborators. The tables and other elements created by the group were visible only to the members of this particular team, until one of them granted access to other users. Columns in Smartsheet are similar to columns in a regular spreadsheet, but they have a number of additional properties that make it easier to work with and expand the range of possibilities. With the help of column types, students controlled what data they were allowed to use when filling out. To ensure the consistency of the input data, certain types, standard and custom

columns were mainly used. Students put files of different types into a table, a line, a comment to fill in the project portfolio.

The tool "Conversations" is of particular value for providing feedback. This functionality in Smartsheet is a unique tool that actually manages the workflow. Through it, the working groups can discuss important production issues. Users respond directly from the email and don't waste time switching between apps. "Conversations" made it possible to manage workflows and discuss them.

Conditional formatting capabilities allow to create rules in the table, according to which the formatting of individual cells and entire rows change depending on the fulfillment of certain conditions.

The use of formulas makes it possible to perform calculations and search on several sheets at once. The formulas use numerical values that are directly put into the cells. Using formulas, students also automate the work of fields with symbols and drop-down lists.

The next important aspect of using Smartsheet is the Share tool. Thanks to these functions, all interested participants in the process kept track of the current version of the data.

With contact lists in Smartsheet, students assign tasks and share spreadsheets with their "customers", colleagues, and "vendors". They studied two kinds of contact lists: an account list managed by a system administrator; and a personal contact list ("My Smartsheet Contacts"). Smartsheet's personal contact list was used to grant access to anyone, including collaborators and "customers" outside the organization. Note that the Groups tool in Smartsheet made it easy and quick to manage access to spreadsheets and workspaces. It was with the help of it that new employees were added to the teams, those users who, after "leaving the organization", no longer needed access to this data and were deleted.

The fundamental functionality for project management is concentrated in the "Provision of cards" mode. Here the members of the working groups can see the projects. In this mode, they work together on projects using drag-and-drop cards to help organize and prioritize the process. Card View is part of an agile project management process that provides teams with a visual way to communicate and interact in Smartsheet. The main purpose of presenting cards is systematization and prioritization. The cards use columns with drop-down lists, symbols, and contact lists with multiple selection options. On this basis, we created stripes into which the cards were dragged. The field values on the cards provided information about the task. A card could have up to 10 fields: a title and 9 additional fields. The title of the card should always contain the value of the field of the main column of the table. If the task contains attachments and discussions, the corresponding icons appear on the card. If reminders are set for a task, the corresponding symbol is displayed on its card.

In the calendar view for Smartsheet, project members shared and overlaid the app's calendars with Google and iCal calendars in their respective Outlook and Apple services. At separate stages of the work, they used the Gantt representation (grid and Gantt chart).

The Smartsheet mobile app for iOS and Android has been heavily used for real-time access to Smartsheet data. The application also allowed to update the contents of an editable spreadsheet, track progress in real time using dashboards, or fill out forms to collect data. Also, project participants added images from a smartphone, viewed attached files, reacted to alerts, scanned barcodes, updated queries.

As one of the examples of an educational project implemented by students in the course of educational and cognitive work, we would like to present a home version of the intensive form for the development of cognitive skills.

Project 1. Mind fitness coach Avreliy, having worked in the profession for 5 years, accumulated start-up capital and decided to open his own center for the provision of services. All this time he rented a small room of 30 square meters with a monthly payment of 350 rubles/month per 1 m². Since the area of the premises was small, the specialist often had to travel to the customer's territory. For example, to organize collective trainings, if large groups were formed.

At the start of the business enterprise, Aurelius planned to rent a ready-made premises, larger in area. However, having learned more about the state support programs for small businesses, he decided to build his own premises with an area of 100 square meters. It is required to evaluate the economic efficiency of the project by performing calculations according to the following scheme:

1. Determine the costs required to start the project.
2. Make a forecast of the economic effect of the project implementation.
3. Calculate the economic performance of the project.

Then the students offered their options for developing the project, showed the ability to manage in the face of the uncertainty of the future.

First development option. The project for the construction of the Center was successfully completed. Aurelius decided that part of the Center's area could be rented out for offices or creative studios. Perform an assessment of the economic efficiency of this project using a similar methodology: determine the costs for starting the project (for example, the construction of partitions, a separate entrance, etc.); complete the forecast of the economic effect (one of its components can be considered rental income or payment of part of utility bills by the tenant); calculate economic performance. In addition, choose the values of interest rates and the project term in such a way that it is really beneficial for the organizer.

The second development option. The project for the construction of the Center was successfully completed, the Aurelius business brought a good income and attracted new visitors. He had to even refuse some clients. Therefore, the entrepreneur decided to expand his staff and take another coach. It is required to evaluate the economic efficiency of the project according to a similar methodology: determine the costs required at the start of the project (for example, lay the wage fund for a specialist, organize his workplace, etc.); fulfill the forecast of economic effect (for example, an increase in the price of services and the volume of sales of services); calculate the economic impact of the project; select the values of interest rates and project term to get real benefits.

Another project to be implemented by means of digital technology is the Atlas of Emerging Jobs.

Project 2. The client formulated a task for a group of specialists: to develop and implement a navigator for the professions of the future. The implementation of the project was divided into two parts: half of the group was engaged in the software and hardware development of the application (navigator); the other half was engaged in design, layout of the paper version of the atlas. Using the Project Budget template, you need to calculate the total cost of producing a brochure, application. Note: each specialist enters his costs in a separate sheet of the project.

It should be noted that in addition to standard and custom columns in the Table many students actively used additional parameters:

- "Attachments", which allow to implement the function of attaching files to the table from a computer or from the Internet;
- "Comments", which support the ability to add explanations that are displayed when clicking on the corresponding symbol;
- "Checking" for inviting a user with a valid email address to control work, writing a review;
- "Indicators" to implement the ability to add a reminder with a comment on a specific date.

When working with Smartsheet resources, students were encouraged to explore additional functionality. For example, some project participants became interested in the "smart strings" functionality. The tool allowed them to create hierarchies and easily organize, track, and move data. Students also noted the following possibility: using line indentation, you could also create a hierarchy in the table. The indented line became a child of the line above (the "parent" line). At the same time, the mentor drew attention to the fact that the hierarchy created relationships between lines, but did not control their formatting.

4.3. Experimental evaluation

4.3.1. The ascertaining stage of the experiment

At the first stage of the experiment, we used materials specially developed for the test to evaluate the input.

1. Vasily, an IT programmer, took part in a competitive selection for a large company during quarantine. The first stage involved solving a system of problems. On average, Vasily spent 5 minutes on each of them in extreme conditions. How long had Vasily been solving N problems since the first stage of the competitive selection started (the number of problems was entered from the keyboard)?

2. The second stage of the competitive selection took place intermittently, during which Vasily managed to watch a movie, walk the dog and order pizza. How much time did Vasily spend on rest (the number of minutes for each action was entered from the keyboard)?

3. At the third stage of selection, Vasily was given an order: to create a website for an online store of computer games. However, Vasily was strong only in programming. Therefore, the young specialist decided to attract familiar designers. The cost requested by the first of them was represented as a formula: $5000+100*(\text{number of images on the site})$. Services of the second one could be determined by the formula: $750*(\text{number of images on the site})$. The quality of services in both cases was the same. Vasily decided that he would choose a more economical option. What amount would Vasily pay the designer if there were N number of images on the site?

4. Vasily received the first order from the company-employer. But before proceeding with the order, Vasily decided to calculate the cost of developing the site, taking into account various options for selecting specialists. Write a program using an auxiliary algorithm that calculates the cost of a site for a customer in different cases. Data for each composition of specialists are in the table.

The first and second tasks involved testing the skills and abilities of self-management, i.e. self-management (the skill of rational planning of one's own resources, interpersonal communication, managing one's emotions, self-motivation, organization of feedback, etc.). For the correct solution of each problem in this group, the student received 4 points.

The third and fourth tasks were focused on a comprehensive test of skills in the field of project management (communicative competencies, foresight thinking, teamwork, conflict resolution, etc.). For the correct solution of the third task, the student received 5 points, and for the fourth – 6 points.

Students could get from 0 to 19 points for the test. According to the results, the levels were the following: from 15 (inclusive) to 19 points – "high", from 6 (inclusive) to 14 – "average", for other cases – "low".

4.3.2. Forming stage of the experiment

At this stage of the experiment, we determined the directions for including Smartsheet tools in online information interaction, the collective activity of students.

The initiator of the project activity carried out preliminary methodological work with all participants to master the functionality of Smartsheet. To organize joint work on the project in the e-learning format and constant access of students to relevant information, materials for solving the problem, the curator added the appropriate files, set up notifications, and updated diagrams. In addition, in order to synchronize work, he imported the necessary files from MS Project, MS Excel, Google spreadsheets. Available templates were tested (sales process, task plan for an event, product launch, adaptation to a project schedule or budget, task management, marketing calendar, etc.). The selected Smartsheet plans were: Unlimited Sheets, Frameless File Storage, Alerts, Changelog, Gantt Charts, Mobile, Technical Support, Web Forms, APIs, Reports, Resource and User Management, Single Sign-On with SAML, and etc. Students then used Smartsheet tools to publish their research projects, problem solving, glossaries, related images, information resources, and others.

We determined the level of skill formation based on the results of joint work in online mode in accordance with the following set of criteria: planning and goal setting; time management; management of emotions, stress, conflicts; information interaction in a team, interpersonal communication; energy, enthusiasm, perseverance, initiative; reflection, use of feedback mechanisms; presentation and defense of the solution results.

The "high" level means that: the student clearly identifies the problem, goal, task of the study; owns time management services; correctly searches, systematizes and summarizes the necessary information for the implementation of the project; applies reasonable methods of interpersonal communication and ways of organizing teamwork; owns conflict resolution methods; timely solves problems arising in the process of project activities; manifests himself as an energetic, proactive participant in the project; creates a significant product/sub-product and determines its further development; completes all stages of project implementation on time; systematically uses feedback mechanisms; while presenting the project, he shows the ability to explain, convince and argue his point of view.

The "average" level means that: the student does not clearly indicate the problem, goal, objectives of the study; owns a limited set of services for time management; his analysis of the necessary information is now always effective; interacts with all project participants, but overreacts emotionally to criticism; does not always notice and react to signs of conflict in the team, avoids discussing their causes; in the process of working on a project, he manifests himself as an energetic participant, but quickly loses interest in the task; creates a significant product/sub-product, but does not think about its further application; sometimes misses the deadline the project; uses feedback mechanisms; while presenting the project, he answers the questions quickly, but not always competently and reasonably.

The "low" level: the student cannot identify the problem, goal, objectives of the study; is not able to independently find and use up-to-date information for project activities; interacts with only one or two project participants; does not think about the presence of conflicts and problems in interpersonal communication, avoids discussing their causes; in the process of collective work he is passive, quickly loses interest in the task; cannot create his own significant product/sub-product; does not adhere to the deadlines for the implementation of the project; does not use feedback mechanisms; ignores team comments; makes various mistakes (technical, stylistic, spelling) while presenting the project.

Students in the control group studied the theory of project activities, time management, digital technologies for project management in the MS Project software environment.

4.3.3. Control stage of the experiment

Students were tested at the control stage of the experiment. The types of tasks, the principles of assessment corresponded to the tasks and the procedure of the input control event.

Table 1 presents information about the levels of formed skills in project management before and after the experiment (Table 1).

Table 1. The results of forming the level of the skill "project management"

Level	Groups			
	Experimental group (44 project participants)		Control group (45 project participants)	
	Before the experiment	After the experiment	Before the experiment	After the experiment
High	4	12	4	4
Average	22	24	23	26
Low	18	18	18	15

We accepted the following statistical hypotheses:

Ho: the level of development of project management skills in the experimental group is statistically equal to the level of the control group;

H1: the level of the experimental group is higher than the level of the control group.

In the online resource <http://medstatistic.ru/calculators/calchit.html>. the values of the criterion were calculated before the experiment ($\chi_{2obs. 1}$) and after it ($\chi_{2obs. 2}$). For $\alpha = 0.05$, according to the distribution tables, χ_{2crit} is 5.99.

Thus, we get: $\chi_{2obs.1} < \chi_{2crit}$ ($0.06 < 5.99$), and $\chi_{2obs. 2} > \chi_{2crit}$ ($6.15 > 5.99$). Therefore, the shift towards an increase in the level of forming project management skills can be considered non-random.

In other words, practical work on studying, using Smartsheet capabilities to gain project management skills while organizing team work contributes to forming supra-professional competencies in students. Corresponding changes in the pedagogical system are not accidental, but natural.

5. Limitations

We formed the experimental and control groups to guarantee the presence in each group of the same skills and personality traits that formed the basis of competencies in the field of project management, their identical distribution. The group of students was not probabilistic; therefore, experimental data cannot be generalized for the entire students' population.

For diagnostics, we took into account the results of the input control measure. The selection of participants for the experiment and the sample size were justified by the specifics of the study: the study of the theory of project activities, time management, digital technologies for project management, the use of mobile technologies for educational purposes. Throughout the experiment, the same teacher carried out practical activities in solving project management problems, supported by digital technologies, using the same software equipment in special classrooms. During the implementation, we considered the main principles and stages of the development of an educational project, the functionality of tools for programmatic project management.

6. Discussion

While discussing the results on the development and management of an educational project, the participants highlighted the possibilities available only in the mobile application: adding your location based on GPS data to a table or form field; creating a photo using the device, editing it and adding it directly to a table or form; scanning a barcode or QR code to update data in a table or search for it; quick access to forms from home tab or recent tab.

Performing a quantitative analysis of the above results, we can conclude that after the experiment, 27 % of the students in the experimental group had a high level of indicators reflecting the degree of development of project management skills (12 participants out of 44), while initially this percentage was 9 % (4 students out of 44). The number of students with a "low" level has significantly decreased from 41 % to 18 %.

In the control group, there were no changes in the "high" level. After the experiment, 58 % of students in the control group had an average level of project activity skills (26 participants out of 45). Initially, this percentage was 50 % (23 students out of 45). The indicator of a low level changed from 40 % to 33 %. So, there is the dynamics by levels in the control group, but it is less significant.

In general, the pedagogical experiment allows to conclude that using Smartsheet tools, presented both in the format of a mobile application and a traditional software tool on a computer, improves the quality of training in terms of forming skills that are the basis of supra-professional project management skills. It is this practical joint activity in the online mode of the software environment on a computer, supplemented by the team's work on the project with mobile application tools, that is maximally focused on forming demanded competencies. The results of the study detail the specific features of Smartsheet. Their implementation contributes to the development of the required qualities of the person and the team as a whole.

The research materials confirm the conclusions made by E.V. Soboleva et al. about the fact that the functionality of e-learning and m-learning can provide additional conditions for forming demanded skills of students (Soboleva et al., 2020). In addition, the presented results complement the conclusions of O.V. Dubinina, L.D. Hrytsiak on the potential of digital technologies to support project management activities (Dubinina, Hrytsiak, 2018).

7. Conclusion

In the context of digital transformation, automation and transition to online interaction, the requirements of employers are changing not only concerning the quality of graduate training, but also for the format of training.

The study presents a solution to the problem caused by the need to use innovative collaborative learning software tools in order to improve the quality of training highly qualified specialists to perform project activities as an important soft skills.

Many researchers consider project management skills in the concept of "soft skills" to be one of the main results of high-quality professional training. Scientific works of a pedagogical, socio-economic nature substantiate the need for additional studying the potential of virtual collaboration, operational feedback mechanisms, and the use of mobile services to develop skills that determine forming supra-professional experience in project management. Every year there are more and more innovative technologies for developing project management skills, organizing joint

activities (mobile applications, automated systems, decision support systems, Scrum, mind maps, etc.). In addition, digital services provide tools for centralized control, feedback and management of all project tasks. Smartsheet is an example of such services.

A significant result of the research is the use of Smartsheet tools, presented both in the format of a mobile application and a traditional software tool on a computer, to create additional conditions for developing in-demand project management skills. A mandatory element is a joint online activity to solve a problem (project) of educational purpose, supported by the tools of the software environment. The project involves not only the teamwork of students in the Smartsheet environment, but also the visualization of all stages using tables, comments, attached files, conversations, charts, and calendars. We highlight the following features of organizing online work on a project in the Smartsheet environment:

- determination of the minimum required range of tools for mandatory use. Additional features can be explored as part of project implementation;
- comprehension of the content of the task, options for its development. It is the task that guides students in learning, supports project management activities;
- distribution into teams is more efficient to carry out in a game form. For example, using the Wheel of Fortune online tool (<https://ru.piliapp.com/random/wheel/>). This option allows to simulate the randomness of events in an indefinite future, change the composition of teams, vary resources.

Despite the fact that the experiment deals with an educational project, such a collaboration can be organized and carried out to solve a wide range of socially significant tasks.

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Teachers' Competencies for Inclusive Teaching: Relation to Their Professional Development and Personality

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Abstract

It is of utmost importance for quality and contemporary education process to study the significant determinants of teachers' competencies for inclusive teaching, such as teachers' professional development and their personalities. In order to organize suitable and quality teaching and learning process for diverse learners, teachers need to board range of competencies, positive attitudes towards inclusive education, training preparation and professional development regarding their various personalities. Therefore, the aim of this study was to explore the relationship between teachers' competencies for inclusive teaching, professional development and personality traits, and which predictors of inclusive teaching skills are significant. The national representative sample of 1195 Croatian teachers (F = 975; M = 198; Age = 41.96) from first to eight grade were included. The Scales to measure self-perceived teachers' competencies for individualized instruction in inclusive classrooms and professional development as well as The Ten Item Personality Inventory were used.

The results reflect a positive relationship between teachers' competencies for inclusive teaching and professional competencies and personality traits, and those with their demographic data such as age, working experience and working position. The hierarchical regression analysis revealed that the greatest predictors for inclusive teaching competencies are professional competencies, while openness to experience and work position have minor significance. The findings have discussed within the frame of their significant implications for enhancing the initial and continuing training and support of teachers as the key strategies for the realization of an inclusive and right-based education system.

Keywords: competency, inclusive education, teachers, professional development, personality traits.

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1. Introduction

Inclusive education, as a global agenda in the 21st century education policy (e.g., Ainscow, César, 2006; Pijl, Meijer, Hegarty, 1997), is defined as an ongoing process of understanding, addressing and responding to the diversity of needs and abilities, characteristics and learning expectations (UNESCO, 2005). Contrary to traditional education in homogeneous classrooms, inclusive education refers to education in regular heterogeneous classrooms of diverse learners whenever it is beneficial for a child. Although this implies that regular schools are prepared to accommodate and meet the different needs of all diverse students, inclusive education is a *far-reaching notion that concerns all students* (Artiles, Kozleski et al., 2006). Teaching diverse learners in the inclusive classroom, as a platform to promote and protect the right to quality education for all children, is a complex task. It should be highlight that successful implementation of the inclusive policy into inclusive practice depends largely on teachers' competencies for inclusive teaching acquired during teacher education.

Teachers' competencies for inclusive teaching refer to a broad set of competencies needed in inclusive classrooms, from the ability to respond to the challenges of an increasing social and cultural diversity in classrooms to specific competencies of tailoring the curriculum to the individual learning needs of students with disabilities (e.g., Choi, Mao, 2021; Skočić Mihić et al., 2020; Skočić Mihić et al., 2014; Skočić Mihić et al., 2016). One of the most important descriptors of the set of competencies of inclusive teachers, classified in four key areas: *“valuing learner diversity, supporting all learners, working with others and continuing personal professional development”* (European Agency for Development..., 2012: 7).

The competencies of inclusive teachers are based on a positive attitude and belief towards inclusive education, appropriate knowledge or level of understanding of diverse learners and teaching strategies in inclusive classrooms and then skills implementation of the acquired knowledge in educational practice.

Teachers' attitudes towards inclusive education have been the focus of much research and positive attitudes have been confirmed (e.g., Avramidis, Kalyva, 2007; Beacham, Rouse, 2012; Campbell et al., 2003; Sze, 2009; Cook et al., 2007; de Boer, Timmerman et al., 2012; Malinen et al., 2012; Sharma, Sokal, 2015; Wilde, Avramidis, 2011), as well as teachers' readiness to accommodate the learning needs of diverse students (e.g., Kurniawati et al., 2014).

Teachers' knowledge about diverse learners and appropriate teaching strategies have been significantly less researched, unlike teacher self-assessments (e.g., Skočić Mihić, 2017; Martan et al., 2017; Skočić Mihić et al., 2021). Nevertheless, teachers perceive themselves generally insufficiently prepared for a quality response to diverse students with complex educational needs in regular classrooms (e.g., Avramidis et al., 2000a), as well as for the other aspects, such as collaboration with different stakeholders, parents, professionals and others in the educational context (e.g., Skočić Mihić et al., 2015, Skočić Mihić et al., 2019).

In the study by Avramidis et al. (2000b), a description of inclusive teaching skills is proposed in terms of the application of teaching strategies and the Individualized Educational Plan (IEP) and professional cooperation. Teachers require a specific set of competencies for individualized instruction, such as the skills to plan, conduct, and evaluate IEP. As IEP is oriented towards students' learning strength and needs, it is expected that the teaching process will maximize its independence and involvement in the learning process (European Agency..., 2012).

It should be pointed out that research is consistently showing a positive relationship between teachers' competencies for inclusive teaching and their professional development in this field (e.g., Avramidis et al., 2000a; Avramidis et al., 2000b; Skočić Mihić, 2017; Tatalović Vorkapić et al., 2019), and the role of teacher education in the development of appropriate attitudes and values, pedagogical knowledge and skills thought reflection on inclusive issues has been widely acknowledged (e.g., UNESCO, 2008; Skočić Mihić et al., 2016). Furthermore, the quality of the educational process (Brunello, Schlotter, 2011) is connected with teaching children “in and for diversity,” which includes teaching them to live together based on democratic relationships and the development of values that promote cooperation, solidarity, and justice (Guijarro, 2008).

Generally speaking, teachers' personality presents an important psychological aspect of the quality process of teaching and learning, so that numerous studies have revealed which personality traits have proved to be the significant determinants in the educational context (Tatalović Vorkapić, 2012, Tatalović Vorkapić, 2015, Tatalović Vorkapić, 2017). Vasconcelos (2002) and

Milner (2010) have accentuated that precisely the teachers' personality will determine what kind of relationship and class climate will be created with a certain class or group of children, and that the teacher's personality matters in the educational process (Tatalović Vorkapić, 2015). However, there is a lack of reliable and objective studies about the teachers' personality within the process of teaching and learning in preschool, primary, secondary schools, or faculties (Tatalović Vorkapić, 2012; Vizek-Vidović et al., 2014). Therefore, it is important to explore teachers' personality traits as an educational determinant and as one of the major aspects within the definition of teachers' professional competence (e.g. Petrovici, 2007, Diaconu, 2002, Jinga, 1998). As Schuh and Jorgensen (2006: 21) emphasized, personality traits that should be an integrative part of a successful inclusion facilitator are: committed, flexible and open-minded, collaborative, respectful of other's viewpoints, creative, friendly, and optimistic. All of these personality features could be easily recognized within the five personality dimensions described in the Big Five personality model (Goldberg, 1990) that has been used in this study as the theoretical framework for exploring teachers' personality traits. The Big Five model, the most empirically tested theoretical model, postulates that human personality is hierarchically structured into five major dimensions: extraversion, neuroticism, agreeableness, conscientiousness, and openness to experience. According to the descriptors of the five personality traits, high levels of extraversion, agreeableness, conscientiousness, and openness to experience, and a low level of neuroticism are expected among teachers. The teachers' personality is significantly related to specific professional competencies that consequently influence the quality of the educational process (Brunello, Schlotter, 2011). In order to organize a suitable and quality teaching and learning process for diverse learners, teachers need to include a wide range of competencies.

Given all this, it is important to investigate the relationship between teachers' competencies for inclusive education, their professional development, and their personality traits. So, the aim of this study was to explore: (1) the relationship between the teachers' competencies for inclusive teaching, personality traits, and professional competency among elementary school and subject teachers in Croatia and (2) significant predictors of teachers' competencies for inclusive teaching (criterion variable) among predictive variables (personality traits, professional competence, gender, age, years of teaching, and position). Regarding the hypotheses and based on the theoretical models and previous research, it is expected to determine: 1) Significant relationship between inclusive teaching skills, personality traits and professional competence among primary and subject teachers in Croatia; and 2) Significant predictors of inclusive teaching skills are personality traits and professional competence.

2. Method

Participants. A national representative stratum sample of 1,195 elementary school Croatian teachers was included in the study. The average teacher age was 42 years (SD = 10.64; Min = 24, Max = 65) with 16 years of working experience (SD = 11.08, Min = 0, Max = 44). Of these, 39 % were elementary school teachers and 61 % were subject teachers. In terms of gender, female teachers dominated in the sample; 83.7 % of the total number of teachers were female teachers. Of all the teachers included, 5.3 % were teacher-trainees and most of those who responded to this question do not hold a positional title (62.8 %), 33.6 % of teachers hold a mentor title, and 3.6 % are advisers. The majority of all teachers in the sample (87.3 %) have permanent employment.

Measures. *The Scale of Teachers' Competencies for Individualized Instruction* measures teachers' competencies for inclusive teaching through the perception of the skills needed for teaching a diverse group of students in inclusive classrooms. The original Scale of teachers' perceptions of the skills for teaching students with the SEN (Avramidis et al., 2000b) includes 18 items. This short version includes eight items related to teachers' skills for teaching diverse students such as "I feel confident in writing/implementing/assessing/evaluating IEPs," "I feel confident in using information from specialists (e.g., educational psychologists, special therapists) to design, implement, and evaluate IEPs," and "I feel confident in managing a class to promote individual learning." Participants provided responses on a five-point Likert-type scale, with responses again ranging from 1 to 5 (from 1 – *I do not feel competent* to 5 – *I feel fully competent*). A one-factor structure was obtained, whereby the percentage of the explained variance in the Croatian sample amounts to 56.80%. The Cronbach alpha reliability coefficient for this investigation was 0.90 for the scale.

Scale of Teachers' Professional Competencies was used in constructing the teachers' perceived level of qualification for professional activity whereby the items were designed to review the theory and previous research on the fundamental fields of professional teacher activity (Marentić Požarnik et al., 2005; Muršak et al., 2011). The scale contains seven items referring to teachers' competencies to establish partnerships with other schools, institutions, and experts for the purpose of incorporating new insights into their educational work, serving a constructive role in research and development projects, cooperating with parents, analyzing positive and negative sides of their educational work, mentoring students in practice and for teacher trainees, and establishing a constructive dialogue with their peers. For each item, teachers should evaluate their competencies on a five-point scale (1 – not competent, 2 – poorly competent, 3 – partially competent, 4 – quite competent, 5 – completely competent). An exploratory factor analysis was used to check the factor structure and psychometric characteristics of teachers' qualifications scale for professional activity by means of major components.

According to the Guttman-Kaiser criterion (typical root greater than 1) and the scree-test criterion, the existence of one factor was verified, which explains 49.55 % of the total variance. A one-factor structure was obtained, whereby the percentage of the explained variance in the Croatian sample amounts to 51.27 %. The coefficient of internal consistency reliability indicates a high reliability of the scale, with Cronbach being 0.83.

The *Ten Item Personality Inventory* is a short version of the scale containing five traits that has been used in this study to measure personality traits. In other words, the *Ten Item Personality Inventory* (TIPI; Gosling, Rentfrow, Swann, 2003) was applied once it was adapted to the Croatian language (Tatalović Vorkapić, 2016). The short 10-item scale was used due to certain time restrictions and a planned big stratified sample. This measurement instrument is aimed at measuring the "Big Five" personality traits: Extraversion (E), Agreeableness (A), Conscientiousness (C), Emotional Stability (ES), and Openness to Experience (O), each of them with two items that are found in Appendix 1 of the original validation study (Tatalović Vorkapić, 2016).

The participants were asked to evaluate how they see themselves on a seven-point Likert scale (from 1 – strongly disagree to 7 – strongly agree). Even though the original Cronbach alphas were relatively low (Gosling et al., 2003), the same as those in the Croatian study (Tatalović Vorkapić, 2016), this short scale was applied due to the previously mentioned reasons.

Procedure. The survey began with the approval of the Croatian Ministry of Education, Science, and Sport to conduct the study. Schools were randomly selected from the national database of statistics for elementary schools representing each county and more than 10% of elementary school teachers. Information about the survey was delivered to the principals of these schools via email and telephone to confirm their participation. The number of sent-out questionnaires matched the number of the teaching staff in elementary schools (1,900 in total).

3. Results

To determine the relationship between teachers' competencies for inclusive teaching and sociodemographic data, the professional competencies and personality traits, the Pearson correlation was computed since the Skewness and Kurtosis for targeted variables are in the range of normal distribution values. The exception is the personality variable Conscientiousness, but since the calculated Pearson correlation coefficients are not significantly differing from Spearman, it is decided to present the Pearson correlation coefficients.

Mean scores on different scale are taken in consideration prior to analyzing the significant correlation between teachers' perceived competencies for inclusive teaching, professional competencies, and personal traits.

Croatian teachers (N = 1,117) perceive themselves just on the border between the moderate and greater extent level (M = 3.53; SD = 0.685) of The Scale of Teachers' Competencies for Individualized Instruction, ranging from 1 to 5. Teachers' mean score on the perceived professional competencies was 3.89, indicating average competencies for establishing professional communication and partnership with parents, analyzing and involving innovative approaches educational practice, and mentoring. In line with previous research, Croatian teachers demonstrated a high level of Extraversion (M = 4.77), Agreeableness (M = 5.64), Conscientiousness (M = 6.25), Emotional stability (M = 5.59), and Openness to experience (M = 5.97).

Table 1. Pearson coefficient of correlation between Inclusive Teaching Competencies and sociodemographic data, Professional Competencies and Personality traits

	M (SD)	Skewness	Kurtosis	Min-Max	Comp. for Inclusive teaching	Age	Teach. Exp.	Position taught
Competencies for Inclusive teaching	3.53 (0.68)	-,208	,237	1-5	1.00	.021	.031	-.137**
Professional Competencies	3.89 (0,60)	-,309	,103	1,71-5	.466*	.201**	.196**	-.037
Personality traits								
Extraversion	4.77 (1.35)	-,241	-,469	1-7	.120**	-.023	-.025	-.046*
Agreeableness	5.64 (1.10)	-,681	-,102	1.5-7	.095*	-.045	-.037	-.143**
Conscientiousness	6.25 (0.91)	-1,423	1,849	1.5-7	.125**	.014	.033	-.106**
Emotional stability	5.59 (1.18)	-,484	-,321	1-7	.175**	-.071**	-.074**	-.039
Openness to experience	5.97 (1.04)	-1,023	,454	1-7	.194**	.037	.032	-.115**

Legend: Competencies for inclusive teaching and Professional Competencies: 1 – not competent, 2 – poorly competent, 3 – somewhat competent, 4 – quite competent, 5 – highly competent; Personality traits: from 1 – I completely disagree to 7 – I completely agree; Position taught: 1 = primary classroom teacher from first to fourth grade, 2 = subject teacher.

As can be seen from Table 1, the statistical high positive correlation was established between competencies for inclusive teaching and professional competence (0.466; $p < 0.001$), indicating that higher perceived competencies for inclusive teaching are connected with higher professional competencies.

A small positive correlation was established among a summary of the results of parametric correlations between teachers' competencies for inclusive teaching with personality traits and those with demographic data (age and teaching experience).

Teachers' higher level of professional competencies are correlated with their higher age group and more years of teaching experience. A similar pattern was detected between teachers' competencies for inclusive teaching with higher extraversion, agreeableness, conscientiousness, emotional stability, and openness to new experiences. On the other hand, a negative correlation was determined between their perceived competencies for inclusive teaching and professional competencies with subject teachers position. Primary teachers, who are teaching students from grades 1 to 4, have a higher level of perceived competencies for inclusive teaching and professional competencies.

Therefore, the hypothesis that there is significant relationship between teachers' competencies for inclusive teaching, professional competencies, and personality traits between primary and subject teachers in Croatia was confirmed. It is obvious that professional competencies are strongly related to teachers' competencies for inclusive teaching.

Predicting inclusive teaching skills: Hierarchical regression

In order to provide an answer to the second research aim, a three-step Hierarchical Regression analysis was conducted. The assumptions of multiple regression were met: linearity, homogeneity of variance, and the residuals of the model are normally distributed. The aim of this analysis was to determine which variables could predict the criterion variable – self-perceived competencies for inclusive teaching. Independent variables were grouped into three models due to high correlations between them. All five-personality dimensions were placed in the first model, professional competencies in the second model, and the model socio-demographic variables such as teachers' age, teaching experience, and position taught in the third model (1= classroom teacher; 2 = subject teacher).

Table 2. Summary of the hierarchical regression analysis of predictors of competencies for inclusive teaching

Predictors	Model 1			Model 2			Model 3		
	B	SE B	β	B	SE B	β	B	SE B	β
Extraversion	.016	.018	.032	-.012	.016	-.024	-.012	.016	-.023
Agreeableness	.005	.024	.009	-.005	.021	-.009	-.016	.021	-.026
Conscientiousness	.032	.028	.042	-.009	.025	-.012	-.017	.025	-.023
Emotional stability	.032	.022	.055	.020	.020	.034	.023	.020	.039
Openness to experience	.086	.026	.128**	.023	.023	.034	.016	.023	.024
Professional Competencies				.572	.036	.495**	.584	.036	.505**
Gender							-.060	.056	-.033
Age							.006	.006	.094
Teaching experience							-.009	.006	-.142
Position taught							-.125	.045	-.089**
R	.191			.504			.514		
R ²	.037			.254			.264		
F for change in R ²	6.729**			257.301***			2.917*		

Legend: Position taught (1=classroom teacher; 2=subject teacher)

In step 1, only openness to experience among the teachers' five personal traits was a predictor of teachers' competencies for inclusive teaching ($R^2 = 0.037$, $F(5, 889) = 6.729$, $p < 0.01$), explaining 4 % of competencies for inclusive teaching, see Table 2. Entering self-perceived professional competencies accounted for an additional 21.7 % of the total variance of competencies for inclusive teaching, and openness to experience ceased to be a significant predictor ($R^2 = 0.254$, $F(6, 889) = 257.301$, $p < 0.001$).

Socio-demographic variables were examined to see if they over and above the perceived professional competencies predicted by competencies for inclusive teaching. By entering those three variables (age, teaching experience, and position taught), it was revealed that only "position taught" can significantly predict competencies for inclusive teaching but only with an additional 1 % of the total variance of competencies for inclusive teaching ($R^2 = 0.264$, $F(9, 889) = 2.917$, $p < 0.01$). So, a higher level of the teaching inclusive skills can be predicted by those teachers who taught from the first to the fourth grade. Obviously, openness to experience, as the only personality trait, stops being a predictor when the model has been added to perceived professional competencies due to the moderating effect. However, teachers' perceived professional competencies are the strongest predictor of inclusive teaching skills.

As it had been expected, in the first model of the hierarchical regression analysis, it was determined that openness to experience is a significant predictor of the inclusive teaching skills ($R^2 = 0.037$, $F(5, 884) = 6.729$, $p < 0.01$). The total contribution of personality traits is 3.7 %, the total contribution of openness to experience is 2.2 % and its independent contribution is 1.6 % in explaining the variance of competencies for inclusive teaching. As it could be observed in Models 2 and 3, this contribution is not so stable and high since it is no longer significant once other independent variables have been entered into the regression.

4. Discussion

According to the aforementioned theoretical and empirical findings, the organization of an individualized teaching and learning process in inclusive classrooms depends on teachers' competencies for inclusive teaching that are in accordance with a broad set of teaching competencies. It should be underscored that the focus in this paper is on the specific set of teachers' inclusive competencies to plan, conduct, and evaluate IEP, plan individualized assignments, manage classroom behaviors, cooperate with other staff and parents. In line with the previously published results of this investigation on a representative national sample (Skočić Mihic, 2017), Croatian teachers assess themselves as moderately high to competent in providing individualized instruction in inclusive classroom.

It should be pointed out that those results were generated from representative national sample and clearly articulate that teachers perceived themselves as well competent to manage classroom behavior, encourage the development of pupils' social skills, and cooperate with

professional experts and others, and moderately competent for implementing IEP ($M = 3.30$), individualized instruction of pupils ($M = 3.29$), evaluating IEP ($M = 3.20$), and writing IEP ($M = 3.13$) (Skočić Mihić, 2017). Interestingly, almost the same mean score was established in the Avramidis et al. study (2000) on the sample of English teachers using the original 18-item scale ($M = 3.54$; $SD = 0.44$). Those competencies are key competencies in a teaching process that is focused on students' learning needs and strengths due to maximize independence and involvement in achieving learning aims through collaboration with parents and professional associates (e.g., European Agency..., 2012). It is evident that this set of competencies is related to teachers' ability to cooperate with professional associates and parents and analyzing and innovating the educational practice in the context of professional development, as elaborated in the study by Čepić, Kalin, and Šteh (2019). The finding of that study confirmed a high correlation between that shared set of inclusive and professional competencies.

Similar results were obtained in the qualitative study by Olson, Chalmers, and Hoover (1997). According to the opinions of general education teachers, whom their principals and special education teacher colleagues identified as skilled at including students with disabilities, inclusive teachers show (1) personal dispositions as tolerance, reflectivity, and flexibility; responsibility for all their students, including those with disabilities and (2) skills for a positive collaborative relationship with special educators and time (that is insufficient) to implement strategies to model the acceptance of students with disabilities and to plan additional time for the students with disabilities to adapt to classroom routines and culture. Taking into consideration that Olson, Chalmers, and Hoover (1997) study was carried out two decades ago, the findings of this study on the high level of connection between the teachers' perceived competencies for inclusive teaching and professional competencies, open up space for questioning the quality of higher education system in preparing teachers for inclusive teaching.

On the other hand, research on teacher competencies is a complex construct that includes not only knowledge and skills, but also attitudes and beliefs. Namely, an unexpected relationship was found between participation in professional development in special education and teachers' beliefs and understanding of inclusion (Woodcock et al., 2017). The authors point out that the nature of the professional development experience of teachers to foster more inclusive pedagogy needs further analysis.

The analysis has obtained a positive correlation between the teachers' competencies for inclusive teaching and professional competencies with higher age and teaching experience, which had been expected. The small size of the correlation may indicate an insufficient quality of the professional development program.

Also, the identified negative relation with the secondary teacher position, as well as with openness to experience, had been expected.

Furthermore, it had been expected that the professional competencies are the strongest predictor of inclusive teaching skills. As mentioned before, competencies for inclusive teaching, such as instructional skills for individualized lessons, planning individualized assignments, managing classroom behaviors, cooperating with other staff and parents, who are part of the general organization and cooperation skills in the profession, they are part of the competencies that the teacher develops during professional development. In addition to the inclusive education policy, a systematic analysis of the teachers' own inclusive practice (experience) plays a key role in continuing teacher education, which can lead to the awareness of the teachers' subjective understanding and a gradual change in educational activities in the classroom, as well as in other fields of professional teacher activities (such as mentoring, exploring their own teaching, partnerships with external institutions, etc.). In line with previous research (e.g., Scruggs, Mastropieri, 1996; Cains, Brown, 1996; Lombardi, Hunka, 2001; Skočić Mihić, 2011), Croatian teachers feel inadequately prepared for teaching diverse students, that they have received insufficient initial training preparation (e.g. Skočić Mihić et al., 2014; Skočić Mihić, 2017). Recent research has shown that, in the study programs of teacher education, insufficient emphasis is given to the development of appropriate competencies in these areas, particularly in the area of classroom management and co-operation between teachers and parents (Muršak et al., 2015; Vizek-Vidović, Velkovski, 2013).

Traditional professional development, as Grimmett (2014, p. 163-164) pointed out, takes place beyond teachers' classroom practice; it occurs WITHIN the practice of professional

development WITH a teacher, IN their practice. The key question is, therefore, how do we encourage the development of new competencies (e.g. Čepić et al, 2015) in accordance with modern requirements so that we develop a more inclusive culture for diverse students (Ainscow et al, 2006, Skočić Mihić et al., 2020). We can and should start fostering and encouraging teachers' professional development from the outside; however, we must be aware that it is essentially a process of an individual's self-development in different areas. Quality teaching places teaching expertise at the very heart of teaching competencies, but these must not be limited to teaching alone. In a broader sense, these competencies include social and socio-moral competencies, the ability to diagnose and advise, to collaborate with colleagues, parents, and school leadership so as to develop the professional culture of schools. Finally, it includes the ability to observe oneself as a teacher. As such, the literature highlights that teachers are able to change/transform their practice only if they also question and change their own theories and notions about teaching and learning (e.g., Kalin, Čepić, 2019; Čepić et al., 2019, Čepić, 2020).

Teachers' readiness to participate in professional development is a statistically significant predictor that explains one-fifth of the competencies for inclusive teaching. Teachers who are willing to reflect on their practice will appropriately monitor requests for specific changes and will be more willing to respond to challenges in inclusive classrooms. It is this finding that indicates the exceptional importance that quality teacher pre- and in-service education has in acquiring a different set of competencies and developing a competent inclusive teacher. In particular, teachers' general professional competencies contribute to inclusive teaching competencies. Furthermore, a fundamental question arises as to what extent teachers have the opportunity to be educated for inclusive teaching primarily during pre-service teacher education and how teachers see themselves in the whole process of professional development. In Croatian higher education, with regards to teacher professional development, teachers acquire competencies for inclusive teaching through one course (7 ECTS) in the total study teacher program comprising 300 ECTS, which means that these competencies are represented by 0.023 %. A quality teacher pre- and in-service education for inclusion must include content and opportunities which are more extensive, including more courses that will provide competencies for inclusive teaching.

In line with the second hypothesis, the positive correlations between teachers' competencies for inclusive teaching and all personality traits have been determined as significant, which had been expected. Prior findings in the context of early and preschool education (Jančec et al., 2015; Tatalović Vorkapić, 2012; Tatalović Vorkapić, Lončarić, 2013; Tatalović Vorkapić et al., 2014; Tatalović Vorkapić, Jelić Puhalo, 2016; Tatalović Vorkapić et al., 2016; Tatalović Vorkapić, Peloza 2017) and in the context of elementary school education (Jančec et al., 2015; Tatalović Vorkapić, Peloza, 2017) showed preschool teachers' higher level of extraversion, openness to experience, conscientiousness, agreeableness, and agreeableness, and a lower level of neuroticism, same as in this study. However, in regression analyses, only openness to experience showed to be a significant predictor of inclusive teaching competencies, which explains 4 % of the criterion variable when personality traits are the only predictors in the model. The obtained results have confirmed the significant role of this particular teachers' personality trait as the facilitator of a successful inclusion (Schuh, Jorgensen, 2006, Tatalović Vorkapić, 2015). Since this is the only one study in Croatia that explored the described relationship, the lack of expected significance of other personality traits as predictors should be tested by applying other personality measures in future studies.

In conclusion, teachers' professional development programs should be in line with inclusive values and provide opportunities for in greater extend competent to moderately competent in classroom management, in supporting social skills development and using information from specialists (e.g., educational psychologists, special therapists) to design, implement, and evaluate IEPs, but moderately competent in writing, implementing, and assessing/evaluating Individual Educational Plans and managing a class to promote individual learning.

Limitation and future research directions

The first limitation of this study refers to the national self-reported statements of teachers, which leaves open the possibility that the results obtained reflect the tendency to provide socially desirable answers and that the actual competencies are lower. It is also dependent on study programs and continuing professional development programs in the Croatian educational context. In addition, as written before, a short version of the personality measure was applied, which, on the

one hand, was very practical but, on the other, less reliable and valid. So, it is recommended to apply a longer version of the personality measure in future research studies.

As the second limitation, we highlight the obtained correlation parameters, which showed statistical significance due to the sample size and the smaller standard error of the parameter.

In order for this relationship to be examined in a much more reliable and valid way, personality measures with higher quality psychometric properties should be used in future research.

It will be interesting to conduct tests with these questionnaires in other national educational contexts in order to determine the possible other factors influencing or connecting, for example, the quality of teacher education programs and professional development programs to teachers' degrees of perceived competencies.

5. Conclusion

Contemporary inclusive education emphasizes that the quality of teaching lies in the individualized approach that is in accordance with students' educational needs and teacher competencies. Today's highly heterogeneous classes require a high level of teacher competencies for individualized instruction, but research consistently points to missing competencies. The starting point is that teachers are consistently assessed as moderately competent for inclusive teaching. This paper, which relied on a representative national sample of Croatian teachers, investigated the rarely studied relationship between perceived teachers' skills for inclusive teaching (ITS) and professional competencies, personality traits, age, teaching experience, and position.

Even though socio-demographic and personality traits have demonstrated small positive and significant correlations with inclusive teaching competencies, as had been expected; a much stronger relationship was determined between the teachers' acquired professional competencies and inclusive teaching competencies. It additionally emphasizes the importance of professional development of teachers for inclusive education, i.g. the design of professional development programs in line with teachers' educational needs, conditions and possibilities, taking into account their self-perceived competencies as basic assumptions of program quality.

In this regard, the established relationship between the professional development and inclusive competencies, and the relationship with personality traits, confirms the findings of previous research on the importance of professional development for inclusion and obliges the professional community, teachers, and others to take into account teachers' self-perceived competence in practice and teacher professional development programs as a determinant. Without the implementation of these findings, as well as many previous ones, many of the challenges of inclusive teaching remain within the reach of teachers' willingness to respond to them, without systematic support.

However, the results offer several important practical implications for education policy makers. Implementation of an inclusive education policy in classrooms depends on teachers' competencies, which are strongly related with their competency for professional development, and to a lesser extent with personal traits. Although the educational paradigm has changed to an inclusive one, it seems that the educational needs, conditions, and possibilities of teachers' professional development in inclusive teaching have not been taken into account. In order to make an education system more inclusive, teachers need quality pre-and in-service education and strong professional support with the overwhelming task of transposing policies and directives into practice while safeguarding the best interests of the child.

Obviously, the initial and continuous training and support of teachers are key strategies for the realization of an inclusive and right-based education system.

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From Uncertainty to Self-Efficacy-Perspectives of Pre-Service Teacher's on Their Practical Experience during the 'Corona Year'

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Abstract

The outbreak of the COVID-19 pandemic in Israel at the middle of March 2020 has disrupted all aspects of life. Schools, colleges and other higher education institutions were closed most of the time. Teaching and learning continued online in an ERT (emergency remote teaching) format. The situation confronted teachers and students with entirely new challenges of uncertainty. The present study focuses on the perspectives of pre-service teachers in Israel regarding their practical experience training during the times of the covid 19 pandemic. The research hypothesis assumed that the complications caused by the pandemic will have a negative impact on how the pre-service teachers assess the quality of their practical training, which would be reflected in difficulties in their integration at work, their sense of efficacy in teaching, their teaching methods and their reluctance to continue teaching. The study examines the correlations between the assessment of their practical training experience and their self-reported self-efficacy, use of various teaching methods, integration at work, and the willingness to remain in the teaching profession. All at the time of the pandemic.

Our main findings indicate that they assess their practical training as good (3.69); have a high sense of professional self-efficacy (4.06); use a variety of teaching methods; and express their desire to continue teaching (3.97). Overall, the findings indicate correlations between the interns' positive assessment of their practical training and their high self-efficacy, their use of a variety of teaching methods, and their desire to continue teaching.

Keywords: teacher training, practical experience, self-efficacy.

1. Introduction

The outbreak of the COVID-19 pandemic in Israel at the middle of March 2020 has disrupted all aspects of life. Schools, colleges and other higher education institutions were closed most of the

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time. Teaching and learning continued online. The epidemic confronted teachers with entirely new challenges and more complicated struggles with online teaching (Huber, Helm 2020). In this respect, Pre-service teachers found themselves adjusting quickly to remote teaching and learning online (Nissim, Simon, 2021).

The present study focuses on the perspectives of pre-service teachers in Israel, on their practical experience training during the transition from third year, where they encountered Emergency remote teaching at schools, to their internship in the fourth year – all during the times of upheaval caused by the covid 19 pandemic. The research examines the correlations between their practical training and their sense of self-efficacy, the use of various teaching methods, integration at work, and desire to continue teaching – all at the time of the covid 19 pandemic.

The research hypothesis assumed that the complications caused by the pandemic will have a negative impact on how the pre-service teachers assess the quality of their practical training, which would be reflected in difficulties in their integration at work, their sense of efficacy in teaching, their teaching methods and their reluctance to continue teaching. This is a quantitative study drawing on self-efficacy theory in teacher training (Bandura, 1997). It aims to demonstrate that the pre-service teacher's perception of the quality of their practical training is a factor decisively influencing their integration at work, sense of self-efficacy in (high-quality) teaching, and desire to continue working in the profession.

Literature Review

The COVID-19 pandemic has halted activities in most spheres of life worldwide. In mid-March 2020, the Israeli Council for Higher Education forced the campuses to transfer all their activities to remote teaching and learning to protect the health of the students and the staff (Cohen, Davidovitch, 2020). At most Israeli institutions of higher education, until the outbreak of the pandemic, studies took place face-to-face in campus classrooms. Practical experience in teacher training took place at schools and kindergartens. Since March 2020 the schools have been closed most of the time, while relying on remote teaching and learning. Due to the pandemic, six months of the pre-service teacher's year of practical training were unconventional. That period was characterized by uncertainty, anxiety, and confusion. The pre-service teachers integrated as much as possible in remote teaching or teaching face to face in 'capsules' (small study groups) and did not always get the opportunity to practice teaching their specific subjects and had to rely on remote learning for their academic studies as well as their pedagogical training. Furthermore, the instructional teachers (veteran teachers that trains the pre-service teachers at his classroom) meant to accompany the pre-service teacher had no time for instruction and did themselves not fully master remote teaching.

The pre-service teacher investigated in this study also began their internship at school during the pandemic. Finding a job, integration at work and the first teaching experience were shaped by the conditions during the pandemic – remote teaching, lockdowns, physical distancing from students and staff, the need for flexibility and creativity in teaching, etc.

The shift to remote teaching and learning was accompanied by difficulties arising from prejudice against such learning, the lack of self-discipline and of a suitable learning environment at home (Bao, 2020) as well as a feeling of isolation, not belonging to a study group (Peacock et al., 2020). Moreover, there have been more reports of feelings of anxiety, uncertainty and confusion, lack or loss of concentration during lessons as well as problems at home that made learning difficult if not impossible (Nissim, Simon, 2020). Abiky (2021) noted the Current literature still has a gap on the challenges faced by early career teachers as a result of the quick and unprepared shift to online teaching. As the situation evolves more, pre-service teachers found themselves with little help or guidance: 'some thrive, some sink and most find it difficult but struggle through' (Secret Teachers, 2020). In light of these indicators, we formulated the pessimistic hypothesis that the circumstances during the pandemic are inflicting significant harm to the pre-service teachers training, practical experience, and sense of self-efficacy. But we were not quite right.

The Structure of Teacher Training in Israel

Few professions have such a significant impact on society as teaching. This has made the need and demand for good teachers a priority in advanced societies (Arnon et al., 2015). Yet, the path to acquiring professional training as teachers is tortuous and complex. Throughout the four-year

programme, students undergo a process of development and learning and build their personal and professional identity while doing, experiencing and observing (Naifeld, Nissim, 2020).

There are different approaches to the nature of practical experience and its goals. The practical experience in schools and kindergartens allows for practical training in teaching students face to face in class, for receiving feedback and evaluation, and for the experience of professional development. (Wang, Odell, 2002; Mena et al., 2017; Orland-Barak, Wang, 2020; Ran, 2017; Yogev, Zuzovsky, 2011). The practical training is very meaningful for the quality of the students' teaching later on and its direct contribution to their achievements (Arnon et al., 2019; Ran, 2018; Ronfeldt, Reining, 2012).

There are three main models for the practical training in Israel today: (1) the traditional model; (2) the participatory-collegial models, such as the Professional Development School (PDS); (3) the clinical models emphasizing competencies alongside academic theoretical training at schools (Zilberstein et al., 2005; Ariav, 2014; Ariav, Smith, 2006; Maskit, Mevurach, 2013; Zilberstein et al., 2005; Ariav, 2014; Ran, 2018; Kriewaldt, Turnidge, 2013).

In recent years there has been a programme called 'Academia and Classroom' a collaborative PDS model, where third-year students practice teaching on three days each week (Ministry of Education, 2014; Ran, 2018; Sperling, 2017).

The teacher training programme prepares the students to be able to teach in a way that facilitates their students' learning and development and their acquisition of various types of knowledge (Shulman, 1987; Abrams, 2018; Elmore, 2000). This expertise is formed into a 'profession' that requires dedicated training and mastery of complex knowledge (Shulman, 1998). Qualified professional teachers are those who impart valuable processes to their students and social surroundings; those combining involvement and interest, promote research, and develop learning strategies and feedback venues (Ministry of Education, 2014).

Practical experience in schools or kindergartens is the most important stage in teacher training. The students learn about themselves, their knowledge and skills, and consolidate their identity and educational worldviews (Walkington, 2013; Orland-Barak, Wang, 2020). The pedagogical training during the practical stage is considered an essential developmental process, in which the instructors and the trainees embark on a personal-professional journey. There is a positive effect of the practical stage on the teacher training and especially the trainees' preparedness for their later teaching career (Hammer-Budnaro, 2014; Yogev, Zuzovsky, 2011; Schatz-Oppenheimer, Dvir, 2010).

The first steps of novice teachers may have significant implications for their professional future. They come to the educational system with ambition, enthusiasm and excitement about educational work (Abrams, 2018). The research literature is saturated with gloomy descriptions of the difficulties faced by novice teachers. The terms 'shock' and 'survival' are dominant concepts in descriptions of the entry into the teaching profession (Naser Abu-Alhija et al., 2011). Novice teachers report many difficulties, such as a lack of tools for their work, a lack of support at school, feelings of frustration, the mismatch between pay and effort, loneliness, and a loss of self-confidence (Arviv-Elyashiv, Zimmerman 2013; Andrews et al., 2007; Fantilli, McDougall, 2009; Maskit, 2013). The difficulties experienced give rise to a feeling of personal incompetence, as reflected in a high dropout rate among novice teachers (Ido, Shkedi 2014; Sasson et al., 2020). In Israel, the dropout rate is very high (about 30 percent) during the first five years, and especially the first two years, after entering professions in education and teaching (Central Bureau of Statistics, 2019; Kfir et al., 2006).

The situation during the COVID-19 pandemic requires teachers to have a series of competences, more than just knowledge and skills; it also requires confidence in their abilities to be successful in online teaching. Studies have pointed out the importance of teachers' self-efficacy as significant features of teacher competences. Teachers with higher levels of openness to experience and conscientiousness reported a stronger sense of efficacy (Djigić et al., 2014). Personal values are also significant predictors of self-efficacy. Openness to change and self-enhancement are positively related to self-efficacy (Sousa et al., 2012). The novice teachers' sense of self-efficacy is a significant factor differentiating between those who can realize their potential and effectively deal with the challenges of the profession and those who cannot (Bandura, 1997; Glasner, Cleave-Hogg, 1996). Self-efficacy theory assumes that people acquire information for assessing efficacy from their performance achievements, experiences, observations, persuasions,

and physiological metrics. Personal performance provides individuals with reliable guidance for assessing their own abilities. The sense of self-efficacy increases with successes and is reduced by failures. Yet, once a strong sense of self-efficacy has developed, failure may not affect it significantly (Bandura, 1997). Among teachers these feelings influence their professional teaching abilities and their sense of satisfaction and success (Friedman, Kass 2000; Troesch, Bauer, 2017).

High self-efficacy in teachers is associated with less stress, burnout and alienation and more satisfaction as well as better pedagogical performance manifested in classroom management, the coping with discipline issues, emotional response to each student and the ability to foster student motivation and academic achievements (Holbein et al., 2016).

During the 'Corona year' teacher training became even more complex and challenging. The schools were at times closed or only partially open (Nissim, Simon, 2020). This period was a catalyst for developing techno-pedagogical skills, learning diverse modes of teaching, assessment, treatment of attitudes and beliefs, and addressing pupils' emotional, social and identity issues in this unique time (Orland-Barak et al., 2020; Huber, Helm 2020; Fernando et al., 2020). Though the importance of integrating technology in teaching had been recognized before the pandemic, until then the reform seems to have been limited and temporary without significant impact on the system. Despite familiarity of online learning among students, some teachers are still having some considerable doubts about the value and quality of online teaching practices (Baran, 2011). Teachers adopted new methods slowly, reluctantly, apprehensively and insecurely, if at all, due to fear of change, time pressure or inability (Buda, 2020; Selwyn et al., 2009; Warnich, Gordon, 2015). Principals and teachers, who train the pre-service teachers, had to deal with instability, uncertainty, technological challenges arising from remote teaching, while managing a flexible framework that changes frequently in accordance with health guidelines (Huber, Helm, 2020; Fernando et al., 2020). Teachers were required to teach remotely in an active and diversified manner, to ensure contact and communication with and among the pupils, to give the personal attention and to attend to emotionally stressed pupils (Fernando et al., 2020). Teaching at the time of the pandemic has created psychological effects as: anxiety and panic among students and teachers (Muacevic, Adler, 2020). The level of anxiety and stress lead to some undesired effects on both teachers and students (Zhai, Du, 2020). Educational institutions found creative solutions to deal with the situation. Some chose to focus on core subjects only, while others opted to concentrate on emotional rather than academic issues (Fernando et al., 2020).

The students experienced remote teaching both as students and as teachers, when they taught pupils during their practical training in schools. They thus gained experience in emergency remote teaching a valuable skill for future teachers (Nissim, Simon, 2020). The transition from traditional teaching, to distance online classes would not be smooth or even easy (Adnan, Anwar, 2020; Nissim, Simon, 2021). The quick shift caused many challenges (Crawford et al., 2020).

This study aims to examine the pre-service teachers from their trainees' point of view on the practical training during the 'Corona year', with regard to their self-efficacy and its impact on their integration as novice teachers. Focusing on demonstrating that the students' perception of their practical training is an influential, formative factor that has implications for their integration at work, their sense of professional self-efficacy, the quality of their teaching and their desire to continue working in the profession. All these aspects are examined during a time of crises and uncertainty that overshadowed the students' last semester and the beginning of their internship at school.

Research Questions

How do the interns, who underwent practical teacher training in 2020, perceive the quality of that training under the exceptional conditions of the pandemic?

How do the interns perceive the impact of the pandemic on their integration at work and are they interested in continuing to work as teachers?

Is there a correlation between the interns' perception of the unique training experience this year and their sense of self-efficacy in teaching?

Is there a correlation between the interns' perception of the unique training experience this year and the quality of their teaching and their ability to use a variety of pedagogical tools?

To what extent did the interns' perception of the unique training experience this year affect their integration at work and their desire to continue working in the profession?

Research Hypothesis

The first research hypothesis was that the interns will perceive their practical training as deficient, feel that they were not well prepared for teaching and point out difficulties in their integration at work, their sense of self-efficacy, their teaching methods, and their desire to continue working as teachers.

The second research hypothesis was that there are correlations between the interns' perception of their practical training and the other indicators evaluating their work as novice teachers, due to the great significance of the practical training for preparing novice teachers for work.

2. Materials and methodology

The present study is a quantitative study drawing on the self-efficacy theory in practical teacher training. The research is based on an attitude survey conducted among students in a teacher training colleges at 25 teacher training institutions in Israel. We examine the relationship between the perception of the practical teacher training during the pandemic and its effect on the sense of self-efficacy, the use of pedagogical and other tools, the integration at work, and the willingness to remain in the profession.

The quantitative approach was chosen in order to obtain as broad and accurate information as possible from the perspective of students in the practical training stage at 25 teacher training institutions in Israel and to examine quantitative correlations through them.

The research method is thus a process of data collection, and evaluation. The data underwent the standard statistical tests. We used the statistical software package for the social sciences, version 23 (SPSS Inc., IL). The questionnaire was found have high reliability (Cronbach's alpha = 0.945).

This method provides practitioners with new knowledge about how to improve educational practices or resolve significant problems in educational initiations using a systematic process, participatory in nature, to bridging the gap between research and practice (Hine, 2013). The survey questionnaire presented to participants drew on validated research tools that has been used and validated in a number of previous studies and asked students to self-report about their attitudes (Fraser, 2007; Sasoon et al., 2020).

The study is drawing on the self-efficacy theory in practical teacher training. We examine the relationship between the perception of the practical teacher training during the pandemic and its effect on the sense of self-efficacy, the use of pedagogical and other tools, the integration at work, and the willingness to remain in the profession.

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Research Process

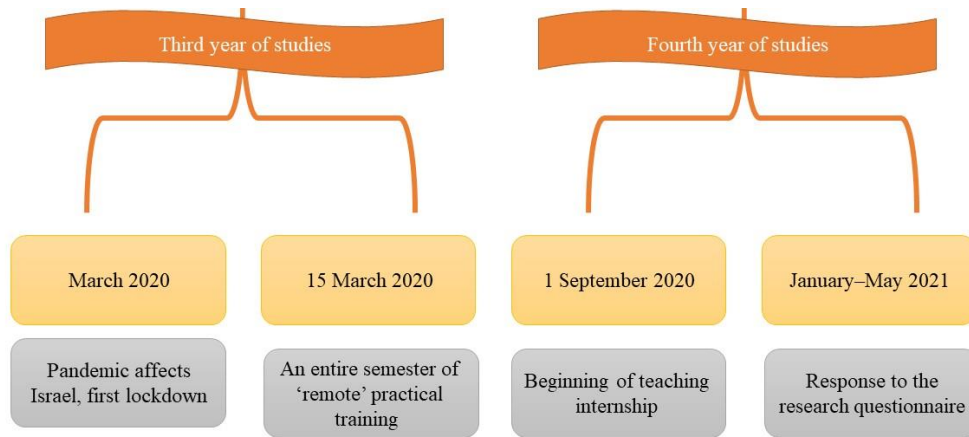
A validated research questionnaire was distributed, in a single-stage distribution, by e-mail to 800 graduates of teacher training institutions in Israel (19 colleges and six universities), who completed their third year in June 2020 and began their teaching internship at the beginning of September 2020. Out of those, 126 (= N) responded. The sample was random; the response anonymous. The data collected underwent the usual statistical examination.

Research Tools

The research tool was a questionnaire composed of 43 statements, each on a 1-5 Likert scale. It was consisted of several parts:

Questions pertaining to feelings about the practical training during the pandemic, which included 13 statements divided into three topics: (a) assessment of the practical training (statements 1-4); (b) evaluation of the subject(s) taught during the training (statements 5-7); and (c) examination of the relationship between the 'Corona year' and its effects on the practical training (statements 8-13). This section validated by three researchers with a doctorate in education. It was found to have high reliability (Cronbach's alpha = 0.922).

Questions pertaining to self-efficacy in teaching, which included eight statements; the questions were based on the questionnaire of Chen, Gully and Eden (2001). It was found have high reliability (Cronbach's alpha = 0.945).



Students in the practical training stage for professions in education and teaching. From practical teacher training to teaching internship in the ‘Corona year’.

Fig. 1. The research procedure

Questions pertaining to the pedagogical instruments, which included 22 statements divided into six topics: (a) adjustment to the differences between the students (statements 1-4); (b) the students’ assessment (statements 5-7); (c) courses of action (statements 8–11); (d) pedagogical practices (statements 12-15; with a reversed scale in the last one); (e) collaboration with other teachers (statements 16-18); (f) remote teaching practices (statements 19-22). This section was based on the Teachers’ Pedagogical Environment Questionnaire (Ministry of Education, 2020) and the one by Fraser (2007). We adjusted the questions to be answered by teachers. The questions were found have high reliability (Cronbach’s alpha = 0.906).

Three questions pertaining to the effect of the pandemic on finding employment; on the integration at school; and on the sense of security and ability at work. This section was validated by three researchers with a doctorate in education. It was found to have high reliability (Cronbach’s alpha = 0.708).

One question pertaining to the desire to continue working as teacher in the education system.

Research Population

There were 126 (= N) participants, including 111 women (88.1 %) and 15 men (11.9 %); ages 21-52 (average age: 26.76). Most of the respondents are employed as teachers (79.4 %), mainly in part-time jobs (65.0 %), at primary schools (50.0 %) or higher schools (39.0 %); 3 % were kindergarten teachers; and 8 % worked in informal education.

3. Results

The first research hypothesis assuming that the pre-service teachers would assess the quality of their practical training during the ‘Corona year’ as deficient, was refuted. The findings show a medium-high assessment despite the complexity of the situation. The interns evaluated the practical training at schools as good (3.85); the score for the practical training in teaching their specific subjects was medium (3.53); and they did not perceive the pandemic as adversely affecting their practical training (3.69), as can be seen in Table 1.

Table 1. General characteristics, averages, standard deviations and reliability of research indices (N = 126)

Measure	Number of Statements	min	max	average	SD	α
Feelings about practical training for teaching in Corona						
Assessment of practical training	4	1.00	5.00	3.85	99.	850.

Assessment of training in subjects to be taught	3	1.00	5.00	3.53	1.12	816.
Correlation between the pandemic and the practical training	6	1.00	5.00	3.69	1.04	9.0.

In addition, the research hypothesis assumed that the interns would perceive the pandemic as a factor impairing their integration at work during their internship and that many of them would seek to leave the teaching profession. The findings do not support these assumptions. As shown in Table 2, the interns did not feel harmed (medium score) and many want to continue teaching.

Table 2. Averages and Standard Deviations of Corona Impact Indices on Work as a Teacher

Measure	Number of statements	min	max	average	SD
Impact of the pandemic on finding work	1	1.00	5.00	2.58	93.
Impact of the pandemic on integration at work	1	1.00	5.00	2.71	99.
Impact of the pandemic on performance, self-confidence and ability	1	1.00	5.00	2.89	1.02
Desire to continue working as teacher	1	1.00	5.00	3.97	1.08

The second research hypothesis assumed that there are correlations between the interns' perception of their practical training during the pandemic and the other indicators investigated. As shown in Table 1, the findings confirmed the assumption, discerning positive correlations of moderate and significant intensities between the sense of self-efficacy in teaching and each of the three indicators of the interns' assessment of their practical teacher training during the pandemic. The greater their sense of self-efficacy, the higher are the scores for the practical training and the subject taught and the more positive the perception of the connection between the pandemic and the practical training.

Table 3. Pearson correlations between feelings indices regarding practical training for teaching in Corona year and other study indices (N = 126)

Views about practical training for teaching in Corona			
The change in the Covid period	Disiplinary study	Practical experience	
.497**	.464**	.420**	A sense of competence in teaching
			Pedagogical applications
.294**	.395**	.380**	Teaching is adapted to the differences between learners
.336**	.357**	.270**	Pupils evaluation

.357**	.476**	.417**	ways of action
.265**	.194*	.122	Pedagogical practices
.375**	.480**	.420**	Collaboration with other teachers
.403**	.298**	.149	Distance teaching practices
.104	.117	.061	The influence of the covid 19 era on finding a job
.291**	.333**	.346**	The influence of the covid 19 era on Integrate schools in the
.216*	.235*	.272**	The influence of the covid 19 era on self-confident
.274**	.429**	.307**	And on The desire to persevere in the teaching profession

Note: * $p < 0.05$ ** $p < 0.01$

In addition, positive correlations of medium-low and (for the most part) significant intensities were found between the pedagogical implementation indicators and each of the three indicators regarding the pandemic's impact on the practical training. The more interns reported that they use diverse pedagogical tools, the higher the scores for the practical training and the subject taught and the more positive the perception of the connection between the pandemic and the practical training.

Furthermore, it was found that there are positive correlations of low and significant intensities between the impact of the pandemic on integration at work and on functioning, confidence and ability, and each of the three indicators for the assessment of the practical teacher training in the 'Corona year'. Yet, the correlations between the impact of the pandemic on finding work and each of the three indicators for the assessment of the practical teacher training in the 'Corona year' were not significant. It was also found that there are significant positive correlations between the desire to continue teaching and each of the three indicators for the assessment of the practical teacher training in the 'Corona year'.

4. Discussion

This study set out to examine how pre-service teachers perceive their practical training during the COVID-19 pandemic. We have focused on their perception of their professional self-efficacy, as manifested in the use of diverse pedagogical tools and their integration at work as novice teachers, aiming to demonstrate that their perception of the quality of their practical training is a decisive factor in their integration at work; and that it has a significant impact on their desire to continue working in the profession – all in the context of the emotional and academic crises and uncertainties caused by the pandemic.

First Research Question

How did interns perceive their practical training during the pandemic and their integration at work in schools?

The interns' assessment of their practical training was measured by three indicators: the practical training; the practical training in the subjects to be taught; and the possible impact of the pandemic on the practical training. Contrary to our hypothesis, our findings show that the interns did not perceive the pandemic as adversely affecting their practical training in general or in the subjects they will be teaching. The three indicators for their assessment of their practical training during the pandemic discern medium-high satisfaction (on average: 3.39), expressing their feeling that their practical training was good and prepared them well for their profession as teachers.

These findings affirm the efforts made by teacher training institutions to continue to allow students to gain practical experience despite the fact that due to the pandemic the educational institutions were closed most of the time. Despite all the difficulties, the students practiced remote teaching in various ways and could support and assist the veteran teachers, who lacked the technological skills and mastery of the new advanced platforms. Though the pandemic caused difficulties for the practical training, it also presented new challenges for the students. They got a

sense of mission and felt empowered when they were able to assist and support the schools, by face-to-face teaching when the classes were reorganized into capsules, or by remote teaching when the schools were closed during lockdowns. That is all bore fruit making it a meaningful time for the students, despite the difficulties.

Second Research Question

How did the interns perceive the impact of the pandemic on their integration at work and are they interested in continuing to work as teachers?

The findings discern that the interns did not perceive the pandemic as an obstacle to their integration at work. Moreover, they expressed their strong desire to continue working as teachers (average score of 3.97). This finding, as well, points out how important it is that students are well prepared for work.

Sense of Self-Efficacy in Teaching

In the indicator for their sense of efficacy in teaching, the interns ranked themselves on a high level (4.06). A high sense of self-efficacy in novice teachers characterizes those who feel that they have the strength and ability to realize their potential and face complex challenges in their profession (Bandura, 1997; Gasner, 1996). It is also associated with less stress, burnout and alienation as well as satisfaction finding expression in good pedagogical functioning, effective classroom management, and the use of a variety of pedagogical tools to advance the students (Zee, Koomen, 2016). These findings of high self-efficacy are particularly noteworthy given that the preparation for work and integration at work took place during the exceptionally complex time of the pandemic.

Interns' Reports on their Use of Various Pedagogical Tools

Our findings show that the respondents reported medium to high levels in all indicators for the use of pedagogical tools. Their responses were very stable and consistent, indicating balanced self-esteem. The use of diverse pedagogical tools characterizes high-quality professional teaching (Fraser, 2007). It should be noted that the interns reported that it was a didactically challenging year, requiring creativity, flexibility and professionalism in remote teaching as well.

Third and Fourth Research Questions

Is there a correlation between the interns' perception of the unique training experience this year and their sense of self-efficacy in teaching, the quality of their teaching, and their ability to use a variety of pedagogical tools?

Employing the Pearson correlation coefficient, we found moderate, positive correlations between the interns' sense of efficacy and their assessment of the practical training during the 'Corona' year. The greater their sense of efficacy, the more positive was their assessment of the practical training in general and in the subjects they will teach. In addition, significant, positive correlations of low-medium intensities were found between the use of diverse pedagogical tools and their assessment of their self-efficacy and positive impression.

Fifth Research Question

To what extent did the interns' perception of the unique training experience they had during the pandemic affect their integration at the schools and their desire to continue working in the profession?

Here, too, significant, positive correlations of low-medium intensities were found between the impact of the pandemic on the integration at work and on the interns' performance, confidence and ability, and each of the three indicators for their assessment of their practical training during the 'Corona year'. It was also found that there are significant positive correlations between those three indicators and the respondents' desire to continue working as teachers.

Only with regard to one indicator, namely finding employment, no significant correlations to the other indicators were found. That is due to the fact that finding employment for novice teachers depends on various external circumstances.

The findings correspond with other researches that aligned with the findings of Adnan and Anwar (2020), and Crawford, Butler Henderson, Rudolph and Glowatz (2020). Those students were not prepared to the situation of online teaching and learning. In addition, some of the challenges highlighted in the current study aligned with the recent studies in Watson and Scottle's study (2020) and Kaur (2020);

The findings allow us to discern circular mutually supportive correlations between the practical training and the other indicators (see Figure 2).

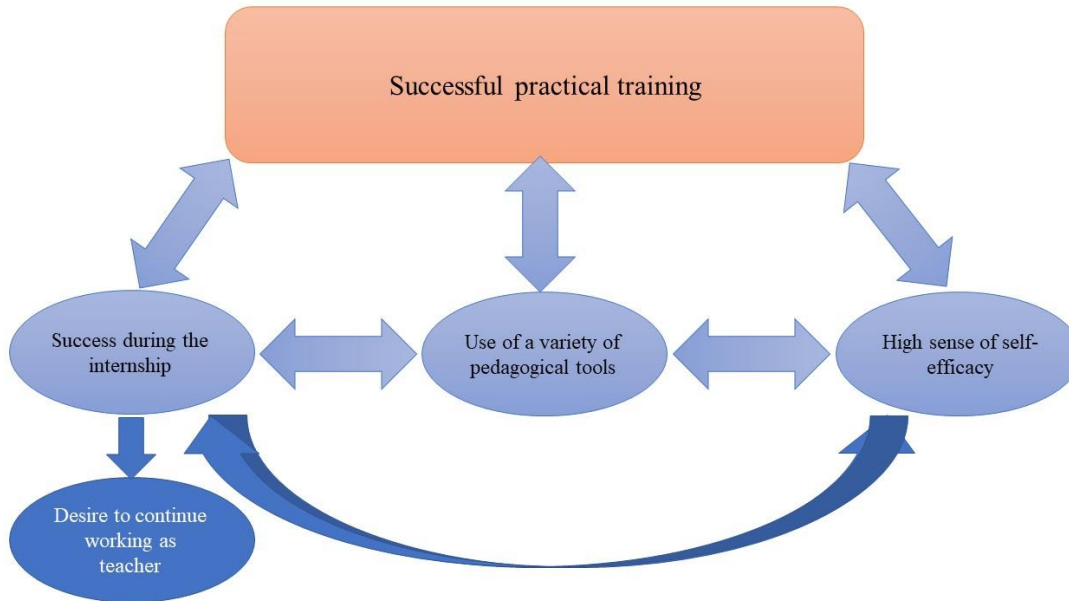


Fig. 2. Successful practical training

A high sense of self-efficacy leads to qualified teachers, who use a variety of pedagogical tools, which in turn leads to a sense of successful integration at work and the desire to continue working as teacher. These insights correspond with previous studies (Friedman, Kass, 2000). In a parallel process, the sense of efficacy, success and satisfaction in teaching leads to a more positive reflective view on the practical teacher training, which is further strengthened given that the practical training and the integration at work took place at a time of uncertainty, lockdowns and remote teaching.

5. Conclusion

This study has sought to open a window into the field of the students' perceptions of their practical teacher training during the COVID-19 pandemic that disrupted established orderly processes. The study hypothesized that the pandemic would have a negative impact on novice teachers' performance, their sense of self-efficacy, the range of pedagogical tools they are able to employ, causing difficulties in their work and a reluctance to continue working as teachers, was proven wrong by the research findings.

From the findings it is evident that the uncertainty created by the pandemic has enabled students to act in a different, unique way in the training processes, allowing them to become novice teachers with a high sense of self-efficacy, a wide range of pedagogical tools and a positive experience in the integration at work, who are able to function well at times of uncertainty. The study indicated that the pandemic challenges and its impact vary among novice teachers some were able to overcome the challenges, some were able to quickly adapt, and some just could not. The pre-service teacher tried to learn new tactics to overcome those challenges and keep going.

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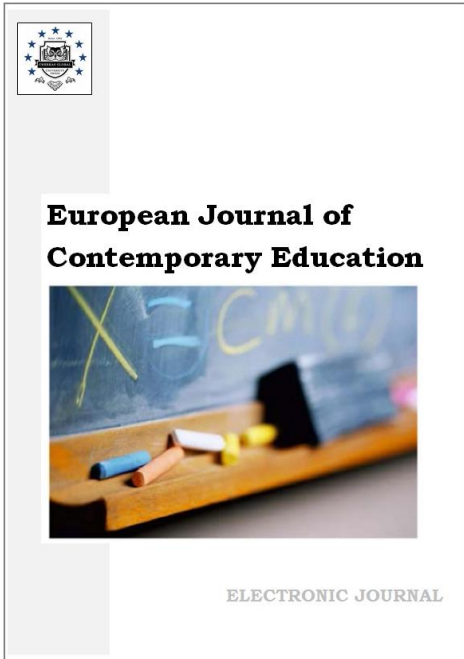
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Creative Abilities of Students with Dominant Cognitive Style

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Abstract

The article examines the problem of creativity development, taking into account students' cognitive styles. We studied theory assumptions for cognitive styles when providing psychological and educational support for the development of a person's creativity, and presented the analysis of parameters of cognitive styles. We presented arguments that a person's cognitive style has a set of invariable constituents that manifest themselves in perception, processing, and use of information, as well as in variable ways to use the information space. We revealed the content characteristics of the cognitive style. We found that the majority of participants were characterized by field dependence and integrity and proved that parameters of cognitive styles are interrelated with self-regulation and creativity. In case of field independence and differentiation, the biggest changes were observed in the development of modeling, flexibility and curiosity. Prevailing field dependence and integrity had a positive effect on the development of emotional sensitivity (empathy), intuition and a creative attitude towards a profession. Students with different parameters demonstrated differences in the development of creativity components. The research provides empirical evidence for using psychological and educational support to develop students' creative abilities. The authors highlighted the possibilities of psychological and educational support for creativity development, taking into account students' cognitive styles.

Keywords: cognitive style, field dependence, field independence, differentiation, integrity, creativity, psychological and educational support.

1. Introduction

Educators pay much attention to students' creativity development. It is due to constantly changing living and working conditions, which necessitates teaching/learning organization in such a way that students can project outcomes when studying and after graduation. The issues of

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creative abilities development are not new. They have been analyzed by many authors. But any recommendation can be ineffective if a person's cognitive sphere peculiarities are not considered. It is here that incoming information is processed. Considering a cognitive style as a way of perceiving and processing information, which is unchanged throughout life, we can talk about characteristics that can influence the manifestation and development of creative abilities. We agree with Mamedova et al, who define a cognitive style as individual differences in information processing, and types of people, depending on the characteristics of the cognitive sphere (Mamedova, 2016). Each person is characterized by such parameters of working with it, which not only indicate creative abilities in a particular area, but also determine the characteristics of the ideas generated in accordance with their cognitive styles.

Creativity is a concept that includes personality traits and inclinations in specific activities. Invariably, creativity is included in every group related to creative work. In our study we focused on creativity as an element of creative abilities.

We agree with Ilyin, who considers creativity as a systemic (multilevel, multidimensional) mental concept. It includes intellectual potential and is associated with motivation, emotions, the level of aesthetic development, existential, communicative parameters, competence, etc. (Ilyin, 2012). Creativity is demonstrated in all spheres of activity and at different levels (personal, procedural and productive) (Ilyin, 2012).

Creativity as a process reveals itself in stages and implies:

1. A motive stimulating the creation of a new product;
2. Imitation and use of standard ways of doing things;
3. Transformation of the available methods in accordance with individual characteristics and the introduction of personal experience;
4. Harmonization and individualization of the result.

To understand the role of creativity in professionally relevant traits of perspective specialists of a "person-to-person" sphere, we analyzed its components. Barysheva describes creativity through emotional (empathy, lability, emotional thesaurus), intellectual (intuition, divergence, etc.), aesthetic (sense of style, sense of humor, etc.), communicative and existential parameters (Barysheva, 2012).

Vishnyakova views creativity as a personal characteristic, a creative process, and a result (Vishnyakova, 1996). The author considers creativity as a problem sensitivity and openness to new things. It implies the destruction or change of habitual forms of behavior and methods of activity (Vishnyakova, 1996). The author singles out the following components of creativity: creative thinking, curiosity, originality, emotional sensitivity (empathy), sense of humor, intuition, imagination and attitude to the profession. In this paper, we analyzed creativity through the structure proposed by Vishnyakova.

Creativity development is viewed from different positions. The problem is rather developed both in Russian and foreign literature. Allinson and Hayes presented empirical evidence for an intuitive-analytical dimension of a cognitive style (Allinson, Hayes, 1996). Despite the empirical data that emphasize the effectiveness of creativity development in conjunction with cognitive sphere (Hayes, Allinson, Dietrich, etc.), there are issues that have received little attention. We will consider the ways of creativity development, taking into account participants' cognitive-style organization (Dietrich, 2004).

According to Narcissova, "cognitive style" has two definitions. In a narrow sense, it is a way of solving problems. Broadly it implies stable individual "differences in the organization of information selection and processing" (Morozova, 2009). Witkin considers a cognitive style as "stable symptom complexes, personality-related individual and age-related differences in cognitive activity" (Morozova, 2009). Witkin and Oltman proposed five criteria for distinguishing styles and abilities: 1) abilities are associated with the level of achievement, while style characterizes the way an activity is performed; 2) a style is bipolar, an ability is unipolar; 3) abilities have a value context, value judgments are inapplicable to styles – in other words, both poles of any style are equivalent from the point of view of the productive aspects of activity; 4) a style is stable over time; 5) a style is steadily manifested in different conditions, while an ability is characterized by specificity in relation to a certain type of activity and can change over time (Morozova, 2009).

Summarizing the approaches of Kestrin-Gloger, Petzold and Nickel, Wordell and Royce, cognitive styles can be classified into three groups: formal, thematic, and mixed ones. These groups

include cognitive and affective components. The authors group all styles as cognitive (reflect only the cognitive aspect), affective (include emotions, values and personality traits) and cognitive-affective (reflect the influence of emotions and the personal aspect on cognitive activity) (Shkuratova, 1998).

Armstrong, Rayner and Peterson define the cognitive style as an individual peculiarity that characterizes the way of information processing (perception, organization and analysis) using various mechanisms and structures of the brain (Armstrong et al., 2012). Ehrman and Leaver classify cognitive styles in terms of two higher-order constructs such as *synopsis* and *ectasis*. These constructs can be understood as bipolar phenomena, which, on the one hand, reflect an integral process, and on the other, describe the nature of all the elements. The complex nature of the model provides a variety of combinations of style organization, providing increased awareness of supervised learning (Ehrman, Leaver, 2003).

Kholodnaya defines them as “individually unique ways of processing information about one's environment in the form of individual differences in perception, analysis, structuring, categorization, and assessing what is happening” (Kholodnaya, 2004). The author distinguishes the following parameters of cognitive styles: field dependence/independence, narrow/wide range of equivalence, narrowness/breadth of categories, flexible/rigid cognitive control, tolerance to unrealistic experience, focusing/scanning control, leveling/sharpening, impulsivity/reflexivity, cognitive simplicity/cognitive complexity (Kholodnaya, 2004).

We agree with Volkova and Gusev, who state that current research is characterized by understanding the functional significance of a cognitive style as a psychological means of regulating cognitive activity and a person's adaptation to its conditions. In general, cognitive styles can be viewed as a system that regulates the relationship between the individual psychological characteristics and environmental demands (Volkova, Gusev, 2016).

Of all the variety of parameters found in literature, we will analyze the two: field dependence and field independence and differentiation and integrity. The choice is due to the data related to creative abilities (Paliy, 2013). Field dependence – independence (FD, FI) was identified in 1954 by Witkin as an indicator of field differentiation. In case of field dependence, the perception of the background of the field and the need for a longer time for the allocation of a stimulus in this field are dominating. A complex image (object) acts as a perceptual field, and its detail is a stimulus. Thus, the perceptions of field-dependent people “are predominantly holistic, global and undifferentiated” (Shkuratova, 1994). Field-independent people are characterized by opposite: they are able to quickly overcome the influence of the background (context) and highlight the necessary element, which is achieved due to the ability to control visual perception and rely on internal evaluation criteria (Shkuratova, 1994).

The cognitive style is constant and manifests itself in all human activities, in uncertain situations its role in thinking increases. Field-dependents are more guided by information coming from others, while field-independent people ignore other people's opinions and prompts. They are guided by their own understanding of the situation. In rest, the reaction to external information does not differ in representatives of these groups (Morozova, 2009).

Differentiation and integrity reflect the perception and processing of information as a generalized and whole picture, or fragmentarily, with isolated components. The parameter is characterized by the generalization of the “image of the world”, which consists in the abstractness or concreteness of the semantic field of the individual, the emotional saturation of cognitive processes, and the activity of cognitive processes (Morozova, 2009).

Depending on the dominant pole and the parameter level, there are several strategies of Differentiation/Integrity. Integral-theoretical strategy is characterized by the fact that information is assessed in a generalized, abstract way. The situation is assessed as a whole, without taking into account an emotional component and activity opportunities.

Integral-active strategy implies that general features are also assessed in a situation, but the dynamics of their development is also taken into account.

Integral-emotional strategy is characterized by the fact that an emotional component, which is stable, is added to the assessment of the situation.

Differential-theoretical strategy is determined by the fact that the situation is assessed statically, but there is a selection of structural components in it.

Differential-activity strategy is characterized by the fact that each component in the structure of information is considered and evaluated in dynamics; an integral picture is not formed.

Differential-emotional strategy has features associated with the fact that the situation is given emotional force due to the introduction of a plot or the use of emotionally colored definitions (Lyatetskaya, 2014). She also singles out a mixed strategy, in which the components of the above mentioned ones are combined in different variations (Lyatetskaya, 2014).

2. Materials and methods

In accordance with the aims, we developed and conducted a study of psychological and educational support for the development of students' creative abilities, taking into account the dominant cognitive style. When designing the study, we outlined the general organization of the study, including the type and methods of consistent search for answers to the questions (Breslav, 2010).

The study was done in two stages. At first, we selected appropriate diagnostic procedures and measured the primary level of target characteristics. At the second stage, we developed and implemented the technology – psychological and educational support, and evaluated its effectiveness with diagnostic tools (Moroshkina, 2016).

To gather psycho-diagnostic information we used the following measures. To measure the level of creative abilities development we used Vishnyakova's "Creativity" test. The validity of the method is proved in the author's dissertation. The method shows the presence of significant correlations with other tests, which makes it possible to use it to measure creativity (Vishnyakova, 1996). It contains 80 questions and allows determining the level of development of the following components: creative thinking, curiosity, originality, imagination, intuition, emotional sensitivity (empathy), sense of humor, creative attitude to the profession. Each component is represented by ten questions. The assessment of the component is measured in percentage. "Creative thinking" manifests itself in the variability of working with information or literature: thinking through details, predicting the consequences of one's decisions, etc. "Curiosity" reflects an individual's desire to obtain more information, on the basis of which something new can be created. Originality is defined as a desire to transform and improve. Imagination indicates the development of a person's imaginative thinking, relying on which, s/he mentally transforms information.

Intuition is defined as an important component of creativity, characterized by the ability to predict events and trust feelings. Emotional sensitivity is considered through the manifestation of empathy as sensitivity to current events. A sense of humor is based on the ability to see the comic in information and events, as well as the degree of self-acceptance, which allows taking personal jokes objectively. Another important component is a creative attitude to the profession, which implies a willingness to take risks and spend much time on professional self-development without succeeding in this field.

To study field dependence – field independence, we chose Gottschaldt's Group Embedded Figures tests. To determine differentiation/integrity we used a test, consisting of 15 plot pictures, sequentially presented to a participant. Dubnikova and Volkova conducted a quality check of psycho-diagnostic techniques for identifying cognitive style features for their reliability and validity. According to the results, the techniques have a sufficient level of validity (Dubnikova, 2017). It consists of 30 figures, which depict complex geometric shapes that embed simple forms. A participant is asked to find simple forms in complex ones. When completing the task, the total time spent on the search for 30 figures is taken into account. Depending on the task correctness and the time spent on completing it, it was concluded that there is FD/I parameter. The technique is based on the assumption that field dependent people spend more time on solving tasks assigned to them. At the same time, FD and FI people can correctly determine all the simple forms enclosed in complex ones, and can make mistakes. Field-independent people, on the other hand, quickly find all the necessary forms and make minimum mistakes. There should be 2.5 or more times correct solutions than the amount of time spent on looking for forms.

The procedure with "15 plot pictures" was the following: after examining each picture, the participant was to describe what was depicted in it. An important requirement was the absence of instructions that could influence the participant's story. Before each picture presentation, a participant was asked one question: "What is shown in the picture?" When determining the parameter of cognitive style, the degree of detail in the descriptions given by respondents, as well as the frequency of detailed stories, were taken into account. If a participant gave general

characteristics of the objects in 70-100 % of cases, then Integrity was inherent. If the description contained a lot of details, the participant's story was in detail in 70-100 % of cases, then we could talk about Differentiation.

The study was carried out in the institute of education, Kemerovo state university. There were 100 participants in two randomized groups (50 people each) tested before and after the exposure. Randomization makes it possible to exclude the influence of participants' individual characteristics on the result, since the participants have an equal opportunity to participate in the experiment. One group is experimental (on which the studied influence is exerted) and the control group is a group of "natural development" (the participants are not exposed to any influence, but were retested after the same time as the experimental group. Groups were similar in gender and age. The respondents were 19-20 years old.

Quantitative and qualitative analysis was carried out using the methods of mathematical statistics (t is a criterion for dependent samples). The reliability of the mathematical calculations was checked using the Statistica 6.0 program.

3. Results

The empirical data obtained in the course of the experiment were analyzed using the methods of mathematical statistics. To interpret the results, we used three groups according to the level of values: low, medium and high. When interpreting the results obtained by "Creativity" test, values are defined as low if they are presented in the range of 0-30 points, values from 40 to 70 are considered average, and results in the range of 80-100 points are considered high.

The analysis of the average values obtained by the measures indicated the presence of integrity and field dependence in the majority of the participants. There were 24 students with differentiation and 76 students with integrity. By the second parameter, 32 students were field independent and 68 were field dependent. Consequently, we can say that the students are inclined to perceive information holistically, without focusing on details. In addition, the participants found the fact of accomplishing a task and its quality to be important. Quality means that the task was almost up to the requirements.

Table 1. Average values of creativity among students with different cognitive styles

Creativity parameters	Average values				Differences
	Field dependence	Field independence	Integrity	Differentiation	
	1	2	3	4	
Creative thinking	67.3	75.3	67.4	75.3	1-2, 3-4
Curiosity	57.8	58.7	60	51.6	1-3, 1-4
Originality	65	74	64.4	75	1-2, 3-4
Imagination	45.7	51.6	48.7	48.6	1-2
Intuition	63.5	64	61	68	1-4
Emotional sensitivity	72	73	74	79	1-4

According to the data presented in [Table 1](#), significant differences were found in creative thinking in participants with different cognitive styles. Values significantly differ in groups with dominant FD and FI ($t = 2.71$, variance = 98 at $p < 0.05$) and in groups with dominant integrity and differentiation ($t = 2.71$, variance = 98 at $p < 0.05$).

Significant differences in curiosity were obtained in the non-polar profiles of field dependence and integrity ($t = 2.21$, variance = 142 at $p < 0.05$) and differentiation ($t = 2.54$, variance = 92 at $p < 0.05$). The findings are comparable with the data presented in Biggs's studies, who defined style as an approach to learning, problem solving, or life in general ([Biggs, 2011](#)).

Significant differences in originality are observed in participants with different cognitive styles. The value is statistically significantly higher in FI group compared with FD group ($t = 2.87$, variance = 98 at $p < 0.05$) and in integrity group, compared with differentiation group ($t = 2.87$, variance = 98 at $p < 0.05$).

Significant differences in Intuition were obtained in the non-polar profiles of FD and Differentiation ($t = 2.54$, variance = 92 at $p < 0.05$). The findings are comparable with the data presented in the studies of Sternberg, who put forward the concept of styles as choices or preferences (Sternberg, 2011).

Having analyzed the data, we can give the following characteristics to the students' creative abilities with various cognitive-style organization.

Field dependent students mainly rely on the experience and external clues that can be set by the conditions of perception and can be typical of any group of situations. Overcoming external reference clues or conditions of perception is difficult for them and requires a lot of effort, usually preliminarily organized. In situations of uncertainty, they rely on someone else's opinion and look for support. If a creative process is attributed to uncertainty, then it can be assumed that such students are inclined to fully or partially copy samples or repeat their own good ideas several times. Learning progress largely depends on its organization. If it is necessary to reproduce topics presented in literature and a teacher chooses an authoritative teaching style, FD students will be more successful than their field-independent counterparts. When being given most of the responsibilities, they are less successful.

Students with dominant integrity tend to perceive events holistically. When comprehending an event, they select a minimum number of objects and react to the situation as a whole. In this regard, emotional reactions are fast and relatively stable.

FI students feel the need to produce new ideas, but they do not fully realize the possibilities of realizing this need. They demonstrate interest in a narrow range of issues and tend to ignore the information that goes beyond it. They have a good imagination about professional tasks, but have difficulty using imagination to predict results and possible difficulties in it.

Students with dominant Differentiation are characterized by segmentary perception of facts and events. Their world picture is fragmentary. When considering and comprehending an event, they highlight a large number of objects and often do not demonstrate consistency of ideas. They have a large emotional repertoire, but are not able to manage it. Emotional sensitivity ranges from overreaction to stiffness and extreme rationality.

Based on our findings, we developed a program of psychological and educational support. According to Krasnoryadtseva, psychological and educational support is "the creation of special conditions under which young people acquire (or expand) the experience of transforming their personal potential and the opportunities of environment (incl. academic) into personal learning resources as the process of self-creation" (Krasnoryadtseva, 2007). We focused not on the program activities, but on how they are interpreted by a student.

As a result of the program, the following changes were expected:

1. Understanding one's capabilities;
2. Correlation of capabilities with the environment (incl. academic one);
3. "The ability to work with one's own potential and the potential of the environment to create an innovative product" (Krasnoryadtseva, 2007).

During the formative experiment, we implemented measures aimed at developing students' creativity by involving them in solving creative tasks consistent with their real activity. There were three kinds of tasks: generating new ideas, increasing the interest in information by turning it into personally significant, increasing empathy and emotionality through solving personally significant problematic tasks. The use of different tasks, the successful fulfillment of which depends on the dominant parameter of cognitive style, allowed creating conditions conducive to the development of these parameters.

For differentiation-integrity, the following tasks were proposed:

- To prepare a report based on given one or several similar sources (for integrity) and on several different sources (for differentiation);
- To make up mind maps;
- To analyze literature and to compare it with scientific data, etc.

To create conditions for FD/I, we chose similar tasks, but the students were asked to choose one of the options for their fulfillment, i.e. they were to analyze factors that promote or hinder creativity development. Some students were to prepare a report, considering the information available in literature (for field-dependents), while others acted as opponents and offered alternative views, presented in other sources or based on personal experience (for field-independents).

At the end of our program, we again conducted a psycho-diagnostic study. The findings after processing the data using the Student's t-test for dependent samples showed changes that occurred between the first and second measurements (Table 2).

Table 2. Changes in the mean values of the components of creativity and self-regulation

Indicator	Average values		Students – t-test	p
	Primary diagnostics	Formative stage		
Creative thinking	71.36	75.91	-2.71	0.05
Imagination	48.64	63.64	-6.69	0.00
Emotional sensitivity (empathy)	75.00	80.91	-4.63	0.01

In our opinion, the increase in creative thinking values may be due to an increase in the degree of awareness of the creative process ($t = -2.71$, variance = 98 at $p < 0.05$). In this case, the participants strive to comprehend the peculiarities of the creative process. The students were more result-oriented and did not seek to understand the peculiarities of the creative process. In addition, the techniques we used also focused on the effectiveness of activities and working out the stages of achieving the goal.

A combination of factors of the organization of the educational process and psychological and educational support ($t = -6.69$, variance = 98 at $p < 0.05$) also affected the increase in imagination. The intensity of learning in general and the process organization in the second academic semester impose the requirements for greater thoughtfulness, which will make it possible to implement ideas in the shortest possible time without losing the quality of work. As we considered imagination, after Vishnyakova, through increased information detailing (which is also manifested in the parameters of cognitive styles), we used several techniques for its development. Psychological and educational support contributed to thinking over and detailing ideas, i.e. to increasing in Imagination.

The growth in emotional sensitivity (empathy) may be due to the inclusion of a large amount of personally meaningful information in the activities and an orientation towards identifying emotional components in it. Also, an increase in values for this component is associated with students' increased need to work in a group and, accordingly, need to be more attentive to the emotional state of others ($t = -4.63$, variance = 98 at $p < 0.05$).

There are no statistically significant changes in other components of creativity. It can be assumed that this is due to the subjectively low role of these components in the activities of the students during the period of psychological and educational support. Curiosity, intuition, sense of humor and a creative attitude to the profession play an important role in creativity in general, but do not have a significant effect on the results of the students' activity. Originality is in the range of average values, thus, the students are able to produce original ideas, but an increase in their quality and quantity at this stage is not regarded as necessary.

4. Discussion

The findings showed the changes in some components of creativity in students with dominant cognitive style. Field independent students with differentiation are characterized by significant changes in creative thinking and curiosity, while those, who are field dependent and with integrity, did not reveal significant changes in these components. Our data are consistent with

the findings by Witkin, who noted that field-dependent people have weaker behavioral control, and are also carriers of less developed defense mechanisms (Kholodnaya, 2004).

We assume that in case of study load and the need to prepare for final exams such students are not able to fully analyze the information. They focus their attention on aspects, which results in the decrease in creative thinking.

Initially, the students with integrity (at the stage of the primary diagnostics) had high values for emotional sensitivity. Within psychological and educational support, they did not have statistically significant changes in this component of creativity. Students with differentiation had significant changes. It might be due to the fact that this group, within the framework of accompanying activities, worked with personally meaningful information or, through analysis, learned to turn information into personally meaningful.

We can say that students with a predominance of differentiation and integrity are different in terms of creativity. The students, who are characterized by dominant integrity, have average creative thinking results and a high level of emotional sensitivity. This group is more stable and less susceptible to influence and change. Students with dominant differentiation have similar creative thinking and emotional sensitivity, but are more susceptible to influence and are prone to changes.

We also identified the correlation between field dependence – field independence and the components of creativity. In the target group, there were changes in imagination. At the same time, there were no statistically significant differences between the parameters. In our opinion, this is due to the presence of a large number of exercises for the development of imagination, as well as factors of academic environment, which provide equal requirements and opportunities for students with both parameters of the cognitive style. The data are comparable with those of Pezdek and Lam, who note the positive correlation between field independence, creativity and academic performance (Pezdek, Lam, 2007).

Values of creative thinking in field dependents remained at the level revealed in the course of the primary diagnostics. The changes in the group of field-independents can be caused by a decrease in the degree of individual involvement in work and relying only on external clues and demands, which has reduced the conscious creative activity.

Statistically significant changes in intuition (component of creativity, measured by Vishnyakova's test) were not found, but polarization of value was observed. Intuition among field-dependents was of medium and high values. There were decreasing values for this indicator in field-independents. Since FD students are more focused on perception and externally specified conditions, they can operate with a large amount of information about what is happening and build more objective predictions (consciously or intuitively). Field-independents are more focused on their own judgments of information and activities and have fewer opportunities to build an intuitive forecast and trust it. We agree with Henry, Roediger III, Pyc, who note that learning contributes to the development of field-independent thinking and perception styles (Henry, Roediger III, Pyc, 2012).

Similar trends were observed in curiosity. Field-dependents tended to rely on external clues of perception and were less focused on internal positions. The exercises and methods we conducted were aimed at attracting personally meaningful information, which could reduce the level of curiosity among field dependents. In our opinion, the inclusion of this kind of information increased "curiosity" in the FI students.

Field-dependent students have higher emotional sensitivity (empathy) due to their involvement in the external conditions of activity (organization of work, the emotional state of others, etc.). Field independent students are more focused on themselves and their own judgments of the situation, which reduces their emotional involvement. These data are comparable to Dunlosky et al., who noted that the ability to quickly process the information when taking notes can be considered one of the factors of academic performance at a university, which is associated with a high level of field independence (Dunlosky et al., 2013).

There are also differences in creativity among students with the dominant field dependence or field independence. Field-dependents are characterized by average imagination, creative thinking and curiosity, high intuition and emotional sensitivity. The values change if they imply an orientation towards external clues (increase in values) or a high level of personal involvement (decrease in values).

Field-independents had average values in imagination, creative thinking, intuition and emotional sensitivity, well-developed curiosity. The tendencies of changes in this category were opposite: an increase in values was observed in a situation of personal involvement, and a decrease was observed when it was necessary to focus on external clues.

5. Conclusion

After the end of the implementation of the support program the participants had changes in the values of some components of creativity and their relationship with cognitive styles. The changes can be traced by analyzing the results at each stage. At the stage of the primary diagnostics, the students were characterized by an average level in all components of creativity. This reflects the ability of the students to produce new ideas, but with a number of limitations.

The main limitation is the unconsciousness of the creative process. The students have a range of interests, which, as a rule, includes professional activity. Information that goes beyond their interests is partially perceived or ignored. In this case, originality is closely related to the creative attitude to the profession, which manifests itself in the presence of internal limitations associated with the unwillingness to actively and creatively express oneself in the profession. Values on intuition and emotional sensitivity testify to the great emotional potential of the students, but the inability to express their emotions, the predominance of the logical component in assessing the situation and expressing their attitude to it. On the "sense of humor" scale, points were obtained within the limits of average values, which is due to the tendency to perceive information holistically. In general, in the perception and operation of information, participants were characterized by an orientation towards the integrity of the picture and reliance on externally specified conditions. For most students, it was difficult to comprehensively analyze the information and evaluate it in accordance with specific conditions and their own criteria.

The results obtained in the course of the second measurement indicated the presence of changes in individual components of creativity, as well as an increase in integration between the parameters of the cognitive style and these components. The participants of the experimental group had higher values for creative thinking indicator, which resulted in generating new ideas and creating new products. Imagination values went up, i.e. the students began to detail events more often (using real or fictional facts). The emotional repertoire and the frequency of demonstrating one's emotional state have increased.

The parameters of the cognitive-style organization were unchanged, but a correlation was found between the predominance of one of the poles of the parameter and the intensity of changes. Thus, participants with predominant differentiation were characterized by greater flexibility and readiness to change than people from the poles of integrity. The relationship between FD and FI and the components under consideration varied depending on the prevailing pole. In FD students there is an increase in values for those components that imply an orientation towards external clues, and a decrease in components that require personal involvement. FI students were characterized by an increase in values with personal involvement and a decrease in a situation of orientation towards external clues or demands.

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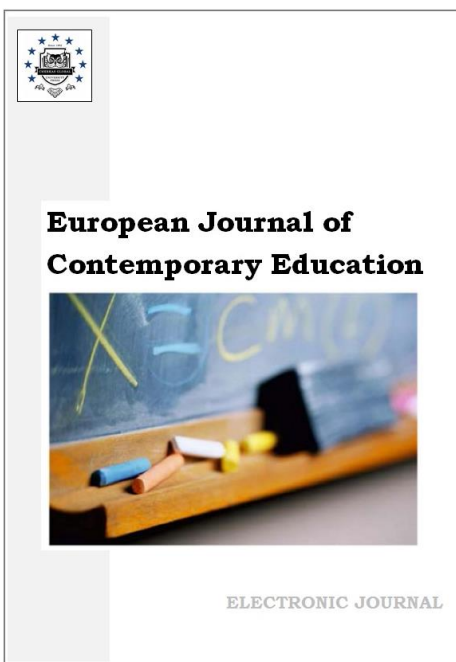
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Model of Socialization in an Orphanage

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Abstract

The article provides substantiation for the process of socialization of orphans in an orphanage. The essence of the concept of “socialization in an orphanage” is clarified. Authors consider socialization in an orphanage as the process of development of social competence of its residents that serves as a basis for orphans’ relationship with society through the implementation of an individual strategy of social learning, self-knowledge, and personal self-realization that provides orphanage residents with social knowledge, socially-oriented motives, and social experience. The main block of the experimental work was carried out based on the Pavlodar orphanage in 2020–2021. The criteria and diagnostic methods for the evaluation of social competence development in orphanage residents are identified. A Model for the development of social competence in adolescents in an orphanage including the program and purpose, activity, and reflexive and predictive components is developed and implemented into the pedagogical practice of an orphanage; based on the Model for the development of social competence in adolescents in an orphanage, the “Socialization in an orphanage” program aimed at the socialization of orphanage residents is developed. The effectiveness of the developed Model for the development of social competence in adolescents in an orphanage is proven in the course of the study of specific characteristics of orphans’ socialization in an orphanage. The study results are recommended for practical implementation in orphanages in the process of orphans’ socialization.

Keywords: model, socialization, orphanage, orphans, formation, social competence, gender.

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1. Introduction

The personality of orphaned children is explored in the works of Nissa Firghianti et al. (2019), Robert Viscusi (2018); socialization of orphaned children is researched in studies by A.N. Larin and I.N. Konopleva (2014), Syifa Rohmatin (2020), K. Doore (2020).

The methodological foundations of child socialization processes are established in the scientific school (Tagiltseva et al., 2020; Filkina et al., 2008; Bunea, 2015; Sarybaeva, Balmaganbet, 2018) that postulates that the development of an individual takes place in the process of interiorization of cultural and historical experiences and social relations. Analysis of the problem of child socialization allows concluding that the socialization of orphaned children occurs within an altered social situation of development in an orphanage formed as a result of the absence of a parental family.

Research by many educators and psychologists (Yavkina, 2019; Bettmann Schaefer et al., 2016; Sakenov et al., 2012; Utami et al., 2019; Parfilova, Valeeva, 2016; Mambetalina, 2012; Chik et al., 2020) demonstrates that orphans are characterized by a low level of social adaptation. The socialization of children in orphanages is characterized by a deprivation of the need for parental love, a lack of deep emotional contact with others, and difficulties in interpersonal communication.

Analysis of scientific studies (Daragad, Roopa, 2019; Zhubandykova et al., 2019; Harry, Hafidhuddin, 2020; Ben-Levi, 2017; Kalashnyk, 2014; Mombek et al., 2017; Viscusi, 2018) and data from practical pedagogical activities shows that the level of orphanage residents' readiness for an independent life is insufficient for complete adaptation in society.

The following contradictions are identified by us as the leading ones:

- the contradiction between the high level of modern requirements (socio-economic, psychological, political) for a socially adapted person and the insufficient effectiveness of socialization in the conditions of an orphanage;
- the contradiction between the need for new and additional models, programs, and certain instruments for improving the level of social competence in orphaned adolescents for their successful independent life and the lack of such means in the traditional system of upbringing in orphanages.

The identified contradictions and the resulting research problem shape the formulation of the study goal: to develop and theoretically substantiate the Model for the development of social competence in adolescents in orphanages that would improve the level of social adaptation of orphanage residents in the community.

2. Methods

The study deploys the following methods: theoretical: analysis of scientific literature on the problem under study to identify and theoretically substantiate the pedagogical conditions for the socialization of children in orphanages, the method is selected as a way to accumulate and organize the scientific material providing a characteristic of the examined process, to comprehend it, choose a direction of research, determine the study goal, and identify the methodology and methods for the study; the method of developing theoretical provisions of the study is chosen as a way to systematize the problem of identifying and theoretically substantiating the pedagogical conditions for the socialization of children in an orphanage; empirical methods: questionnaire, tests, interview, observation; educational experiment, analysis of documentation, the study and synthesis of experience, the expert evaluation method, self-assessment, statistical data processing methods (qualitative and quantitative analysis of the obtained data); the empirical study was conducted in the Pavlodar orphanage in 2020–2021. The overall sample of the study consists of 28 orphaned adolescents. The study participants were formally divided into the control (CG) and experimental (EG) groups, 14 people in each group.

The formative experiment was conducted in the natural conditions of the orphanage during school hours in the course of which the developed Model for the development of social competence in adolescents in the orphanage was implemented in the experimental group of orphaned adolescents. At the initial stage of the formative experiment after the implementation of the program and purpose, activity, and reflexive and predictive components of the Model in the educational process of the orphanage, the diagnostics of social competence of adolescents in the orphanage based on the selected criteria was carried out once more.

To compare different levels (high, average, low) of the criteria for the formation of social competence in children from the orphanage in the control and experimental groups (two independent samples) before and after the formative experiment, the nonparametric Pearson chi-square test (χ^2) was used.

The use of the χ^2 criterion made it possible to conclude that there were no significant differences in the results in the control and experimental groups before the formative experiment and there were significant differences in the results in them after.

3. Results

The mechanism of socialization in an orphanage as a process of development of social competence in its residents is a unified process of activity, communication, and self-awareness.

Changes in the activity sphere in adolescents consist in increasing the types of activities and orientation in each of them, comprehending new types of activities, mastering the appropriate forms, methods, and means of activity, and developing autonomy and competence. In the communication of adolescents, the formation of new relationships with adolescents of the opposite sex takes place. The circle of communication expands, its content deepens, and the assimilation of the norms and rules of behavior accepted in society takes place. In the sphere of self-consciousness, an "I-image" is formed as an active subject of activity; there is a comprehension of one's own social belonging and social role. Self-esteem, personal and professional self-determination, gender identity, socially responsible behavior, and the system of social values are formed.

When developing criteria for socialization in an orphanage as a process of development of social competence in orphanage residents, we relied on the personal characteristics of orphans and conditions of their upbringing and life in an orphanage. Below we present the criteria and indicators of the level of development of social competence of orphanage residents, as well as the corresponding diagnostic methods:

Criterion 1. Development of professional intentions. Levels: high (realizes the problem of choosing a life path, a high degree of awareness of the world of the profession in general and specific professional activities in particular, a high subjective assessment of a specific professional activity, has decided on the type of professional activity and, despite obstacles, shows high activity and perseverance in mastering it, high degree of awareness and understanding of their needs); average (considers the problem of choosing a life path as a goal in achieving some utilitarian goal motivated by short-term interests, partial degree of awareness of the world of the profession in general and specific professional activities in particular, information about the world of professions is not complete, does not cover the entire range of professions, blurry subjective assessment of specific professional activity); low (considers the problem of choosing a life path as an unpleasant necessity, lack of awareness of the world of the profession in general and specific professional activities in particular, misunderstanding of one's own needs, desires and goals related to future professional activities). Quantitative and qualitative diagnostic methods: interview, questionnaires, tests of professional intentions of adolescents.

Criterion 2. Development of gendered social and domestic skills and abilities. Levels: high (complete and solid knowledge necessary for mastering specific skills, understanding their necessity for independent living; full awareness of the value of practical skills; the desire to master specific skills and improve existing ones); average (partial knowledge necessary for mastering specific skills, insufficient understanding of their need for independent living; incomplete awareness of the value of practical skills; insufficient desire to master specific skills and improve existing ones); low (lack of knowledge necessary to master specific skills, lack of understanding of their need for independent living; lack of awareness of the value of practical skills; lack of desire to master specific skills and improve existing ones). Quantitative and qualitative diagnostic methods: conversation, questionnaires.

Criterion 3. Development of the gendered culture of interpersonal and social relations. Levels: high (normative and legal awareness of gender relations in society, the formation of ideas about the characteristics of a person's gender and gender identity, the recognition of the ideas of gender equality in the public and private spheres of a person's life, the rejection of established gender stereotypes regarding gender relations in society); average (limited legal and regulatory awareness of gender relations in society, superficial knowledge of the characteristics of a person's gender and gender identity, lack of activity and insufficient interest in studying and solving gender

issues, recognition of ideas of gender equality or in the public or private spheres of a person’s life); low (insufficient regulatory and legal awareness of gender relations in society, knowledge of the characteristics of a person’s gender and gender identity remain at the level of determining biological sex, lack of interest in studying and solving gender problems due to a lack of understanding of the essence of this issue). Quantitative and qualitative diagnostic methods: conversation, testing the needs for communication and achievement.

Criterion 4. Development of healthy lifestyle skills and gendered self-acceptance. Levels: high (deeply understand the importance of health as a universal value, the need to develop their own individual program of life, responsibly and positively treat their own health and the health of other people, always strive for physical, mental, and moral self-development); average (mostly, they understand the importance of health as a universal human value, they are predominantly responsible and positive about their own health and the health of other people, although they strive for physical self-development from case to case); low (don’t understand the importance of health as a universal value, the need to develop their own individual program of life; irresponsibly treat their own health and the health of other people, do not strive for physical, mental and moral self-development). Quantitative and qualitative diagnostic methods: conversation, tests of personal self-esteem.

Summarizing the results of the ascertaining stage of experimental work, we conclude that the real level of development of social competence in most students is not enough for independent life as the inadequacy of self-esteem and ambitions, underdevelopment of the need for communication and achievement, an increased level of general anxiety, and a generally low level of social competence is observed both in the control and experimental groups.

In the course of the formative stage of the study, we designed a model for the development of social competence in adolescents in an orphanage presented in Figure 1. Further on, the “Socialization in an orphanage” program was developed based on this model for work with the experimental group of orphanage residents.

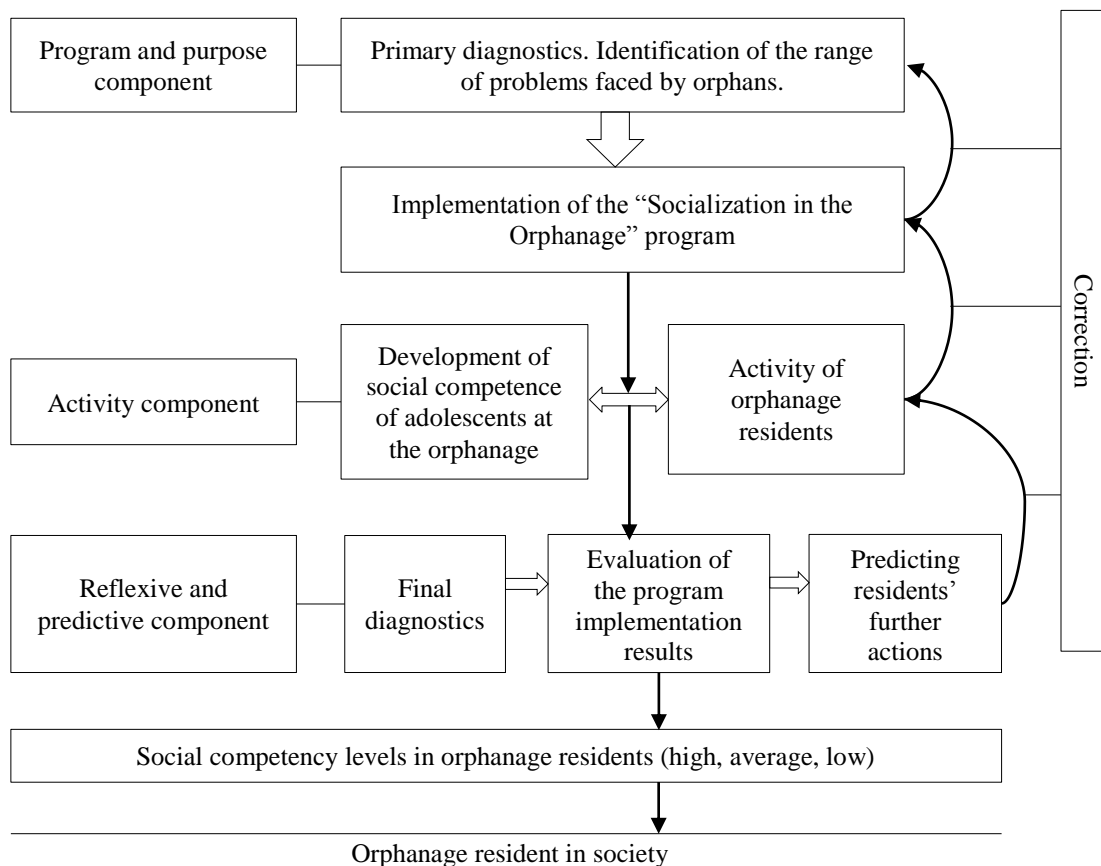


Fig. 1. Model for the development of social competence in adolescents at the orphanage

Components of the Model for the development of social competence in adolescents in an orphanage (Figure 1).

1. The program and purpose component comprises primary diagnostics aimed at identifying the range of problems faced by orphanage residents and the development and implementation of a set of measures to overcome the difficulties and problems of socialization of an orphanage resident.

2. The activity component of the program is represented by the realization of the “Socialization in an orphanage” program in the experimental group. Proceeding from the understanding of the situation of orphans in the conditions of the orphanage and modern society and taking into account the peculiarities of their development, there is a need to implement a program for the socialization of orphanage residents. The program is designed to promote the development of social competence in adolescent and young adult orphanage residents accounting for their specific characteristics.

3. The reflexive and predictive component of the model implies the evaluation of the program implementation results, specifically conducting final diagnostics of the level of development of social competence (high, average, low) in adolescent orphanage residents, conducting correction procedures, and predicting residents’ further actions.

The content of the “Socialization in an orphanage” program was developed based on the principles of humanism (understanding a person as a unique open system capable of change and development in the process of pedagogical interaction, the strategy of interaction with an adolescent is based on a subject-subject relationship; a child is an independent and responsible subject of their own development), naturalness (educating children according to their gender and age, forming responsible attitudes toward themselves and their lives), cultural appropriateness (education based on universal human values), and the effectiveness of social interaction (expanding the spheres of communication, developing gender-specific social and everyday skills) (Kapustina, 2021).

Implementation of the program minimizes the range of problems faced by orphanage residents in socialization and promotes the assimilation of social experience for their further adaptation in society. The obtained knowledge, abilities, and skills facilitate the socialization of orphanage residents after they leave the institution.

The final stage of experimental work involves a comparative analysis of diagnostic data on the levels of development of social competence in orphanage residents before and after the experimental work which allows us to trace the positive dynamics of this process.

A comparison of the initial and final diagnostic results on the level of social competence development in orphanage residents at the ascertaining and control stages of experimental work by all of the examined criteria is presented in Table 1.

A positive dynamic is found in all of the identified criteria of social competence development in the experimental group which indicates that the goal of the study is achieved. At the control stage of the experimental work, an analysis was made of changes in the level of formation of social competence in both the experimental (EG) and control (CG) groups of orphanage residents. The results of this stage of the study show a positive dynamic in the level of development of social competency in the experimental group by all of the criteria (Table 1).

Table 1. Changes in the level of development of social competence in orphanage residents before and after the experiment

Criteria	Level	Primary diagnostic results (in %)		Final diagnostic results (in %)	
		CG	EG	CG	EG
Development of professional intentions	high	7	7	7	50
	average	29	29	29	36
	low	64	64	64	14

	χ^2	0,0		65,244 (p < 0,01)	
Development of social and domestic skills	high	7	7	14	50
	average	21	21	29	36
	low	72	72	57	14
	χ^2	0,0		47,046 (p < 0,01)	
Development of the culture of interpersonal and social relations	high	7	7	7	50
	average	21	21	29	36
	low	72	72	57	14
	χ^2	0,0		59,075 (p < 0,01)	
Development of skills of healthy lifestyle and self-acceptance	high	7	7	7	36
	average	14	14	29	50
	low	79	79	57	14
	χ^2	0,0		51,004 (p < 0,01)	

The nonparametric Pearson's chi-square test (χ^2) confirms statistically significant differences (χ^2 crit=5.991 at a significance level of 0.05, empirical value $\chi^2 = 19.79$, which is greater than the table value) in the level of social competence in adolescents in the control and experimental groups. Verification of the effectiveness of the Model for the development of social competence in adolescents in the orphanage using Pearson's chi-square test (χ^2) shows statistically significant positive changes in all criteria of the development of social competence in orphaned adolescents; thus, the conducted experimental work confirms the effectiveness of the Model for the development of social competence in adolescents in the orphanage.

4. Discussion

The novelty and originality of the present study are evident in the fact that, unlike the studies of Lyudmila Kulikova (2018), Kwabena Frimpong-Manso (2021), Kate Quealy-Gainer (2020), P.P. Shcherbinin, I.A. Shikunova (2020), A.D. Syzdykbayeva, A.S. Mambetalina, A.S. Nuradinov, M.B. Kurmanbekova, Z.B. Kabyzbekova (Syzdykbayeva et al., 2020), it proves the effectiveness of the Model for the development of social competence in adolescents in the orphanage, as well as the proposition that the criterion-based evaluation of changes in the level of development of social competence in orphanage residents should be based on such personal qualities as emotional stability, sociability, high level of self-control in communicating in a team, calmness, and trustworthiness. The decisive pedagogical aspect that allows concluding on the successful socialization of an orphanage resident comprises satisfaction with their gender position, their work, and their relationships with adults and peers.

In independent life, orphans will have to enter into social relationships, which requires the development of social skills and abilities – responsibility and the ability to make choices and work in cooperation. It is necessary to technologically diversify the environment and forms of social life. Since this discussion considers orphaned children, it is here that a development-inducing environment must be created to maximize the expansion and deepen of a child's socialization in three main areas: activity, communication, and self-awareness. This process can be largely promoted by orphans' active participation in the work of a children's organization under the pedagogical condition of joint activity of children and adults, i.e. cooperation. The process of giving children an opportunity to offer their options of forthcoming social activity and arrangement of daily life which, in turn, is an important pedagogical condition for children's socialization in an orphanage, is technologically justified.

5. Conclusion

1. The essence of the concept of "Socialization in an orphanage" applied to orphanage residents at the stage of preparing for an independent life is clarified. Socialization in an orphanage is viewed as a process of development of social competence in orphanage residents that provides a basis for their relationship with society through the realization of an individual strategy of social

learning, self-knowledge, and personal self-realization providing them with social knowledge, socially-oriented motives, and social experience.

2. The study identified the criteria for the evaluation of the development of social competence of orphanage residents (development of professional intentions, social and domestic skills, the culture of interpersonal and social relations, and skills of healthy lifestyle and self-acceptance), as well as diagnostic methods allowing to establish the low indicators of the level of said development and determine the range of problems faced by orphans in preparing for independent life (in the sphere of interpersonal relations, unpreparedness to interact with society; the lack of a clear idea of independent life, infantilism, inability to foresee the consequences of one's actions; underdeveloped gendered social and domestic skills; inability to fill one's free time with socially acceptable leisure activities; insufficient development of self-control and self-discipline).

3. A model for the development of social competence in adolescents in an orphanage and the "Socialization in an Orphanage" program for the socialization of orphanage residents designed on its basis are developed and implemented in the pedagogical practice of an orphanage.

4. It is established that the implementation of the developed model for the development of social competence in orphanage adolescents ensures the assimilation and acquisition of social experience, knowledge, skills, and abilities which greatly facilitates the process of social adaptation of orphanage residents in the society.

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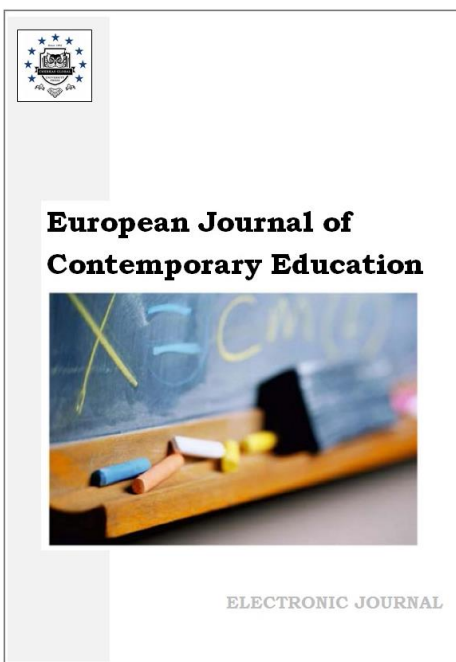
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Financial Literacy, Savings Culture and Millennials Students Behavior Towards Retirement

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Abstract

The objective of this work is to know, based on gender, the level of financial literacy of millennials students in the city of Veracruz; whether they have a savings culture and their behavior regarding retirement savings. For this, the descriptive cross-sectioned method was used, with a sample of 120 millennials students from Veracruz between 17 and 40 years of age. The data was obtained from an electronic survey applied through WhatsApp and Facebook. The instrument used was designed with items taken from surveys by Lusardi and Mitchell (2014), CONSAR+ (2017), Banamex (2014) and Banamex-UNAM (2008). Subsequently, the Cronbach's alpha coefficient was used to test the reliability of the instrument. The main findings are that this group has basic financial knowledge, however, not enough to handle more complex financial products such as bonds. In terms of gender, it is men who have a higher level of financial literacy, while it is women who have a greater culture of saving and are more aware of the importance of saving for retirement.

Keywords: Financial literacy, financial knowledge, millennials students.

1. Introduction

The most recent generation to enter the workforce are millennials, who are individuals born between 1980 and 2000 (Smith, Nichols, 2015). They are called millennials because they are the generation that was born with the new millennium, in a very digital era (Kaifi et al., 2012) and with a great acceptance of non-traditional values and families (Andert, 2011).

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Financial literacy is essential for Millennials, as they face financial decisions that can have important consequences throughout their life. The financial choices that younger generations face are far more challenging than those faced by past generations. Individuals today must take on greater responsibility for decisions like investing in additional education and planning for retirement. When facing major decisions such as these, financial literacy is critical (Lusardi, Mitchell, 2017).

Constant savings as well as having a retirement plan, allow people to maintain a similar lifestyle to the one they have when they are still working. Data from the National Survey of Financial Inclusion (ENIF, 2018) in Mexico, show that only 40 percent of the population has a retirement savings account, a percentage that decreases by region. For example, in the South central region and East and South of Mexico, this percentage only reaches 32 and 29 percent respectively (CNBV and INEGI, 2018).

Valdivia et al. (2017) carried out a study in the state of Veracruz that shows that people's financial culture does improve decision-making. The financial culture acquired impacts the priority for forecasting and long-term savings. However, it is also observed that the majority do not do enough to increase their savings, and there is a difference in terms of gender.

Women face unique challenges with longer life expectancies than men, shorter working lives than men, and career interruptions due to parenting (Lusardi, Hasler, 2017). In addition, women plan less, therefore they are less prepared than men to face their retirement from work (Lusardi, Mitchell, 2008).

The new generations have to change their mindset, begin to consider the idea of the importance of saving and understand that each individual must be in charge of their own pension through savings (Villarreal, Macías, 2020). The above leads us to the following questions from a gender perspective: what is millennials' level of financial literacy? Do they have a savings culture? What is their behavior regarding retirement savings?

2. Discussion

Financial literacy has been defined in the literature as a combination of awareness, knowledge, ability, attitude and behavior (OECD, 2018; Dube, Pradeep, 2018; Atkinson, Messy, 2012; Saavedra, 2020; Capuano, Ramsay, 2011). Financial literacy allows a greater participation of the population in various products and services offered by the financial sector, translating into higher levels of financial inclusion and reduction of social gaps (Álvarez, Ruiz, 2016). Taft et al. (2013) explain that financial literacy causes a reduction in financial concerns by improving the ability to meet basic needs and provide compatibility between financial income and expenses.

Like knowledge, behavior and attitude towards financial products are essential elements of financial literacy (Idris et al., 2015; OECD, 2018). Various studies confirm that the higher the financial literacy, the better the financial attitude and behavior of millennials (Das, 2016; Ariffin et al., 2017). Specifically, financial knowledge will have a positive impact on decision-making and behavior such as increasing wealth or preparing for retirement (Annabi et al., 2018; Ali, Frank, 2019; Mountain et al., 2020).

Gautam and Matta (2016) show that age, marital status, annual household income, real estate ownership, duration of investments, and portfolio review frequency significantly affect an individual's financial behavior as well. Lusardi (2019) mentions that the factors that have some impact on financial behavior in millennials are age, gender and the ethnicity they belong to.

Saving is one of the behaviors that generates greater resilience in order to face financial crises and promote financial well-being (OECD, 2017). Attitude and behavior, according to Kimiyagahlam, Safari and Mansoric (2019), lead the individual to save and not just remain with the intention of doing so.

Numerous studies around the world have been carried out to analyze the knowledge and financial behavior of millennials, especially in terms of saving for retirement. Das (2016) states that there are differences in financial education among millennials in India, according to the academic area they study. As a result of his research, it is shown that, although 60 percent of the total respondents answer most of the questions that measure the level of financial knowledge correctly; less than 30 percent answer correctly when asked about topics such as time value of money and corporate taxes. Those studying accounting/finance got better results than HR and marketing

students. However, there are other factors such as the parents' level of education, especially that of the mother, which plays an important role in the financial education of millennials.

Factors such as being a first-generation student and having a student loan or owning a credit card, influence the financial knowledge they acquire during university (Annabi et al., 2018). Likewise, demographic factors and financial attitude must be considered in order to improve financial planning. According to Selvadurai, Kenayathulla and Siraj (2018), planning for retirement requires monetary goal setting, early financial exposure, and financial awareness, as many older people face the dilemma of not having enough money to live when they retire.

On the contrary, Gale, Gelfond and Fichtner (2018), when comparing the millennial generation and their parent's generation, find that the former have advantages such as a higher schooling degree, and have a longer and flexible working life. However, millennials do not take on as many responsibilities as their parents. It is observed that this new generation does not usually have their own retirement plans, marry and have children at the age their parents did it.

There is a hypothesis that young people are not saving enough for retirement, particularly when it comes to women. Foster, Heneghan and Wijeratne (2019) explore millennial women's attitudes and motivations towards pension savings and self-enrollment, finding that although the introduction of self-enrolled pensions is generally received positively, the knowledge they have about pensions is still limited, increasing the risk that millennial women may not save enough for a decent retirement.

Attitudes towards money and financial literacy have a significant positive impact on young adults' personal financial management behavior, and financial literacy has a positive moderating impact on the relationship of attitudes towards money and personal financial management behavior (Qamar et al., 2016).

Once the theoretical body of the study has been analyzed and discussed, the methodology to be followed for the development of the analysis that will answer the research questions is presented.

Research Methodology

This study takes a sample of millennials students between the ages of 17 and 40, located in the Veracruz-Boca del Río metropolitan area. For this purpose, a survey on financial knowledge and behavior regarding retirement savings was organized. The survey was applied through electronic means such as email, WhatsApp and Facebook and was answered by 120 millennials students.

The instrument used was constructed as follows: to measure financial literacy, the three questions from Lusardi and Mitchell (2014) were included, the third section on the culture of savings was taken from the national survey by CONSAR (2017): What do Mexican millennials students think about retirement savings? and the questions were converted to a Likert-type scale. The section on financial behavior in terms of retirement savings was built with items from the Survey on Financial Culture of Young People in Mexico (Banamex, 2014) and the First Survey on Financial Culture in Mexico (Banamex, 2008). The instrument applied is presented in Appendix 1.

To analyze whether the instrument used is reliable, the Cronbach's alpha coefficient is estimated, then non-parametric statistics are used, specifically the use of cross tables to verify the frequencies of each indicator and its comparison between gender.

3. Results

For the analysis of the data matrix, the Cronbach's alpha is used to evaluate the reliability and internal consistency of the instrument, as well as the parallel and strict parallel procedure, and later the statistical analysis to answer the study question. Tables 1 and 2 show the results.

Table 1. Reliability of the Cronbach's alpha instrument

Cases processing summary		Model goodness of fit test		Reliability Statistics	
N	%	Chi-square	Value	Common mean	Common
			3276.294	3.536	5.989

Cases	Valid	120	100.0	Logarithm determinant:	gl	132	variance	
	Excluded ^a	0	.0		Sig	.00	True variance	-.228
	Total	120	100.0		Unconstrained matrix	-2.083	Error variance	6.218
Cronbach's alpha		0.443	Items 15		Constrained matrix	26.575	Common items correlation	-.040 ^a
							Scale reliability	-1.376 ^a
							Unbiased scale reliability	-1.316 ^a

^a. Deletion by list is based on all the procedure variables. Under the parallel model assumption

Table 2. Reliability of the instrument using the Strict Parallel method

Model goodness of fit test			Reliability statistics	
Chi-square	Value	1035.676	Common mean	3.536
	gl	118	Common variance	5.989
	Sig	0.000	True variance	-.228
Logarithm determinant of the	Unconstrained matrix	-1.268	Error variance	6.218
	Constrained matrix	6.838	Common items correlation	-.040 ^a
Under the parallel model assumption			Scale reliability	-1.376 ^a
			Unbiased scale reliability	-1.316 ^a

^a. The average covariance between items on this scale is negative. This misestimates the assumptions of the reliability model. Statistics that are functions of this value may have estimates outside the theoretically possible ranges.

In relation to the reliability of the instrument items, a Cronbach's alpha of 0.461 was obtained, which is very low, which violates the reliability assumptions suggested by the theory (Hair et al, 1997). This result is probably due to the variety of responses to the items. In addition, the data did not obtain normality, so nonparametric statistics are used for the analysis of the data matrix.

Table 3. Gender, age, educational level and occupation of the participants

Variable	Frequency	Percentage	Cumulative percentage
Gender			
Male	66	55	
Female	54	45	100
Age			
17-20	9	7.5	
21-24	47	39.2	46.2
25-28	33	27.5	74.2
29-32	17	14.2	88.4
33-36	7	5.8	94.2
37-40	7	5.8	100
Educational level			

High school	21	17.5	
Bachelor	87	72.5	90
Master degree	12	10	100
Occupation			
Student	19	15.83	15.83
Student and employee	100	83.33	99.17
Retired or unemployed	1	.83	100.00

As can be seen in Table 3, 55 % of the participants are men and 45 % women. About 40 % of the population is in an age range between 21 and 24 years. 72.5 % of the population has a bachelor's degree and 83.33 % of the surveyed participants study and work. Regarding financial literacy indicators by gender, Table 4 describes the results.

Table 4. Cross table on financial literacy by gender

Variable		CF1					Total
		*More than \$ 102	Exactly \$ 102	Less than \$ 102	I don't know	I would rather not to say	
Gender	Male	51	4	5	6		66
	Female	39	6	3	8		54
Total		90	10	8	12		120
Variable		CF2					Total
		More than today	Exactly the same	*Less than today	I don't know	I would rather not to say	
Gender	Male	3	6	35	21	1	66
	Female	5	9	28	11	1	54
Total		8	15	63	32	2	120
Variable		CF3					Total
		*They will increase	They will decrease	They will stay the same	There is no relationship	I don't know	
Gender	Male	16	13	2	11	24	66
	Female	16	10	2	9	17	54
Total		32	23	4	20	41	120

Note: * Correct answer.

The results of the three questions that measure financial literacy show that there are different levels between men and women. In the first question, which assesses the calculation of simple interest, 75 % of all cases answered correctly, the highest percentage being that of men with 56.66%, followed by 43.34 % of women.

The second question that evaluates knowledge regarding the effect of inflation, 52.5 % answered correctly, and again men with the highest percentage (55.55 %) versus women (44.45 %). Finally, in the third question, which assesses the knowledge that people have regarding the behavior of the capital market, only 26.7 % answered correctly and in a higher percentage, 34.16 % of the participants answered "I don't know", a response indicated in a greater number of cases by men (58.53 %).

In relation to the variable on savings culture, the results of the twelve indicators are shown in Tables 5 and 5a in which specific actions associated with savings are proposed, with opinions ranging from not very important (1) to very important (7).

Table 5. Cross table on savings culture by gender

Variable		Statement							Total
Variable		If I had money I would save it to buy a property / house / apartment							Total
		1	2	3	4	5	6	7	
Gender	Male	1	0	1	10	5	13	36	66
	Female	0	0	0	5	4	10	35	54
Total		1	0	1	15	9	23	71	120
		If I had money I would save it to start a business							Total
		1	2	3	4	5	6	7	
Gender	Male	1	2	2	7	9	8	37	66
	Female	2	1	2	5	5	6	33	54
Total		3	3	4	12	14	14	70	120
		If I had money I would save it for retirement							Total
		1	2	3	4	5	6	7	
Gender	Male	3	3	2	8	13	18	19	66
	Female	1	2	3	2	12	9	25	54
Total		4	5	5	10	25	27	44	120
		If I had money I would save it for traveling / vacation							Total
		1	2	3	4	5	6	7	
Gender	Male	3	2	4	17	21	10	9	66
	Female	1	0	7	9	14	9	14	54
Total		4	2	1	26	35	19	23	120
		If I had money I would save it to invest							Total
		1	2	3	4	5	6	7	
Gender	Male	0	1	4	5	10	12	34	66
	Female	0	1	3	4	11	9	26	54
Total		0	2	7	9	21	21	60	120
		If I had money I would save it to buy a car/motorcycle							Total
		1	2	3	4	5	6	7	
Gender	Male	11	1	9	11	18	6	10	66
	Female	0	5	8	9	7	13	12	54
Total		11	6	17	20	25	19	22	120

Table 5, which presents the results of the first six statements on savings culture, shows that 59.16 % (71 cases) consider it very important to save to buy real estate. In a higher proportion, it was women who valued this type of savings as very important (64.8 % of women versus 54.5 % of men). Similar is the response regarding saving to start a business, where 58.33 % consider that it is very important and women were also the majority (61.1 % of women against 56.1 % of men).

The option of saving for retirement had a lower percentage of responses (36 %) that consider it very important, compared to the options of saving to buy a property or start a business. In this indicator, women were also the majority. Another option that the participants consider as a destination for their savings is investment, half of the participants considered it a very important option, although in this case, more men than women responded that way (51.5 % versus 48.1 %).

The two options that the participants considered the least important were those that suggested that the destination of their savings was to buy a car or travel. Although in both cases, men give more importance to these two options than women.

Table 5a. Cross table on savings culture by gender

Variable		Statement							Total
		Save even if it is little by little							
		1	2	3	4	5	6	7	
Gender	Male	1	0	1	4	8	14	38	66
	Female	0	0	2	6	1	6	39	54
Total		1	0	3	10	9	20	77	120
		Save even if you do not earn enough							
		1	2	3	4	5	6	7	Total
Gender	Male	2	0	1	13	9	13	28	66
	Female	2	0	1	8	3	7	33	54
Total		4	0	2	21	12	20	61	120
		Spend the money right now							
		1	2	3	4	5	6	7	Total
Gender	Male	21	16	12	11	2	2	2	66
	Female	21	14	7	6	4	1	1	54
Total		42	30	19	19	6	3	3	120
		Keep financial records							
		1	2	3	4	5	6	7	Total
Gender	Male	2	7	2	6	6	15	28	66
	Female	0	1	2	6	6	10	29	54
Total		2	8	4	12	12	25	57	120
		Receive a pension							
		1	2	3	4	5	6	7	Total
Gender	Male	3	0	0	10	17	11	25	66
	Female	1	3	1	5	5	6	33	54
Total		4	3	1	15	22	17	58	120
		Save for old age							
		1	2	3	4	5	6	7	Total
Gender	Male	3	2	1	3	9	12	36	66
	Female	1	1	0	2	1	11	38	54
Total		4	3	1	5	10	23	74	120

Continuing with the items of savings culture, in [Table 5a](#) it is observed that the majority (64.1 %) of the respondents consider that saving, even a little or when income is not enough, is very important. In both responses, the percentage of women is higher than men. They were also the majority who consider that spending money at this time is very unimportant. 60 % chose the two least important options to answer this question. In a greater proportion, it was women who considered it that way (64.8 % women versus 56.1 % men).

It was also the majority who considered keeping financial records to be the most important, as well as saving for old age and receiving a pension. In all cases it was more women than men who responded to the three options with the highest scores. It is noteworthy that 90.7 % of women consider it very important to save for old age and although there was also a significant percentage of men who responded this way (72.7 %) it is notably lower than women.

An analysis of each of the indicators described in tables 5 and 5b was carried out in parallel by using the variable age and the result shows that the age range of the respondents in which the highest percentage of responses was focused on each indicator by gender, was between 23 and

25 years of age. In relation to the variable on financial behavior in terms of retirement savings, the results of the four indicators are shown in Table 6.

Table 6. Financial behavior in terms of retirement savings

Variable		Do you currently have any savings for your retirement?			Total			
		No	Yes					
Gender	Male	47	19	66				
	Female	27	27	54				
Total		74	46	120				
		Have you thought about saving for your retirement?			Total			
		No	Yes					
Gender	Male	13	53	66				
	Female	13	41	54				
Total		26	94	120				
		How often do you read or learn about savings accounts, investments, loans, and retirement funds?			Total			
		Never	Sometimes	Always				
Gender	Male	21	40	5	66			
	Female	16	36	2	54			
Total		37	76	7	120			
		At what age do you think a person should start saving to have a good pension?						
Variable		From					Total	
		Before 18 years old	From 18 to 19 years old	20 to 24 years old	From 25 to 29 years old	From 30 to 39 years old	From 40 onwards	
Gender	Male	7	16	17	15	9	2	66
	Female	7	9	18	9	9	2	54
Total		14	25	35	24	18	4	120
		How much would you be willing to save per month?					Total	
		More than \$100	Between \$50 and \$100	Between \$10 and \$49	Nothing			
Gender	Male	57	6	3			66	
	Female	45	7	2			54	
Total		102	13	5			120	

In general, more than 50 percent of those surveyed (61.66 %) do not have savings for retirement: In a particular way, it can be said that in a higher percentage, women have worried less than men about having some savings for their retirement (24 % of women have not thought about saving for retirement, while 19.7 % of men have not either).

Despite the above, 78.33 % of those surveyed have thought about saving for retirement and 50 % consider that people should start saving for retirement between the ages of 18 and 29. 63.3 % of the participants sometimes read about savings, funds and investments for retirement and 30 % never read about it. However, in a very similar proportion between men and women, 85 % of those surveyed would be willing to allocate more than \$100.00 Mexican pesos (five dollars approximately) per month in savings for their retirement.

4. Conclusion

Once the data obtained in the application of the instrument had been analyzed, the following can be discussed: in relation to the indicators on financial literacy, 75 % answered the indicator that evaluates the calculation of simple interest correctly, just over half knew how to calculate the effect of inflation. However, only 26 % know the relationship between the interest rate and the price of bonds. The first two questions were answered correctly mostly by men, however, it was a

higher percentage of women who answered the relationship between interest rate and price of bonds correctly. These results coincide with other studies such as those by Das (2017) and PwC (2015) which mention that millennials students are familiar with basic financial issues. However, concepts such as bonds, inflation and risk diversification, which tend to be more complex, are more difficult for millennials to understand them. Likewise, the results coincide in terms of gender with that reported by Fessler, Jelovsek and Silgoner (2020), who found that men have a higher level of financial knowledge than women.

Regarding the culture of savings, the results showed that for this generation it is still considered very important to acquire real estate as property, in addition to being attracted to the idea of having a business or making investments. On the contrary, they are not so interested in buying a car or motorcycle. This contrasts with the results of Alvarado and Duana (2018), who show that the highest percentage of what millennials students save is spent on vacations, romantic relationships, studies or buying a car and/or motorcycle. Likewise, women find it more important than men to save even if they don't earn enough, keep financial records, save for old age and receive a pension. It is also women who find it less important than men to spend money at this time. The above coincides with what Fessler, Jelovsek and Silgoner (2020) found in their research, which tells us that men obtain slightly worse scores than women in terms of behavior and financial attitudes and with Lusardi (2019) that mentions that the gender of the person does have a financial impact on millennials.

Finally, with regard to financial behavior in terms of retirement savings, the results show that this group is not taking sufficient action to increase their retirement savings, as the majority still do not have any savings of this nature and they are not always informed, despite having some interest in this topic.

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Appendix

Survey

The purpose of this survey is to collect information that will help find out your financial literacy level, savings culture, and behavior towards retirement plans. The information provided for this survey is completely confidential and will only be used for research purposes. That is why we

ask for your valuable collaboration to answer some questions, which will not take you long to answer.

Section I. Profile of the respondent

Gender: Male () Female ()

Age: _____

Schooling (highest degree of study completed):

Elementary (), Middle School (), High School (), Bachelor Degree (), Specialty (), Master's Degree (), Doctorate ()

Current work status: Studies only () Studies and works ()

State of birth: _____

Section II. Financial literacy

This section evaluates three important factors for long-term savings such as interest, inflation, and bonds.

AF1. Suppose you have \$ 100 in a savings account and the interest rate is 2 % per year. After 5 years, how much do you think you would have in the account if you let the money grow?

- a) More than \$ 102 b) Exactly \$ 102 c) Less than \$ 102 d) I don't know
- e) I'd rather not say

AF2. Suppose the interest rate on your savings account was 1% per year and inflation was 2 % per year. After 1 year, how much could you buy with the money in this account?

- a) More than today b) Exactly the same c) Less than today d) I don't know
- e) I'd rather not say

AF3. If interest rates go down, what will normally happen to bond prices?

- a) They will increase b) They will decrease c) They will stay the same d) There is no relationship between bond prices and interest.
- e) I don't know f) I'd rather not say

Section III. Savings culture

In this section the culture of saving is evaluated through a scale. Read the following statement and select the option that you consider appropriate. Mark 1 if the option is Not important until 7 as its importance increases.

	Not important						Important
	1	2	3	4	5	6	7
CA1. If I had money I would save it to buy a property / house / apartment							
CA2. If I had money I would save it to start a business							
CA3. If I had money I would save it for retirement							
CA4. If I had money I would save it for traveling / vacation							
CA5. If I had money I would save it on an investment							
CA6. If I had money I would save it to buy a car/motorcycle							
CA7. Save even if it is little by little							
CA8. Save even if you do not earn enough							
CA9. Spend the money right now							
CA10. Keep financial records							
CA11. Receive a pension							
CA12. Save for old age							

Section IV. Financial behavior regarding retirement savings

CF1. Do you currently have any savings for your retirement?

- a) Yes b) No

CF2. Have you thought about saving for your retirement?

- a) Yes b) No

CF3. How often do you read or learn about savings accounts, investments, loans, and retirement funds?

- a) Never b) Sometimes c) Always

CF4. At what age do you think a person should start saving to have a good pension?

- a) Before 18 years old b) From 18 to 19 years old c) From 20 to 24 years old d) From 25 to 29 years old e) From 30 to 39 years old f) From 40 onwards

CF5. How much would you be willing to save per month?

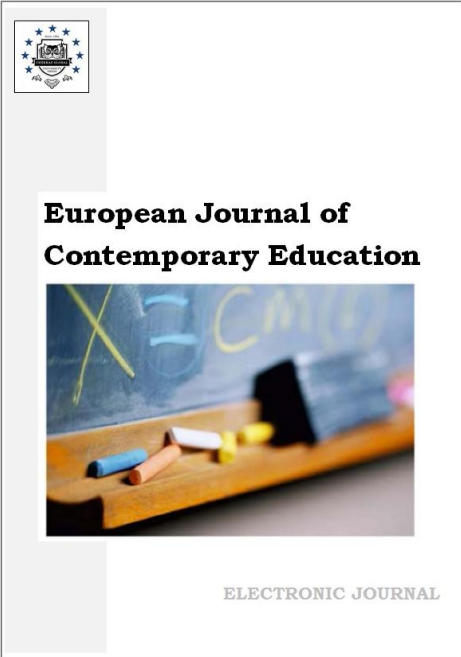
- a) More than \$ 100 pesos b) Between \$ 50 and \$ 100 pesos c) Between \$ 10 and \$ 49 pesos d) Nothing



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Psychometric Properties of Anxiety Towards Mathematics Scale using Samples from Four Continents

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Abstract

This study aimed to examine the factor structure and psychometric properties of the Anxiety Towards Mathematics Scale across four continents. We adopted and translated the original Spanish version of the 24-item Anxiety Towards Mathematics Scale (ATMS-24; Muñoz, Mato-Vazquez, 2007) to collect 4,338 responses from Egypt, Ghana, India, Iran, Malaysia, Mexico, Nigeria, Pakistan, Romania, Thailand, Ukraine, and United Arab Emirates. Also, we conducted an Exploratory Factor Analysis (EFA) on the ATMS-24 to examine whether the data fit well across cultures. Furthermore, we modified the full-length ATMS-24 to a short form (11-items: ATMS-11) using the Gradual Response Model (GRM) of Item Response Theory (IRT) and further conducted an analysis of measurement invariance. The EFA conducted indicated that the ATMS-24 fit the data well across cultures. The new ATMS-11 version has adequate configural, metric, and scalar invariance in seven countries and the overall sample. The ATMS-11 offers a valid, reliable, and parsimonious means to assess mathematics Anxiety (MA) among students from varied cultures. The factor structure and psychometric properties of ATMS-11 support its use for MA assessment in both male and female students across locations in Africa, Asia, Europe, and South America.

Keywords: anxiety towards mathematics scale, cultures, mathematics anxiety, psychometric properties.

1. Introduction

Mathematics is a universal language and attracts a growing consideration from educational, clinical, social, and personal perspectives (Silver et al., 2021; Waller, Flood, 2016). Several human activities in all cultures require the use of some level of mathematics to undertake either basic or complex tasks (García-Santillán et al., 2016; García-Santillán et al., 2018; Polly et al., 2018). Notwithstanding the cognitive dimension of learning and using mathematics globally, some people experience fear, apprehension, tension, worry, frustration, and dislike due to the emotional dimension of mathematics (Dowker et al., 2016). This negative emotion associated with the teaching, learning, achievement, and application of mathematics in academic, career, and daily life was first termed “number anxiety” by Dreger and Aiken (1957).

Currently, number anxiety is called mathematics anxiety (MA) in present educational and research circles (Dowker et al., 2016). Generally, MA can be described as a state of apprehension associated with executing a mathematical task, exposure to numbers and mathematical operations, and classroom evaluations (García-Santillán et al., 2018). Several factors often link unpleasant cognitive, affective, and behavioural responses toward mathematics-related activities. These factors include gender, age, performance in mathematics, teaching approach, academic stress, motivation, parental influence, and biological causes (Dowker et al., 2016; Jamieson et al., 2016; Keshavarzi, Ahmadi, 2013; Silver et al., 2021). As MA affects all ages and cultures, it is essential to assess it with brief tools that are also valid and reliable (García-Santillán et al., 2016).

Notwithstanding this global need for testing MA, most existing instruments are lengthy (Suinn, Winston, 2003) with limited cross-cultural sensitivity (García-Santillán et al., 2018; Pajares, Urdan, 1996; Mahmood, Khatoon, 2011; Muñoz, Mato, 2007), and gender sensitivity (Bai et al., 2009). Moreover, some of these existing instruments have narrow age ranges (Beasley et al., 2001; Chiu, Henry, 1990) and are often old (Brush, 1978; Hopko, 2003; Suinn et al., 1988); thus, they lost touch with contemporary. Besides, none of these measures of MA had been used across four continents to provide robust cross-cultural psychometric evidence to the best of our knowledge.

Considering the above weaknesses, we sought to explore the cross-cultural value of the original Spanish version of the 24-item Anxiety Towards Mathematics Scale (ATMS-24; Muñoz, Mato-Vazquez, 2007). As a unidimensional instrument, all items in the ATMS-24 measure the same latent construct. Although the ATMS-24 has a good factor structure and psychometric properties, a shorter version of the scale with cross-cultural psychometric evidence is desirable in both research and practice. Furthermore, the Principal Components Analysis was used to extract factors in the original ATMS-24 (García-Santillán et al., 2018) like other similar instruments (Moreno-García et al., 2018; Widaman, 2007). By definition, most psychological constructs like MA are a reflective measure (i.e. the variance in the items are due to a latent trait), making an

Exploratory Factor Analysis the most desirable method of extraction (Ellwart, Konradt, 2011). Consequently, a shortened form of ATMS-24 as a reflective measurement offers a suitable brief tool for assessing MA across cultures (Ellwart, Konradt, 2011; Tetrick, Buffardi, 2006).

2. Method

2.1. Participants

We used a quantitative, non-experimental cross-sectional survey to select 4,339 participants from 12 countries (Mexico, Ghana, Pakistan, Iran, Ukraine, Thailand, Romania, Nigeria, India, Malaysia, Egypt, and the United Arab Emirates). The overall sample included 59.9 % females and 40.1 % males. See Table 1 for more details about sample sociodemographic description according to country and region/location collected.

Table 1. Sample Sociodemographic Description According to Country and Region Collected

Countries	Region/ City	N	Age %					Gender %	
			12-15	16-20	21-23	24-30	>30	Male	Female
Mexico	Veracruz	201	3	44.3	52.7	0	0	65.7	34.3
Ghana	Koforidua	164	2.44	70.12	22.56	3.05	1.83	57.3	42.7
	Cape Coast	230	0.4	61.3	38.3	0	0	40.4	59.6
Pakistan	Sargodha	394	0	69.8	29.7	0.5	0	42.6	57.4
	Faisalabad	156	0	48.7	51.3	0	0	25.6	74.4
	Rawalpindi	204	0	62.7	37.3	0	0	40.7	59.3
	Lahore	331	0	56.5	43.5	0	0	44.7	55.3
Iran	Tehran	151	0	66.7	33.3	0	0	52.3	47.7
	Qom	155	0	71.6	28.4	0	0	48.4	51.6
Ukraine	Sumy	101	2	74.2	18.8	5	0	31.7	68.3
Thailand	Bangkok	155	0	39.4	60.6	0	0	52.9	47.1
Romania	(Online)	194	0	100	0	0	0	42.8	57.2
Nigeria	Enugu State	117	0	99.1	0.9	0	0	45.3	54.7
India	Puducherry	250	0.4	57.2	40.4	2	0	18.8	81.2
	Uttar Pradesh	207	0	65.2	34.8	0	0	36.7	63.3
	(Online)	511	100	0	0	0	0	54.8	45.2
Egypt	(Online)	501	0	53.1	35.9	10.2	0.8	16.8	83.2
United Arab Emirates	(Online)	317	0	71	29	0	0	28.1	71.9
Total		4339	12.1	56.2	29.9	1.6	0.2	40.1	59.9

2.2. Instruments

The data collection instrument contained the following measures: Part A (ATMS-24, Muñoz, Mato-Vazquez, 2007) and Part B (Demographic details, e.g. age, gender, location). Each item in ATMS-24 was rated on a five-point scale, from Strongly disagree (1) to Strongly agree (5).

2.3. Data Collection

Data was collected by a collaborative international team of scientists across 18 research sites in 12 countries across four continents (listed in the participants' locations). Following a call for collaborators by the first author on www.researchgate.net (a social networking site for scientists and researchers) in October 2019, several collaborators applied to join the cross-cultural project. This data collection represents Phase 1 of the project, which ended in October 2020. Ethical approval for the project was obtained from the Institutional Review Board of the International Network Center for Applied Research (INCFAR-IRB/009/01-2020). Nonetheless, individual collaborators were allowed to apply for local or institutional ethics approval. Furthermore, all collaborators were permitted to translate the study protocol and instrument (where necessary) into their respective languages.

The data collection was conducted face-to-face and using an online questionnaire disseminated through e-mail and on social media platforms (i.e. LinkedIn, Facebook, Twitter, and

Instagram). Each collaborating site was to collect a minimum of 150 students (relaxed in two cases: Ukraine [Sumy] and Nigeria [Enugu State] from their respective communities (relaxed in four cases: Romania, Malaysia, Egypt, and United Arab Emirates, where data collection was conducted using online platforms). Any person between 12 and 18 years old could respond to the questionnaire following parental and individual consent. Participants stated their agreement through an informed consent form that ensured confidentiality about their identity. Moreover, each participant was informed to answer the questionnaire only once.

2.4. Data Analysis

An Exploratory Factor Analysis was conducted using the polychoric correlation matrix, Factor version 10.9.02 (Ferrando, Lorenzo-Seva, 2017). One response was dropped due to an almost full incomplete response. The sample adequacy was assessed through Kaiser-Meyer-Olkin (KMO) and the Bartlett test of sphericity was calculated with Kaiser and Chi-square with its p-value. Concerning the extraction method, we used the Robust Diagonally Weighted Least Squares (RDWLS). With Robust Promin Rotation, the RDWLS is adequate for ordinal and non-normal data (Lorenzo-Seva, Ferrando, 2019).

Additionally, we used a parallel analysis based on the Minimum Rank Factor Analysis with 500 simulations to retain factors (Timmerman, Lorenzo-Seva, 2011). The number of factors to be extracted was based on three criteria: the scree plot, eigenvalue greater than one, and the parallel analysis. Besides, the unidimensionality was assessed with Closeness to Unidimensionality Assessment (Uni-Co; Ferrando, Lorenzo-Seva, 2018), with values greater than 0.95 suggesting that data can be treated as unidimensional. Also, the model fit indices were assessed using the Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and χ^2 mean with variance adjusted. Besides, Cronbach's Alpha, McDonald's Omega, and Greatest Lower Bound were used to estimate the reliability of the data (Woodhouse, Jackson, 1977).

Specifically, data cleaning reduced the responses from 4,339 to 4,306 cases using listwise deletion. To reduce the number of items and to know the parameters of the items, parameters a (discrimination/slope) and parameters b (difficulty/threshold) were calculated using the Gradual Response Model (GRM) of the Item Response Theory (Samejima, 1969) with mirt package [version 1.30] in R Software (Chalmers, 2012; R Core Team, 2019). We also estimated the scale invariance between males and females by conducting a confirmatory multigroup analysis using the lavaan package in R software (R Core Team, 2019; Rosseel, 2012) with an algorithm from Svetina et al. (2019). Subsequently, we tested three levels of invariance. These levels were configural invariance (which tests whether the factor structure is the same between groups), metric invariance (which tests whether the factor loadings of the items are the same between groups), and scalar invariance (which tests whether the intercepts are the same between groups).

3. Results

The Exploratory Factor Analysis showed that the ATMS-24 had sufficient data adequacy; KMO = 0.97 (CI Bootstrap 95 % 0.972 – 0.972); Bartlett test of sphericity, χ^2 (276; $N = 4,338$) = 49,449.9, $p < .001$. Two factors showed eigenvalues greater than one, explaining 59.1% of the variance in the data. The first, second, and third factors presented eigenvalues of 12.6, 1.61, and 0.97, respectively. However, the parallel analysis suggested extracting a single factor, with the explained variance of the second observed factor of 7.10 % and simulated data of 8.03 %. Details of factor loadings can be seen in Table 2.

In addition, another evidence of unidimensionality was based on the UniCo = 0.98 (CI 95 %, 0.974 – 0.983) which was greater than 0.95. For the goodness of fit, the scale produced the following statistics: χ^2 (252, $N = 4,338$) = 6,570.1, $p < .001$; CFI = 0.98 (CI 95 %, 0.979 – 0.984); TLI = 0.98 (CI 95 %, 0.981 – 0.986); RMSEA = 0.076 (CI 95 %, 0.071 – 0.079). Furthermore, the reliability estimates of data from the Cronbach's Alpha, McDonald's Omega, and Greatest Lower Bound to Reliability were 0.96, 0.96, and 0.98 respectively.

After identifying the unidimensional structure, we sought to reduce the scale with Item Response Theory using GRM (Samejima, 1969) for the 24 items of the ATMS-24 scale. Parameters a (discrimination/slope) and parameters b (difficulty/threshold) of the items are shown in Table 3. We decided to retain items with substantial discrimination that covered a large portion of the construct without harming the theoretical contribution from the literature (i.e. without excluding all items from the factors found in other papers). Therefore, items 1, 3, 4, 8, 9, 10, 12, 14, 15, 17, 20,

21, and 22 were excluded from the original ATMS-24 scale. The remaining 11 items which formed the ATMS-11 were included in the subsequent analysis.

Table 2. Factor Loadings of the Anxiety Towards Mathematics Scale based on an Exploratory Factor Analysis

Item	Factor 1	h ²
1. I get nervous when I think about the math test the day before.	.73	.74
2. I feel nervous when I get the math test questions.	.76	.81
3. I get nervous when I open the math book and find a page full of problems.	.73	.66
4. I feel nervous thinking about the math test when there is only one hour left to do it.	.70	.64
5. I feel nervous when I think about the math test that I have to do next week.	.74	.74
6. I get nervous when I know that I will still have math classes in the next course.	.78	.73
7. I feel nervous when I think about the math test that I have next week.	.78	.80
8. I get nervous when someone looks at me while I do math homework.	.67	.68
9. I feel nervous when I check a purchased ticket after paying.	.47	.57
10. I feel nervous when I start studying for a math test.	.69	.72
11. The math exams make me nervous.	.78	.83
12. I feel nervous when the teacher leaves me with math problems to solve at home and I have to deliver them the next day in class.	.75	.68
13. It makes me nervous to do mathematical operations.	.77	.68
14. I feel nervous having to explain a math problem to the teacher.	.69	.82
15. I get nervous when I do the final math exam.	.71	.74
16. I feel nervous when they give me a list of math exercises.	.77	.76
17. I feel nervous when I try to understand another classmate explaining a math problem.	.69	.69
18. I feel nervous when I do a math assessment test.	.75	.65
19. I feel nervous when I see/hear my teacher explaining a math problem.	.74	.76
20. I am nervous to receive the final (exam) math grades.	.67	.72
21. I feel nervous when I want to find out about the change in the store.	.59	.75
22. I feel nervous when we get a problem and a partner finishes it before me.	.57	.51
23. I feel nervous when I have to explain a problem in math class.	.74	.74
24. I feel nervous when I start doing my homework.	.78	.82
	Eigenvalue	12.1
	% variance explained	57.3
	Cronbach's Alpha	.96
	McDonald's Omega	.96
	Greatest Lower Bound	.98

Note. N = 4,338; h² = communalities; Extraction method Robust Diagonally Weighted Least Squares with Robust Promin rotation.

Table 3. Items Discrimination and Difficulty Parameters

	a	b ₁	b ₂	b ₃	b ₄
1.	1.84	-1.57	.0.55	-0.06	0.96
2.	2.03	-1.71	-0.59	-0.17	1.34
3.	1.97	-1.34	-0.34	0.17	1.23
4.	1.77	-1.71	-0.73	-0.20	1.04

5.	1.98	-1.21	-0.15	0.38	1.38
6.	2.29	-0.99	-0.12	0.32	1.06
7.	2.33	-1.08	-0.18	0.27	1.40
8.	1.62	-0.99	-0.05	0.55	1.46
9.	0.93	-1.43	0.21	1.74	3.45
10.	1.84	-1.16	0.11	0.67	1.73
11.	2.30	-1.30	-0.46	0.10	1.07
12.	2.13	-1.27	-0.23	0.31	1.16
13.	2.33	-1.23	-0.15	0.44	1.60
14.	1.78	-1.57	-0.50	0.13	1.31
15.	1.81	-1.59	-0.59	-0.02	1.16
16.	2.34	-1.32	-0.26	0.37	1.49
17.	1.77	-1.05	0.07	0.64	1.80
18.	2.22	-1.20	-0.25	0.34	1.50
19.	2.00	-0.92	0.18	0.71	1.69
20.	1.61	-1.73	-0.74	-0.15	1.04
21.	1.26	-1.16	-0.07	0.79	2.24
22.	1.24	-1.69	-0.47	0.29	1.76
23.	2.10	-1.41	-0.44	0.06	1.15
24.	2.29	-0.83	0.06	0.52	1.47

Note. a = discrimination parameter. b = threshold (difficulty) parameter. Parameters of discrimination and difficulty estimated by Graded Response Model (Samejima, 1969). N = 4,306.

The analysis of measurement invariance (MI) was conducted using multigroup confirmatory factor analysis. Table 4 presents the comparison between configural, metric, and scalar models of the short version of the original scale, ATMS-11. Following the recommendations of Chen (2007), invariance is established when the CFI does not decrease by 0.010, and the RMSEA does not increase by 0.015 when the loads and intercepts are fixed as compared with the prior model when they were not fixed. We found configural, metric, and scalar invariance in Mexico, Ghana, Pakistan, Iran, Romania, India, Egypt, and the overall sample.

Table 4. Measurement Invariance (MI) Testing between Male and Female According to Country

		χ^2	df	p value	RMSEA	CFI	TLI
Mexico	Configural	229.08	88	0	0.127	0.955	0.944
	Metric	254.80	110	0	0.115	0.954	0.954
	Scalar	238.26	120	0	0.100	0.962	0.966
Ghana	Configural	392.72	88	0	0.13	0.948	0.935
	Metric	431.03	110	0	0.12	0.945	0.945
	Scalar	417.82	120	0	0.11	0.949	0.954
Pakistan	Configural	518.57	88	0	0.095	0.971	0.964
	Metric	570.67	110	0	0.088	0.969	0.969
	Scalar	554.20	120	0	0.082	0.971	0.973
Iran	Configural	395.17	88	0	0.152	0.944	0.929
	Metric	433.14	110	0	0.139	0.941	0.941
	Scalar	413.85	120	0	0.127	0.946	0.951

Romania	Configural	280.55	88	0	0.151	0.910	0.887
	Metric	317.04	110	0	0.140	0.903	0.903
	Scalar	305.24	120	0	0.127	0.913	0.920
India	Configural	448.85	88	0	0.134	0.935	0.918
	Metric	484.79	110	0	0.122	0.932	0.932
	Scalar	483.07	120	0	0.115	0.934	0.940
Egypt	Configural	682.13	88	0	0.164	0.972	0.965
	Metric	674.13	110	0	0.143	0.973	0.973
	Scalar	649.62	120	0	0.133	0.975	0.977
Total	Configural	2,954.85	88	0	0.121	0.959	0.949
	Metric	3,156.62	110	0	0.113	0.955	0.955
	Scalar	2,975.84	120	0	0.105	0.958	0.961

Note. MI was not accessed in Malaysia, Nigeria, and United Arab Emirates because some response categories had missing data; MI in Thailand and Ukraine was not accessed because of the number of persons in each group. We adopted Svetina et al.'s (2019) algorithm.

However, MI was not accessed in Malaysia, Nigeria, and the United Arab Emirates because some response categories were empty in some groups. Also, MI in Thailand and Ukraine was not accessed because of the number of responses in some specific categories. As a pre-requisite for the Wu and Estabrook (2016) measurement invariance test for ordered categorical outcomes, we needed to have responses in each category of the item response scale (e.g., 1 – Strongly disagree; 5 – Strongly agree). Furthermore, ATMS-11 had reliability estimates of 0.93, 0.95, and 0.95 for Cronbach's Alpha, McDonald's Omega, and Greatest Lower Bound to Reliability. See Figure 1 for the test information curve.

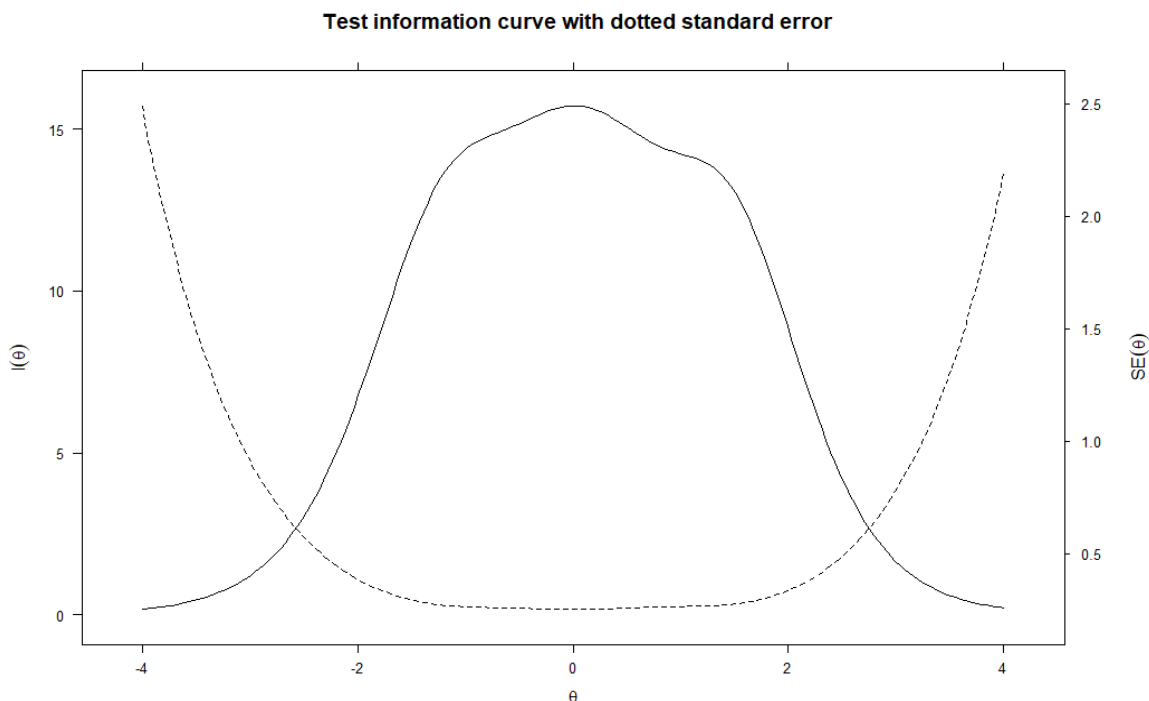


Fig. 1. Test Information Curve

Note. The continuous line represents the test information curve. The dotted line represents the standard error of the measurement.

4. Discussion

Our study explored the psychometric properties of the ATMS-24 (Muñoz, Mato-Vazquez, 2007) and attempted to evaluate the level of MA experience of students across cultures. We further examined the factor structure and psychometric properties of the short form of the original scale, ATMS-11. The present study showed a stable unidimensional structure of the instrument across samples from the four continents. With adequate KMO and Bartlett test of Sphericity, the Exploratory Factor Analysis confirmed the results obtained by García-Santillán et al. (2018) and Muñoz and Mato-Vazquez (2007) among Mexican samples. Significantly high reliability estimates of above 0.90 for the scale's Cronbach's alpha, McDonald's Omega, and Greatest Lower Bound confirmed the scale's reliability (Field, 2009; Hair et al., 1998).

Per previous literature (Samejima, 1969), we were able to reduce the original ATMS from 24 to 11 items. A shorter scale allows future researchers and practitioners to apply the instrument without harming the participants' responses (e.g., acquiescent responses, fatigue, and boredom). For this new version, we observed that the scale offers a more parsimonious way to measure MA and covers a large portion of the construct without impairing the theoretical contribution from the literature (García-Santillán et al., 2018; Muñoz, Mato-Vazquez, 2007). Further observations demonstrated that ATMS-11 also has significantly higher reliability estimates (Field, 2009). Besides, the concerns that MA ought to be screened using brief, valid and reliable instruments make ATMS-11 ideal and useful (Carey et al., 2017; Suinn, Winston, 2003).

Furthermore, the results indicated that ATMS-11 is a sensitive instrument for measuring MA among males and females across cultures. We established configural, metric, and scalar invariance in samples from Mexico, Ghana, Pakistan, Iran, Romania, India, Egypt, and the overall data following the recommendations of Chen (2007). Although MI was not accessed for data from Malaysia, Nigeria, the United Arab Emirates, Thailand, and Ukraine due to data inadequacies, there is enough suggestion from our results that the usefulness of ATMS-11 cannot be underestimated.

Directions for future research

The results of the current study are presently one of the most extensive datasets on cross-national and continental MA evaluation and instrument standardisation. However, some issues limit the generalisability of our results. First, the sample pools of each country were purposively selected and may only represent a self-selected sample out of their local or national population. Second, the present study included most research sites in Asia and Africa with much less or no representations of South, North and Central America, Europe, the Caribbean, Australia, and Oceania, mainly due to the flexible recruitment method. Thus, our samples are less likely to represent their selected countries fully. Third, we could not exclude participants with a formal diagnosis of mood or learning disorders due to the nature of the design and modalities for data collection. Additional studies with larger samples from several countries will be needed in the future to address these issues. Also, longitudinal studies may provide additional understanding of developmental paths among various age categories, as this study failed to address that.

5. Conclusion

The present study was conducted to establish the validity and reliability parameters of the ATMS-24 across nations. The study also provided a modified and abbreviated version of the original scale, ATMS-11, which is useful for measuring the differences in MA between males and females from different cultures with a cross-national perspective. Using 4,338 participants from 12 countries and across four continents, the ATMS-11 is one of the current existing instruments for assessing MA with the highest multinational standardisation sample compared to several previous studies (Bai et al., 2009; Beasley et al., 2001; Carey et al., 2017; Chiu, Henry, 1990; García-Santillán et al., 2016; Muñoz, Mato, 2007). The novel 11-item scale may offer a valid, reliable, and parsimonious means to assess MA in different populations as it discriminates between male and female students across cultures. Though the data for this study has some limitations, the usefulness, validity, and reliability of ATMS-11 cannot be underestimated (see Table 5).

Table 5. Modified Scale of Anxiety Towards Mathematics (ATMS-11)

Items	
1.	I feel nervous when I get the math test questions.
2.	I feel nervous when I think about the math test that I have to do next week.
3.	I get nervous when I know that in the next course I will still have math classes.
4.	I feel nervous when I think about the math test that I have next week.
5.	The math exams make me nervous.
6.	It makes me nervous to do mathematical operations.
7.	I feel nervous when they give me a list of math exercises.
8.	I feel nervous when I do a math assessment test.
9.	I feel nervous when I see/hear my teacher explaining a math problem.
10.	I feel nervous when I have to explain a problem in math class.
11.	I feel nervous when I start doing my homework.

Note. Each item is rated on a five-point scale, from Strongly disagree (1), Disagree (2), Neutral (3), Agree (4), and Strongly agree (5).

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7. Declaration of Conflicting Interests

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Impact of the Social Skills Training Programme on Adolescents Attending Physical Education Classes

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Abstract

Adolescents can successfully apply social skills obtained during physical education classes in other spheres of life. In this respect, social skills training problems of adolescents attending physical education classes are widely investigated. However, there is not enough scientific research on this subject. It is purposive to continue studies in order to evaluate applicability and effectiveness of social skills training programmes.

The goal to reveal the impact of the social skills training programme on adolescents attending physical education classes is formed in this work. The duration of the situational social skills training programme is 18 weeks. 48 14-15-year-old adolescents that attended physical education classes participated in the training experiment. To evaluate social skills before and after the educational experiment, questionnaires of situational social skills and basic social skills were used. The social skills development programme was applied for the experimental group and no impact was applied for the control group. The results of the training experiment revealed the social skills training programme applied during the physical education classes had a statistically reliable impact on the situational and basic social skills in the adolescents from the experimental group.

Keywords: adolescents, social skills training programme, situational social skills, basic social skills, physical education classes.

1. Introduction

The development of social skills in adolescents is relevant because the modern school does not pay enough attention to the spread of a young personality, so the development of social skills in the period of adolescence is one of the most important challenges of modern education. Adolescence is the period of the personal and social development, in which changes, searches become commonness, emotions are experienced more strongly, the pursuit of independence is

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getting stronger and stronger, the thinking also changes and there are constant questions what is right and what is wrong. According to Weissberg et al. (2015), the adolescents that have sufficient social skills apply their knowledge more effectively, tend to control their emotions better, reach set goals more quickly, retain positive attitudes for a longer period and are not afraid to make decisions in responsible situations. For example, the adolescents that have proper communicational skills and tend to get involved in the communication with contemporaries, adapt themselves better and obtain better results compared with the adolescents that avoid any social interaction (Buljbašić Kuzmanović, Botić, 2012). The earlier attention is paid to social skills in the period of adolescence, the more affective is the formation of proper social behaviour (Miller et al., 2017; Veziroglu-Celik, Acar, 2018). It is supposed the social skills obtained in the school environment can also be transposed successfully to other life situations. It is especially important to create favourable conditions for adolescents to train their social skills, develop efficient and effective programmes and choose effective methods for the development of social skills. It is known the earlier adolescents obtain social skills, the more easily they are accepted by contemporaries, they experience academic success more often and adapt to the social environment more quickly (Zelyurt, Ince, 2018). It is indicated in other scientific studies these adolescents tend to study better (Rivers et al., 2012), get better relations (Lopes et al., 2004), solve conflicts more constructively (Brackett et al., 2006) cope with social problems more effectively (Reis et al., 2007) and get involved in improper behaviour more seldom (Brackett et al., 2004). Moreover, some studies reveal qualitative physical education classes can also have a positive impact on the social and moral development of adolescents (Hellison, Martinek, 2006), fair play behaviour (Vidoni et al., 2009), team formation and development of communicational and social skills (Hunter, 2006). For example, (Van Boekel et al., 2016; Muñoz-Bullón et al., 2017) emphasize physical activity increases self-confidence of adolescents and enables them to become more active and successful in the social environment. Moreover, scientific studies (Siskos, 2012; Šniras, 2014; Akelaitis, 2016; Zekioglu et al., 2018; Camiré, Santos, 2019) suggest the physical activity that pays enough attention to the development of social skills helps adolescents to improve their social skills. The adolescents that attend classes improve their self-understanding, strengthen their relation with contemporaries, improve their social behaviour and the reduction of problematic behaviour can be noticed (Matos et al., 2016; Common et al., 2019). Studies show the training programmes based on the model of the personal social emotional training can improve social skills in older adolescents (Akelaitis, 2016). Physical education classes give a lot of various emotions and help adolescents to reveal themselves better. Thus, physical education classes can be a proper kind of activity for the development of social and emotional skills in adolescents (Siskos et al., 2012). Performed studies also show it is possible to train both social and moral skills (Hellison, Martinek, 2006), fair behaviour (Vidoni, Ward, 2009), create team work (Hunter, 2006) and cooperation in physical education classes with success (Dupri et al., 2020). On analysing scientific publications, it can be noticed the peculiarities of social skills in adolescents are often emphasized in the context of the social environment, but there is a lack of studies paying attention to the formation of social skills in physical education classes. Moreover, there is a lack of scientific data, which results would reflect an impact of the social skills training programme on the social skills of adolescents attending physical education classes.

The goal of this study is to reveal the impact of the training programme on the social skills of adolescents attending physical education classes.

During the study, we raised a hypothesis that the social skills training programme will have a positive impact on the situational and basic social skills of adolescents attending physical education classes.

2. Materials and methods

2.1. Participants

By using the principle of the random serial selection (i.e., all the schools had equal possibilities to get into the sample), an experimental group was formed from 25 adolescents and a control group was formed from 23 ones. 48 14-15-year-old boys-adolescents from two schools that attended physical education classes participated in the training experiment. The mean age of the researched from the experimental group was $14.72 \pm .46$ and that of the researched from the

control group – $14.81 \pm .28$. The groups of the researched did not differ according to sex because just boys-adolescents participated in physical education classes.

2.2. Measures

The following research methods were applied: questionnaire of situational social skills (Gambrill, 1995; cited from Hinsch, Pfungsten, 1998) and questionnaire of basic social skills (Riggio, Friedman, 1982). The social skills of adolescents before and after the training experiment were evaluated with these questionnaire surveys.

The questionnaire of situational social skills enabled evaluating the following social skills: to be able to refuse, to react to remarks, to be able to contradict, to apologise, to recognise of being wrong, to be able to enjoy praise, to start a conversation, to be able to talk, to be able to end a conversation, to ask for help, to say good words, to tell what one feels. On evaluating these skills, three index levels are classified: 1 – low level, 2 – average level, 3 – high average level.

The questionnaire of basic social skills consists of 24 statements that are evaluated in a five-point scale: 1 – never, 2 – seldom, 3 – sometimes, 4 – often, 5 – always. 4 statements are attributed to each of six social skills. The following social skills are evaluated: emotional expressiveness, emotional sensitivity, emotional control, social expressiveness, social sensitivity and social control.

Emotional expressiveness is the social skill that belongs to the non-verbal region and reflects an individual’s ability to express experienced emotional states spontaneously and exactly. Emotional sensitivity is the ability to be observant and interest in the signs sent by other people (it is non-verbal sensitivity). Emotional control is the ability to control and regulate emotional states and their non-verbal expression.

Social expressiveness is the ability to express oneself in the verbal form and involve other individuals in the social interaction. Social sensitivity is the ability to decode and understand verbal information as well as understanding of norms that regulate proper social behaviour. Social control is the ability that means a person’s ability to introduce oneself, play social roles and defend the own opinion.

2.3. Social skills training programme

During the training experiment, educational conditions were created to form the essential and social skills in adolescents during physical education classes. Two groups of the researched were formed: experimental and control ones (the participants were selected to these groups randomly from two comprehensive schools). The social skills training programme was applied for the experimental group at the beginning of physical education classes and there was no impact on the control group, i.e., classes were organized to the adolescents from this group according to the usual school programme. The duration of the situational and basic social skills training programme was 18 weeks and up to 20 minutes were spent at the beginning of every physical education class on the development of these skills. Social skills were trained twice per week by using different training methods (Table 1).

Table 1. Social skills training programme for the adolescents attending physical education classes

Social skills	Number of sessions	Content	Training method	The purpose of the training method
Situational social skills	2	To be able to refuse	Role play	It helps to express the internal state, ideas, feelings, dreams, restore phenomena of real life actively and design them, experience them
	2	To react to remarks		
	2	To be able to contradict		
	2	To apologise		
	2	To recognise of being wrong		
	2	To be able to enjoy praise		
	2	To start a conversation		
	2	To be able to talk		
	2	To be able to end a conversation		
	2	To ask for help		
	2	To say good words		

Basic social skills	2	To tell what one feels		
	2	Emotional expressiveness	Sensitive training	It helps to feel the internal world of another person with the expression of feelings and emotions and evaluate the own behaviour and behaviour of other people properly
	2	Emotional sensitivity		
	2	Emotional control	Imagination training	It helps to plan new goals, imitate behaviour, create by using the visual activity, play, remember information better
	2	Social expressiveness	Method of small groups	It helps to strive for academic and social goals on communicating by consolidating the available knowledge or skills
	2	Social control		
2	Social sensitivity	Designing of positive behaviour	It helps to reveal the understanding and attitudes to certain questions and is especially good for the discussion of emotions, beliefs and feelings	

2.4. Statistical Analyses

The SPSS 26.0 (Statistical Package for social Science) programme package was used for the study data analysis. The χ^2 (chi square) criterion was used for the statistical data analysis in order to check the statistical difference between evaluations. The Student's *t* test was also applied in order to determine the equality between the means of the experimental and control groups. The obtained data was considered statistically significant in case it coincided with the significance level $p < .05$.

The following was also calculated in the statistical data analysis: percentage expressions, arithmetic means (\bar{x}), standard deviations (SD).

3. Results

In this section, we analysed the results of the study and tried to reveal the changes of situational and basic social skills related with the impact of the training programme in the adolescents from the experimental and control groups that attended physical education classes. The repeated study after the training programme revealed the measures with the pedagogical impact applied during the experiment had an influence on the situational social skills of adolescents. The evaluations of situational social skills in the experimental group changed statistically significantly because there were much more answers, which level of skills was evaluated as high, but the data of the control group show the changes of these skills are insignificant (Table 2).

Table 2. Indexes of situational social skills in the adolescents attending physical education classes before and after the training programme (in numbers and per cent)

Situacion social skills	Group	Study time	Level						$\chi^2(2); p$
			low		average		high		
			n	percent	n	percent	n	percent	
To be able to refuse	Experimental group ** (n=25)	Before social skills training programme	11	44	8	32	6	24	3.47 $p < .01$
		After social skills training programme	5	20	10	40	10	40	

	Control group (n=23)	Before social skills training programme	9	39	6	26	8	35	1.75 p > .05
		After social skills training programme	8	35	10	43	5	22	
To react to remarks	Experimental group ** (n=25)	Before social skills training programme	4	16	14	56	7	28	3.13 p < .01
		After social skills training programme	2	8	10	40	13	52	
	Control group (n=23)	Before social skills training programme	15	65	5	22	3	13	1.45 p > .05
		After social skills training programme	11	48	8	35	4	17	
To be able to contradict	Experimental group ** (n=25)	Before social skills training programme	6	24	12	48	7	28	3.98 p < .01
		After social skills training programme	2	8	10	40	13	52	
	Control group (n=23)	Before social skills training programme	4	17	6	26	13	57	1.07 p > .05
		After social skills training programme	6	26	5	22	12	52	
To apologise	Experimental group ** (n=25)	Before social skills training programme	4	16	13	52	8	32	6.38 p < .01
		After social skills training programme	0	0	11	44	14	56	
	Control group (n=23)	Before social skills training programme	10	44	7	30	6	26	.37 p > .05
		After social skills training programme	8	35	8	35	7	30	
To recognise of being wrong	Experimental group ** (n=25)	Before social skills training programme	3	12	11	44	11	44	6.16 p < .01
		After social skills training programme	1	4	5	20	19	76	
	Control group (n=23)	Before social skills training programme	10	43	8	35	5	22	1.53 p > .05
		After social skills training programme	12	52	9	39	2	9	
To be able to enjoy praise	Experimental group * (n=25)	Before social skills training programme	4	16	8	32	13	52	2.25 p < .05
		After social skills training programme	2	8	13	52	10	40	
	Control group (n=23)	Before social skills training programme	11	48	6	26	6	26	1.07 p > .05
		After social skills training programme	8	35	9	39	6	26	
To start a conversation	Experimental group ** (n=25)	Before social skills training programme	6	24	12	48	7	28	4.13 p < .01
		After social skills training programme	3	12	8	32	14	56	
	Control group (n=23)	Before social skills training programme	6	26	13	57	4	17	1.83 p > .05
		After social skills training programme	10	43	11	48	2	9	
To be able to talk	Experimental group ** (n=25)	Before social skills training programme	10	40	8	32	7	28	7.02 p < .01
		After social skills training programme	2	8	12	48	11	44	
	Control group (n=23)	Before social skills training programme	9	39	9	39	5	22	1.71 p > .05
		After social skills training programme	12	52	9	39	2	9	
To be able to end a conversation	Experimental group (n=25)	Before social skills training programme	6	24	8	32	11	44	1.40 p > .05
		After social skills training programme	4	16	12	48	9	36	
	Control group	Before social skills training programme	8	35	7	30	8	35	.84 p > .05

	(n=23)	After social skills training programme	11	48	6	26	6	26	
To ask for help	Experimental group ** (n=25)	Before social skills training programme	2	8	12	48	11	44	3.13 p < .01
		After social skills training programme	3	12	6	24	16	64	
	Control group (n=23)	Before social skills training programme	7	30	11	48	5	22	1.69 p > .05
		After social skills training programme	6	26	8	35	9	39	
To say good words	Experimental group ** (n=25)	Before social skills training programme	7	28	9	36	9	36	6.52 p < .01
		After social skills training programme	3	12	4	16	18	72	
	Control group (n=23)	Before social skills training programme	3	13	11	48	9	39	1.80 p > .05
		After social skills training programme	4	17	8	35	11	48	
To tell what one feels	Experimental group ** (n=25)	Before social skills training programme	9	36	9	36	7	28	4.37 p < .01
		After social skills training programme	3	12	10	40	12	48	
	Control group (n=23)	Before social skills training programme	8	35	9	39	6	26	.37 p > .05
		After social skills training programme	10	43	8	35	5	22	

Note. * p < .05; ** p < .01

On analysing the data, it can be noticed the skill there were no statistically significant changes in the experimental group just in the case of the skill *to be able to end a conversation* ($p > .05$). On analysing the changes of the skill *to be able to refuse* after the training programme, it emerged 40 per cent of the researched from the experimental group evaluated the level of that skill as high, although 44 percent of the researched had evaluated the level of that skill as low during the initial study ($p < .01$). The level of the skill *to react to remarks* grew significantly in the researched from the experimental group after the training programme because 52 percent of adolescents indicated a high level of that skill ($p < .01$). After comparing the percentage data distribution of the skill *to be able to contradict* in the experimental group with the initial data, we can see the number of high-level cases increased from 28 to 52 percent ($p < .01$). It was revealed after the second study the evaluations of the skill *to apology* increased statistically significantly in the experimental group compared with the initial results ($p < .01$): the number of high-level cases increased from 32 to 56 percent. On analysing the percentage distribution of the results *to recognise of being wrong* in the experimental group, it was determined the evaluations of average-level skills decreased after the experiment (44 percent before the development programme and 20 percent after the training programme), but the number of high-level evaluations increased (44 percent before the training programme and 76 per cent after the training programme, $p < .01$). The obtained results of the study also showed the indexes of the skill *to be able to enjoy praise* raised at the average level of that skill especially – from 32 to 52 percent. Compared the percentage data distribution of the skill *to start a conversation* in the experimental group with the initial data, we can see the number of high-level cases increased from 28 to 56 percent ($p < .01$). After the training programme in the experimental group ($p < .01$), the number of students evaluating their level of the skill *to be able to talk* as high increased (28 percent before the training programme and 48 percent after the training programme, $p < .01$), but the number of adolescents evaluating this skill as low decreased to the maximum (40 percent before the training programme and 8 percent after the training programme). On presenting the data of the skill *to be able to ask for help*, we noticed the adolescents from the experimental group also indicated their level of that skill was high (44 percent before the training programme and 64 percent after the training programme, $p < .05$) after the training programme. The analysis of the results of the skill *to be able to say good words* revealed the relation between the evaluations of the average level and especially of the high level of that skill changed under the influence of the social skills training programme in the experimental group: 48 percent of adolescents evaluated the level of that skill as low before the training programme and

35 percent – after the training programme, but 36 percent indicated a high level of their skill before the training programme and even 72 percent – after the training programme ($p < .01$). The results of the study show the level of the skill *to tell what one feels* grew significantly ($p < .01$) in the experimental group. The analysis of the results allows emphasizing there were statistically significant changes in the experimental group on evaluating the level of situational social skills (*to be able to refuse, to react to remarks, to be able to contradict, to apologise, to recognise of being wrong, to be able to enjoy praise, to start a conversation, to be able to talk, to be able to end a conversation, to ask for help, to say good words, to tell what one feels*). Meanwhile, compared the results of the control group before and after the training programme, it can be noticed the changes of situational social skills in this group are insignificant. It enables supposing the obtained results of the experimental group reveal the possibilities of the social skills training programme applied at physical education classes and its impact on the situational social skills.

Below, we will present the results of change of basic social skills in the adolescents from the experimental and control groups attending physical education classes in relation with the impact of the social skills training programme.

Table 3. Indexes of basic social skills in the adolescents attending physical education classes before and after the training programme (M \pm SD)

Basic social skills	Experimental group (n = 25)				Control group (n = 23)			
	Before social skills training programme	After social skills training programme	Student's t test	Statistical significance level	Before social skills training programme	After social skills training programme	Student's t test	Statistical significance level
Emotional expressiveness	2.86 \pm .41	4.28 \pm .66*	-9.14	$p < .01$	2.79 \pm .34	2.66 \pm .57	.94	$p > .05$
Emotional sensitivity	2.54 \pm .57	3.83 \pm .82**	-6.46	$p < .01$	2.59 \pm .55	2.84 \pm .49	-1.63	$p > .05$
Emotional control	3.43 \pm .49	4.29 \pm .58**	-5.66	$p < .01$	3.02 \pm .39	2.99 \pm .65	.18	$p > .05$
Social expressiveness	2.86 \pm .51	3.37 \pm .83*	-2.57	$p < .05$	3.11 \pm .42	2.87 \pm .57	1.62	$p > .05$
Social sensitivity	2.79 \pm .33	4.12 \pm .74**	-8.21	$p < .01$	2.86 \pm .59	3.15 \pm .72	-1.49	$p > .05$
Social control	3.09 \pm .61	4.34 \pm .59**	-7.36	$p < .01$	2.91 \pm .43	3.09 \pm .69	-1.06	$p > .05$

Note. * $p < .05$; ** $p < .01$. M = mean; SD = standard deviation.

The study performed after the social skills training programme showed the evaluation of *emotional expressiveness* in the adolescents from the experimental group changed: the level of *emotional expressiveness* (4.28 \pm .66) was higher statistically reliably after the experiment ($p < .01$) than before the experiment (2.86 \pm .41). That change of results in the experimental group was affected by a higher number of answers given by the adolescents that were evaluated with higher and not average points. The data of the control group changed little after the experiment compared with the initial results ($p > .05$). On analysing the results of the skill *emotional sensitivity*, it should be noticed the data of the control group did not change after the experiment compared with the initial results ($p > .05$). However, the analysis of results showed the indexes of adolescents from the experimental group improved from 2.54 \pm .57 to 3.83 \pm .82 ($p < .01$) after the training programme. On evaluating the changes of the skill *emotional control*, it emerged the *emotional control* of adolescents from the experimental group increased statistically significantly after the training programme (3.43 \pm .49 to 4.29 \pm .58, $p < .01$), although it cannot be said the same about the

changes of this social skill in the control group ($3.02 \pm .39$ before and $2.99 \pm .65$ after the training programme; $p > .01$). These results enable stating the level of the skill *emotional control* in the adolescents from the control group was average before and after the experiment and the level of *emotional control* in the experimental group after the experiment can be interpreted as high.

On analysing the data of the skill *social expressiveness*, it should be noticed the tendency of growth of the indexes in the experimental group was obvious in the experimental group. The analysis of results revealed the indexes of the experimental group improved from $2.86 \pm .51$ to $3.37 \pm .42$ after the training programme. Thus, it can be stated the social skills training programme had a sufficient influence because the level of the skill *social expressiveness* raised statistically significantly ($p < .05$) in the researched from the experimental group. Meanwhile, the data of the control group did not change after the experiment compared with the initial results ($3.11 \pm .42$ before the training programme, $2.87 \pm .57$ after the training programme, $p > .05$). The repeated study after the social skills training programme showed just the evaluation of the skill *social sensitivity* changed statistically significantly ($p < .01$) in the experimental group: ($2.79 \pm .33$) before the experiment and ($4.12 \pm .74$) after the experiment. That change of results in the experimental group was affected by a higher number of answers given by the adolescents that were evaluated with higher and not average points. The data of the control group changed little after the experiment compared with the initial results ($p > .05$). A statistically significant difference was also determined on evaluating the skill *social control* before and after the use of the social skills programme. The indexes of the skill *social control* in the researched from the experimental group changed from ($3.09 \pm .61$ before the training programme to $4.34 \pm .59$ after the training programme, $p < .01$). On evaluating the change of statistical indexes of the skill *social control* in the adolescents from the control group attending physical education classes before and after the social skills training programme, there were no statistically significant differences ($p > .05$).

4. Discussion

The performed training experiment allowed evaluating the impact of the social skills training programme on the situational and basic social skills of adolescents attending physical education classes. We tried to ensure the validity of the study by performing the research of two homogenous groups (in respect of sex, age, level of social skills) with the help of the initial and final measurements. The validity of the study was also obtained because there was no statistically reliable difference between the evaluations of the level of situational and basic social skills in the experimental and control groups before the implementation of the social skills programme ($p > .05$). The obtained results enable supposing the social skills training programme applied during physical education classes had a positive impact on the social skills of adolescents that are especially necessary in various situations of daily life. Taking it into account, it can be stated reasonably the scientific hypothesis raised at the beginning of our work was confirmed. To sum up the statistical indexes of situational skills, it was determined the level of the following skills increased especially significantly in the experimental group after the training impact: *to be able to refuse, to react to remarks, to be able to contradict, to apologise, to recognise of being wrong, to be able to enjoy praise, to start a conversation, to be able to talk, to be able to end a conversation, to ask for help, to say good words, to tell what one feels*. On analysing the data more comprehensively, it emerged there were no statistically significant changes just during the evaluation of the level of the skill *to be able to end a conversation*. In order to obtain a bigger change of the evaluation of this skill, more attention may be paid to the content, goal, time of conversations among adolescents or even their emotional state in the future.

We will also review the results of change in the results of the level of basic social skills. The research performed at the beginning of the experiment showed there were no statistically significant changes between the groups before the experiment. However, the repeated study after the social skills training programme showed just the evaluation of basic social skills of adolescents from the experimental group (emotional expressiveness, emotional sensitivity, emotional control, social expressiveness, social sensitivity, social control) changed significantly after the social skills training programme: it was reliably higher after the experiment than before the experiment. That change of results in the experimental group was affected by a higher number of answers given by the adolescents that were evaluated with higher points. All these changes can be explained by the training impact applied during the experiment.

However, by comparing the effectiveness between the social skills training programmes applied during our study and other scientific studies, we notice that some authors (Akelaity, 2017; Brusokas, 2014) have performed similar experimental studies. For example, A. Akelaity (2017) tried to reveal the peculiarities of the development of social emotional abilities in high-school students during physical education classes in his work. One of the main tasks of this work was to evaluate the effectiveness of the social emotional abilities training programme on high-school students. There were similar tendencies in this study that just the *abilities of communication, cooperation, perseverance, social self-control and social adaptation* improved in the students of the experimental group statistically significantly after the complex emotional abilities training programme ($p < .05$). Meanwhile, Malinauskas et al. (2018) analysed the self-activity of young sportspeople and peculiarities of its development and the impact of the applied training programme on the self-activity and its components was also determined. Taking into account these studies, we can agree with the conclusions drawn by (Akelaity, 2017; Malinauskas et al., 2018) purposeful development of social skills based on the social skills model can have a positive influence on the social skills of students. On the other hand, some authors (Goudas, Magotsiou, 2009; Gresham, 2016) recognise the effectiveness of social skills programmes, but express their opinion that their impact can be short-term. We suppose additional scientific studies should be performed in order to answer the question about the duration of the training impact. The study performed by Nalbant (2018) showed similar research and it was tried to reveal the impact of the training programme applied during the physical activity of people with autism (their age ranged from 6 to 26) on their social skills, motor and physical abilities. It makes the possibility of comparison of our results a little more difficult because the researched of that study were autistic students and the contents of the training programme, its duration, frequency and time spent on practice were different. Although our data does not contradict to the results of the study performed by Madrona et al. (2014), it is tried to evaluate the impact of the training programme on the social skills of lower students (boys and girls) playing games during physical education classes in the work of these authors. The results of the study showed that after the social skills training programme was implemented during physical education classes with the help of games, positive changes in the social skills of fourth-formers-girls and boys were even reached after a month.

To sum up the changes of situational and basic social skills in our experimental group after the social skills programme, we can explain we tried to create as many possibilities as possible for adolescents during our experiment to apply a trained skill for real situations during physical education classes.

For example, our research showed it would be purposeful to perform wider and more comprehensive studies and pay more attention to the analysis of the contents of training programmes because it is presented quite superficially in many studies. We can also suppose deeper studies are necessary in order to reveal how long adolescents-girls and boys are able to apply trained skills effectively and it could be a trend of further educational research.

5. Conclusion

The impact of the social skills training programme on the situational and basic social skills of 14-15-year-old adolescents attending physical education classes was determined during the training experiment that lasted for eighteen weeks. During the training experiment, the social skills training programme was applied in physical education classes and the level of the following situational social skills improved statistically significantly in the experimental group: to be able to refuse, to react to remarks, to be able to contradict, to apologise, to recognise of being wrong, to be able to enjoy praise, to start a conversation, to be able to talk, to be able to end a conversation, to ask for help, to say good words, to tell what one feels. The following basic social skills of adolescents also improved statistically significantly under the influence of the social skills training programme: emotional expressiveness, emotional sensitivity, emotional control as well as social expressiveness, social sensitivity and social control during physical education classes.

A few limitations of the study that are related with the sample of the study and applied research methods should be accentuated. Although the sample of the experimental and control groups was sufficient, but the researched from a few schools participated in the study and their physical education classes were organized according to the usual programme before the experiment. This study is also limited because the results of the experiment are only based on the

data of questionnaires of the researched themselves. It is supposed further studies are possible in order to evaluate the influence of the experimental impact on the social skills of adolescents by using more different methods, for example, monitoring or group evaluation methods.

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Didactic Possibilities of Mobile Applications to Form Intercultural Competence of Students

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Abstract

The current epidemiological situation and the format of distance interaction determine the importance of including digital technologies to form intercultural competence. The problems of obtaining the practice of oral foreign language communication, studying the norms of net etiquette, the rules of ethics in multilingual communication, the mechanisms of word formation are actual. The purpose of the research is to identify the didactic possibilities of mobile applications and purposeful work with m-learning technologies to form intercultural competence of students.

The methodology is based on the analysis of scientific literature on the issues of m-learning. The provisions of the communicative-activity approach are taken into account when integrating mobile applications into the subject-subject scheme of intercultural communication. Empirical methods were used (surveys, analysis of the results of working with mobile applications and MS Teams). The effectiveness of the proposed approach was confirmed by a pedagogical experiment, during which educational activities with mobile applications were organized within the framework of a specially designed module. Research results. The authors describe the possibilities of mobile applications for involving students in active group interaction on the project, professional self-presentation and intercultural communication. In conclusion the conditions under which the integration of mobile applications into the educational process will be most effective are summarized: the targeted nature of

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work with m-learning technologies; collaboration of teachers of various disciplines; conscious participation of students at all stages of choosing and using a mobile application.

Keywords: digital technologies, mobile learning, interaction, language diversity, multilingual communication, educational environment.

1. Introduction

In the modern world, taking into account globalization, the need to establish information interaction with representatives of other countries is increasing. The UN General Assembly has proclaimed the period from 2022 to 2032 as the International Decade of the World's Indigenous Languages. Firstly, this event is aimed at mobilizing resources for their preservation, revival and promotion. Secondly, the proclamation of the "decade of the languages of the world" is one of the important results of UNESCO's activities in the direction of intensifying international cooperation and stimulating the dialogue of nations (Burnet, 2008). Thirdly, recommendations were developed on exactly how states should contribute to the enrichment of the information environment for a deep analysis of modern problems and trends in the development of world languages, for the introduction of scientific developments in the educational process. As part of the implementation of these recommendations, international events are being held to develop new approaches to the development of foreign language communication. In practice, it has been demonstrated that tasks focused on the creation of verbal patterns are positively perceived by students. Relevant activities support the atmosphere of creativity and facilitate easier perception of the facts of scientific information.

As a result, a special place is given to form intercultural competence in the digital educational environment: foreign language communication should be organized in all areas of training of specialists at a sufficiently high level. This is also an important condition for graduates to have the opportunity to take an active part in the life of the international scientific community. In-demand professionals need to master all the means of exchanging information with foreign colleagues.

J. Picatoste, L. Pérez-Ortiz, S. M. Ruesga-Benito determine that the resources of mobile technologies must be integrated into the learning process (Picatoste et al., 2018). Indeed, at present, university students are actively using a variety of mobile applications, which are becoming real tools for interactivity and obtaining various types of information. However, in practice, the integration of mobile applications into intercultural communication is accompanied by many problems:

- how to identify and select a mobile application that helps achieve educational goals, meet the challenges of the future, the demands of the digital society, the needs of the students themselves;

- how to use the mobile application as efficiently as possible, i.e., shift the emphasis during integration to its didactic, rather than entertainment potential;

- how to organize a mandatory check of self-directed learning, compliance with the level of material complexity to the curriculum, training and gradual formation of self-control skills, taking into account individual characteristics of students;

- how to maintain the leading role of the teacher in the transfer of new knowledge, education of the individual, socialization and professional self-determination.

And finally, new realities of the digital society necessitate the transformation of education, taking into account sanitary and epidemiological conditions.

In the modern world, mobile applications occupy a significant place precisely due to their unique capabilities for transmitting, searching, processing information; management of information and socio-economic systems; organization of interactivity and interaction. The current situation with COVID-19 and temporary transition to distance work only show their importance in various areas of life and fields of activity, including professional foreign language, intercultural communication.

So, the introduction of mobile learning technologies (m-learning), according to P. Cabrera-Solano, A. Quinonez-Beltran, P. Gonzalez-Torres, C. Ochoa-Cueva, L. Castillo-Cuesta (Cabrera-Solano et al., 2020), helps the activation of professional foreign language, intercultural communication, intensification of knowledge, differentiation in learning. However, like any means, according to K. C. Brata, A. H. Brata, they have their advantages and disadvantages (Brata, Brata, 2020). The task of the teacher is their optimal integration into the educational process and intercultural interaction.

Thus, there is a need for further research of the potential of mobile applications in the context of the new epidemiological situation and the development of distance learning.

1.2. Objectives of the research

The purpose of the work is determined from the need to identify the didactic capabilities of mobile applications and to determine the effectiveness of targeted work with m-learning technologies form intercultural competence.

Research objectives:

- to determine the potential of m-learning in the new epidemiological situation and distance interaction;
- to analyze the experience of using mobile services in online learning and multilingual communication at a distance;
- to identify new promising areas for the use of mobile applications for distance foreign language information interaction;
- to describe the stages of systematic purposeful work that allows the most effective use of mobile applications to form intercultural competencies of students;
- to confirm the effectiveness of the proposed educational and cognitive activity for the formation of intercultural competencies of students experimentally.

2. Relevance

2.1. Literature review

2.1.1. Analysis of Russian scientific and pedagogical literature

Intercultural competence is considered by O.E. Khukhlaev, M.Yu. Chibisova as the ability of a person to function effectively when communicating with representatives of different nations and in different cultural environments. Its importance for solving specific professional problems in a multicultural environment, according to these scientists, is obvious. The authors note that if the achievement of a certain level of intercultural competence allows solving problems associated with cultural differences, then a high level of intercultural abilities allows using cultural diversity as a resource (Khukhlaev, Chibisova, 2010). In this regard, the issue of measuring intercultural competence is extremely relevant both for the research field and for teaching practice.

According to O.A. Obdalova, O.V. Odegova, the inclusion of students in foreign language information interaction should no longer be an end in itself (Obdalova, Odegova, 2018). The language of another country, another culture can be used as a learning tool for seminars and lectures. In addition, intercultural communication is becoming the leading activity of a modern scientist.

Intercultural communication of the future specialist is understood by N. A. Sergeeva et al. as a software-mediated context of any interaction of foreign language teachers based on foreign language communicative activities in the field of multicultural education (Sergeeva et al., 2021).

According to V. V. Matveev et al. features of intercultural communication based on digital technologies must be taken into account when designing a system for training a professional of the future at the following levels (Matveev et al., 2021):

- with organizing intercultural interaction in the digital environment as a special communicative social space, a special place for the implementation of the language;
- with verbal communication expressed using electronic texts;
- with the development of linguistic diversity in cyberspace and the organization of equal access through global networks to any information that is in the public domain.

In the domestic theory and practice of integrating mobile applications into education, there are following areas of research: highlighting the features, principles and advantages of using m-learning technologies in the educational process of higher education (Soboleva, Perevozchikova, 2019); description of specific organizational forms and teaching methods to form various competencies (Levina, Goncharova, 2021). D.D. Klementiev and V.V. Klementieva emphasize the expediency of using accessible mobile applications in education on specific examples to optimize classroom lessons and self-directed learning (Klimentyev, Klimentyeva, 2018). E.A. Komochkina, L.V. Yarotskaya substantiate the need for the introduction and use of mobile technologies in the system of higher education. The authors consider in detail mobile applications for systematic evaluation and control (Komochkina, Yarotskaya, 2020).

The work of E.V. Tikhonova, A.S. Potapova, A.V. Kreider also reveals the goals of using innovative technologies for a foreign language teaching: providing the possibility of continuous learning regardless of age, place and time; creation of a unified information and educational environment (Tikhonova et al., 2018).

The use of m-learning technologies, as noted by N.S. Petrishcheva, T.G. Rybalko, allows “updating students’ knowledge, engaging them in an active dialogue, learning to express their point of view, demonstrating their skills and developing certain skills” (Petrishcheva, Rybalko, 2020). This circumstance is especially important for training and practice of solving future professional problems, reaching the level of professional competence.

The use of mobile applications, as substantiated by N.N. Serostanov and E.I. Choporova, meets the requirements of modern education standards and, subject to the conditions for effective organization, helps the activation of the didactic process (Serostanova, Choporova, 2020).

O. Kalugina, N. Tsarevich prove that in the system of professionally oriented education, directions for the development of innovative processes have been outlined: a change in the role of the teacher in the educational process; increasing student autonomy; diversification of the content of training; strengthening interdisciplinary links between the study of a foreign language and other disciplines; changing the nature of profiling; increasing interest in project-based and blended learning technologies (Kalugina, Tarasevich, 2018).

M-learning technologies significantly expand the possibilities of implementing the procedure for assessing students' achievements. According to the communicative characteristics, D. Bartosh, N. Galskova, M. Kharlamova, E. Stoyanova distinguish two models of interaction at the stage of systematization and control: "student – mobile application" and "student – mobile application – teacher" (Bartosh et al., 2020).

Another classification was proposed by N.V. Vasiliev, V.V. Grigoriev, Golubev, I.V. Evgrafov (Vasiliev et al., 2017). The paper considers two models for using mobile applications: choose your device and bring your device. So, mobile technologies make it possible to significantly expand the practice of foreign language communication with native speakers and engage in intercultural communication. O. Putistina also notes that it is necessary to monitor the compliance of the level of the material complexity with the curriculum, to ensure the gradual formation of self-control skills, taking into account the individual characteristics of students (Putistina, 2015).

One of the problems of a modern university in the new sanitary and epidemiological conditions, as noted by N.A. Sergeeva et al., is the organization of oral, professionally oriented foreign language communication. In their opinion, the effectiveness of the implementation of teaching foreign languages during the coronavirus pandemic depends on the level of students' motivation to study the discipline, the presence of clearly structured advanced homework assignments and the use of active teaching methods during online classes (Sergeeva et al., 2021).

Another important position for the research is presented in the work of D. A. Ivanchenko (Ivanchenko, 2014). The scientist concludes that it is advisable to use a complete set of such mobile applications: universal mobile services, mobile identification and authentication tools for effective communication and distance interaction in a higher education institution.

Thus, despite the fact that there are enough works on m-learning and their formation by means of intercultural foreign language communication, there are two important circumstances:

- in most of them, mobile applications are used only at one stage of education (actualization, motivation, new material, consolidation/systematization, control or reflection);
- the sanitary and epidemiological situation and distance learning require a revision of methods and forms of interaction.

Due to the fact that formation of intercultural competence of a highly qualified and competitive specialist is a priority of the modern educational space, there is an objective need for additional study of the didactic potential of mobile applications in the context of the new epidemiological situation and the development of a remote interaction format.

2.1.2. Analysis of foreign research

Modern society is characterized by a sharp intensification of migration processes and clashes with representatives of other cultures, which differ in many respects from the indigenous people. Possession of intercultural competence, according to H. Trisasanti et al., allows to build relationships with representatives of other cultures with knowledge of their characteristics, due to

differences in traditions, norms, behavior, appearance and many other things that are behind the focus of attention externally observed (Trisasanti et al., 2021).

The personal qualities and professional competencies necessary for a specialist of the future in order to interact in a multicultural environment, given its diversity, for the implementation of developmental activities, according to G. Tutunea, include the ability to form and develop universal learning activities, patterns and values of social behavior, multicultural communication skills and tolerance (Tutunea, 2021).

At the personal level, as M.J. Ennis et al. prove, multicultural education help form professionally significant qualities of students as a system of professionally significant affective and subjective-volitional characteristics, the presence and degree of formation of which ensure the successful implementation of the professional activities of a teacher in a multicultural educational environment (Ennis et al., 2021). At the level of society, as shown in the work of H. Trisasanti et al., multicultural education helps overcome interethnic conflicts and, as a result, better efficiency in the cooperation of citizens who proclaim certain values of a particular culture (Trisasanti et al., 2021).

A foreign language is included in the basic cycle of the humanities studied at many levels of education, including at the stage of higher education. This, as N. Yemez, K. Dikilitaş substantiate, means that the teacher of a foreign language faces the task of developing in students both communicative skills (listening, speaking, reading and writing), language skills (phonetic, lexical, grammatical), and sociocultural awareness (Yemez, Dikilitaş, 2022). These findings allow them to suggest that turning to productive models of a foreign language teaching can not only help improve communication skills and language skills, but also stimulate the formation of outside-the-box thinking professionals who are able to creatively refract the acquired knowledge in practice.

The Universal Declaration on Cultural Diversity, adopted by UNESCO, defines the range of activities that countries/states should implement (UNESCO: Building peace..., 2022):

- preservation of the linguistic heritage of mankind, promotion of the dissemination of creative ideas;
- encouragement of linguistic diversity, fostering respect for the mother tongue, promoting the study of several languages from childhood.

Undoubtedly, classes in the form of conferences, linguistic and cultural quizzes, virtual tours, debates, creative competitions and presentations, projects and days of national culture are effective for the formation of intercultural competence. So, it is necessary to create educational communicative situations that determine the conditions and goals of communication for the organization of intercultural communication in the classroom for a practical course of a foreign language.

For example, cultural competition. Students are offered images of famous scientists of various nationalities. The task is to correlate each portrait with an attribute of the activity that glorified this person. To check the correctness of the answer, you need to "click" on the portrait. Or, it is proposed to correlate the portrait with the type of activity that glorified the person.

This type of task provides an opportunity to get acquainted with the manners and etiquette of different countries; help to understand the peculiarities of the culture of other peoples, thus forming multicultural competence; provide a communicative orientation of training; help develop practical skills and creative abilities of students by stimulating the vigorous activity of their thinking and speech.

R. Barac et al. argue that work in accordance with these areas must begin at preschool age and continue at all stages of education (Barac et al., 2014). Including in the practice of university teaching. N. Yemez, K. Dikilitaş conclude that the learning model in the modern multicultural world should involve the formation of a creative personality capable of independent creative search for solving professional problems (Yemez, Dikilitaş, 2022). M. Elphik considers the possibilities of mobile technologies in terms of increasing the creative potential of students (Elphik, 2018).

In particular, A. Andujar et al. identify the following goals for using digital tools for learning a foreign language: improving the quality and efficiency of mastering theoretical material; activation of knowledge and support of professional self-determination; implementation of intersubject communications; increase in the volume and optimization of the search for the necessary information; development of communication skills (Andujar et al., 2020). G.E. Putrawan, B. Riadi explore the potential of m-learning specifically for the modern educational space (Putrawan, Riadi, 2020).

In the new sanitary and epidemiological conditions, mobile learning is characterized by the following features: interaction and collaboration in the network, regardless of the location of

students and teachers; use of a mobile device as a source of organizational, methodological, reference and educational materials; providing students with the opportunity to adjust the content; researching; learning at your own pace based on the multimedia content of mobile devices (Nadeem et al., 2020).

Thus, in the course of analytical work with the literature, it is substantiated that

- promoting linguistic diversity, promoting the dissemination of creative ideas, incorporating digital resources into learning are initiatives supported at the UNESCO level;
- the formation of intercultural competence determines the formation of professional competencies of future specialists;
- a foreign language teaching has a powerful didactic potential for the development of intercultural competence;
- in the modern educational space and the conditions of the spread of COVID-19, new digital tools are emerging that create additional conditions for the formation of intercultural competencies of students.

It is necessary to determine the conditions under which new digital technologies most effectively realize their potential in distance learning for specialists whose future professional activity involves solving problems in the field of education, healthcare, culture, sports, management, and social assistance to the population (Günday, Çamlıoğlu, 2016).

3. Materials and Methods

3.1. Theoretical and empirical methods

The following methods were used in the work: theoretical analysis and generalization of literature in describing the conditions for effective training of future specialists in the context of the spread of COVID-19; features of the inclusion of mobile services in multicultural education, adaptation and socialization of the individual; the didactic potential of digital tools to enhance foreign language communication and dialogue between representatives of different cultures.

The research methodology takes into account the key principles of task-based learning (hereinafter – TBL). TBL is a kind of communicative method. Technology places a strong emphasis on skills and competencies. The basic principle of TBL is that it is important not only what is taught, but also why in this way.

The execution of tasks using mobile resources includes the following steps: problem statement (tasks) – selection of a mobile application – planning activities in the MS Teams space – execution – reflection (assessment of the solution itself and the effectiveness of choosing a service).

The second principle is the selection of means and methods for overcoming communication problems. All activity with mobile applications is subordinated to the goal of developing the skills required to master any language (reading, grammar, speaking, listening and writing). Mastering the required material in a short time and with sufficient efficiency is due to the fact that the key expressions of the language of another country, grammatical structures, vocabulary are conveyed to the student using a mobile application, in a real and emotionally charged situation.

Simulation of dialogues of professional communication, intercultural communication in the space of a mobile application is used to simulate educational practical activities that allow students to “pass the situation through themselves”. This increases the efficiency of mastering another language, since along with the intellect, the emotional factor is connected. The task of the teacher when integrating mobile technologies into the study of educational material is to create a situation that motivates the student to research, search for solutions to creative issues, and develop grammatical and lexical structures in speech.

To obtain up-to-date information about changes in the level of skills that make up the essence of intercultural competence, empirical methods were used (observation, analysis of the results of working with mobile applications and MS Teams).

The conversation as a psychological method provided for direct or indirect, oral or written receipt from the student of information about his activities. With the help of the method, the most significant, characteristic of the subject, psychological phenomena were objectified. Types of conversations used: interviews, questionnaires and psychological questionnaires.

The experimental study was carried out on the basis of the Vyatka state university. The integration of mobile applications into education was implemented within the disciplines

"Psychology of the professional activity of the individual", "Electronic resources in professional activity", "Foreign language", "Digital technologies in education". Special testing was developed and carried out, including 15 tasks. Auxiliary methods of computer data processing were also used: data presentation in the form of mind maps, tables, diagrams, graphs. 90 students of the second or third year of the bachelor's program 37.03.01 Psychology were involved. When characterizing the relationships of the features under consideration, nonparametric statistical criteria are used, in particular, the Pearson's chi-square coefficient – χ^2 .

3.2. The base of research

The main goal of the experiment was to test the potential of mobile applications in the context of the new epidemiological situation to form intercultural competence of students.

Achieving the goal and objectives of the research becomes possible due to the involvement of teachers of related disciplines in the choice of mobile services and platforms (in particular, "Psychology of professional activity of the individual", "Electronic resources in professional activity", "Foreign language", "Digital technologies in education"), the inclusion of all digital resources and files in a single MS Teams space. The average age of the respondents was 21 years (78 % of girls and 12 % of young people). 90 students of the second and third courses were involved.

With the help of the results of the entrance test, it was possible to collect the required initial data on students. The sample was not random. To fulfill the rules of probabilistic selection, the same teachers supervised the practical activities of all students. They also formulated systems of educational tasks, directed intercultural interaction in the process of solving professionally oriented tasks by students using MS Teams tools:

- creating teams and channels, inviting participants;
- support for intercultural and multilingual activity in the chat,
- placement of educational materials;
- holding an online seminar or lecture;
- screen sharing, meeting recording, recording storage;
- conducting an interactive lesson in MS Teams;
- creating homework, checking, grading; test creation.

The integration of mobile applications into training was carried out in the same classrooms, using the same equipment and software.

The materials for the test were developed by the authors in accordance with the current standard of higher education in the field of study.

3.3. Stages of research

The study was carried out in three stages.

At the preparatory stage of the experiment, various mobile applications for multilingual interaction at a distance (HelloTalk, MS Teams, Zoom, Skype, Tandem, HiNative, Busuu, Duolingo, Memrise, etc.) were considered and analyzed.

To obtain up-to-date information about changes in the level of skills that make up the essence of intercultural competence, empirical methods were used (observation, analysis of the results of working with mobile applications and MS Teams). The integration of mobile applications into education was implemented within the disciplines "Psychology of the professional activity of the individual", "Electronic resources in professional activity", "Foreign language", "Digital technologies in education" of the bachelor's program 37.03.01 Psychology.

The didactic potential of m-learning methods and tools for systematic professionally oriented student learning was studied. Materials of specially organized testing were used to evaluate the input conditions.

For the test-paper, the student could get from 0 to 45 points. According to the measurement results, the levels were determined as follows: from 45 (inclusive) to 39 points – the value of "high", from 38 (inclusive) to 24 – the value of "average", for other cases – "low".

Thus, it was possible to collect data on 90 students, from which the experimental (45 students) and control (45 students) groups were formed. The sample was not random. The experimental group included 78 % of girls and 12 % of young people.

The second stage of the study was devoted to determining the directions for the purposeful inclusion of work with mobile applications and devices in the educational process of the university.

The third stage of the study covers experiential teaching and the use of mobile applications in learning to form professional intercultural competence of students.

4. Results

4.1. Clarification of the essence of the basic concepts

In the framework of the present research, mobile learning is understood as learning supported by mobile devices. The didactic process implemented by means of m-learning reveals the relationship between cognitive activity, intercultural communication and foreign language competence. Intercultural competence is a set of knowledge, skills and abilities common to all participants in information interaction, as well as a positive attitude towards the presence of different ethnic and cultural groups. It implies a willingness to conduct a dialogue based on knowledge of one's own and other cultures, the ability to navigate in time and space of a partner, his social status, intercultural differences, the use of various language forms and information technologies.

The formation of intercultural competence of students through the purposeful integration of the work of students with m-learning technologies into the educational process of the university involves:

- support for a special psychological attitude towards cooperation with representatives of another culture;
- development of abilities to overcome social, ethnic and cultural stereotypes;
- mastering a set of communication tools and supporting their correct choice depending on the communication situation;
- observance of etiquette norms in the process of multilingual virtual communication.

In accordance with these directions, the content was determined for each level of formation of intercultural competence of students (described in paragraph 4.3.2.).

The following ways of forming intercultural competence are applied in the work: educational and cognitive activity in the information environment to understand the features of one's own and another's culture; situational business communication and replenishment of knowledge about other cultures; professional orientation and the acquisition of knowledge about the socio-cultural forms of professional interaction in a foreign culture.

The first key idea for the effective use of mobile applications in a foreign language teaching and the formation of students' intercultural competence is precisely the targeted integration of students' work with m-learning technologies into the educational process of the university.

Directions for the implementation of the key idea: leveling the knowledge and skills of students in the field of using mobile applications; organization of practical activities within the framework of various modules (disciplines).

4.2. Stages of systematic purposeful work on the use of mobile applications to form intercultural competence of students

Next, we describe the features of purposeful work with m-learning technologies to form intercultural competence of students. The didactic potential of mobile applications is revealed on the materials of a specially developed module "Mobile Technologies: Opportunities to Support Online and Offline Learning".

The content of intercultural interaction includes groups of mobile applications that can be used to form the professional competencies of sought-after specialists of the future: instant messengers, mobile versions of social networks, mobile versions of cloud services; QR code scanners, analytics and statistics apps, flash card mobile apps.

At the first stage, students get acquainted with distance learning platforms, their functionality and limitations. It is advisable to include the named module into the composition of a related discipline, for example, "Digital Technologies in Education". It was within the framework of this module that the MS Teams platform was reasonably chosen to integrate various mobile learning resources: chat bots, calendars, Trello, Stream, OneNote Class Notebooks, MindMeister, OpenLearning, Kahoot, Nearpod, Quizlet, and Flipgrid, etc.

Further, educational group activities were organized directly within the framework of the discipline "Foreign Language". The groups were formed from students with different levels of knowledge of mobile applications. In order for students not to deviate from the main task, which is to equalize knowledge and skills in the use of mobile devices for foreign language communication, the groups were given a task. It consisted of two parts. The first part is obligatory. It lists mobile apps to learn and foreign language tasks to complete with them. For example, organize a group video discussion of a situation of professional communication, consolidate grammatical skills, expand vocabulary and work out pronunciation. The second part is variable. Students themselves choose an application that was left unattended in the main part, or explore a "new" aspect of its work. For example, travel planning, finding an online tutor, compiling a menu for a dining room, etc.

At the second stage of including work with mobile applications in the educational activities of the university (and in the teaching of a foreign language), a public defense of group projects was organized. In particular, one of the groups presented the presentation "My Holidays with TripIt". This English-language service allowed them to create a route, save information about departures, mark all the necessary places on the map and indicate upcoming meetings. Notifications about changes in flight status, maps of airports and terminals, and points of interest were also provided.

The integration of mobile applications at the third stage was implemented in the distance learning format for a traditional lesson. At the update stage, the Nearpod application was used, CoachBot for motivation, Trello for learning new material, MindMeister for systematization, Quizlet for consolidation, and the Assessment service for control.

Further, mobile applications were tested on various types of learning activities in online and offline formats. The search for information in a foreign language was supported by such mobile applications as iTranslate, ABBY Lingvo, mobile versions of digital libraries. The selection and brief review of sources was accompanied by work with Coursera, Google Classroom, Moodle, Stepik. Participation in webinars, courses to improve the skills of foreign language and intercultural communication took place on the MS Teams platform itself. Group discussion of the task, problem, plan, results of work is implemented through Trello, Skype, instant messengers.

The second key idea of the study is that the student is an active participant at the stage of a reasonable choice of the mobile application itself to support intercultural communication. In other words, the result of the cognitive activity of students in the module "Mobile Technologies: Opportunities to Support Online and Offline Learning" should be a case of mobile applications. The purpose of the cases: firstly, students demonstrate their competence in the field of digital technologies; secondly, they are preparing the basis for a model of personalized foreign language teaching. Further, from this application case, students independently choose services to perform a particular task in the conditions of the educational situation proposed by the teacher.

For example, what mobile application to use while sending messages and announcements to participants in intercultural interaction; creating test tasks/open type; plan work; discussing options for solving the problem of dialogue of cultures; using virtual notebooks to exchange notes, materials and feedback, as well as collecting and exchanging data in the process of multilingual communication.

The fourth stage of the integration of mobile applications into the educational process of the university includes the application of the acquired knowledge in the course of educational practice. At this stage, the student himself acted as a mentor, but if necessary, he could seek advice from a university teacher. Such appeals arose when representatives of educational institutions and parents of schoolchildren expressed doubts about the advisability of using mobile devices in communication.

However, the distance learning format removed a lot of issues in this direction. Other difficulties were associated with the organization and management of multilingual communication among schoolchildren with very different levels of training, knowledge of grammar and vocabulary. Mobile applications allowed in a playful way to relieve emotional stress from multiple repetition of phrases, the study of norms and rules, word-formation mechanisms. For example, the Duolingo resource has become available to owners of mobile devices. In the process of practicing in a foreign language, students used the following functionality of the application: reminders in the form of a tone scale; special points – lingots for free additional lessons; communication in a convenient chat; sorting material for each user.

The fifth stage of integration is the self-presentation of students with the help of mobile applications to potential employers. For this, online meetings, seminars and round tables were

organized, within which students conducted master classes on the possibilities of m-learning technology (timelines, planners, calendars, questionnaires and virtual sticker boards).

4.3. Experimental Evaluation

4.3.1. The ascertaining stage of the experiment

To assess the input conditions, materials of specially organized testing were used. For each completed of the first 10 tasks, the student could receive a maximum of 2 points. The remaining tasks were evaluated out of 5 points.

1. A task for understanding the content of the text, followed by the choice of the correct answer from several proposed options. For example, read the text and choose one of the three sentence completion options that best suits you.

2. Learning situation: "Alexander from the 6th grade went on an autumn vacation with his parents to the capital of Great Britain. On the first day of their journey, they decided to visit the Palace of Westminster. On the way to the palace, Sasha and his parents decided to have a bite to eat at the West Garden restaurant. Sasha's father only learned German at school, and his mother remembers only "window" from English words. Help Sasha order 3 mashed potatoes with sausage and 3 cups of tea. Write a proposal with an order for the waiter (3 servings of mashed potatoes with sausage and 3 cups of tea, please).

3. Learning situation: "After a delicious lunch, the whole family reached the Palace of Westminster. Sasha was so carried away by the excursion that he lost sight of his parents. The charge of phone battery was low after a lot of photos, then the young man decided to go to the exit and wait for his parents there. The palace has a rather complicated design." Help Sasha ask the employee how to get to the exit of the building (Hello! Can you help me? What is the way to the exit?).

4. Learning situation: "When Sasha waited for his parents, they decided to take a taxi together. The travelers got into the famous London cab, and the driver asked them: "Where do you want to go?" Help Sasha tell the driver that they need to be taken to the Metro Hotel on Main Street (Hello! Could you drive us to Metro hotel on Main street, please)?

5. Learning situation: "At the hotel, Sasha met Mary, who came from France. They struck up a conversation. Mary was very interested to know: where Sasha came from, where this place was, what it was famous for? Help Sasha tell about his hometown Kirov. (I`m from Kirov city. It`s located in central Russia. It is famous for Dymkovskaya toy).

6. Read the text, paying attention to the gaps in it, and choose the most appropriate word for each gap.

7. Task for word formation. For example, form verbal nouns, adjectives and adverbs.

8. Listen to the principal's conversation with one of the parents and fill in the gaps in the sentences.

9. Task for understanding the content of texts with the choice of the correct answer from the proposed ones. For example, listen to the mini-dialogues and choose one of three answers to a question.

10. The task of correlating questions and speakers. For example, listen to the opinions of five people about what they do not like when people around them use mobile phones, and match the speaker with what he says.

11. Assignment for an abstract reduction of up to 50–100 words of a text on psychological and pedagogical topics. Read the text and answer the question: what is the main idea of the text?

12. Write an essay on the topic "Life without TV: pros and cons." Point out the advantages, disadvantages and express your own opinion.

13. Interview with the examiner about the student's scientific activities and interests. Orally answer the examiner's questions.

14. Monologue-description of a picture of pedagogical subjects. For example: "Describe the proposed photo, in the description you need to answer the following questions ..." Three questions are offered for each photo.

15. Dialogue with the examiner in continuation of the discussion of the educational process depicted in the picture. The examiner asks oral questions based on the photo.

Thus, the maximum possible score was 45.

For the test-paper, the student could get from 0 to 45 points. According to the measurement results, the levels were determined as follows: from 45 (inclusive) to 39 points – the value of "high", from 38 (inclusive) to 24 – the value of "average", for other cases – "low".

4.3.2. Forming stage of the experiment

This stage of the experiment was devoted to the design and implementation of the process of targeted inclusion of communication with mobile applications and devices in the work of the university. There was a choice of a digital platform into which it will be possible to integrate the relevant resources here; create effective conditions for the conscious active development of terminology, lexical-syntactic and grammatical features; for individual and group activities with oral and written texts, simulation of communication situations.

The components of intercultural communicative competence, directions and ways of supporting multilingual communication were identified. Mobile applications were used both as a means of activating cognition and as a means for semantizing lexical material and its application. The m-learning services were included in solving the problems of intercultural communication, and in explaining the rules, and in case of situational illustration, and for foreign language communication.

As noted above, the levels of formation of intercultural competence of students were determined.

High level: in multilingual communication, the student shows the ability to be flexible, tactful, humane; patient with new ideas and perspectives; ready to accept change, resourceful in solving problems and overcoming crises. The student shows activity and desire to communicate with people from other cultures, interest in culture and cultural differences. There is no ethnocentrism. He possesses a wide range of communication skills in the information environment, which are important in intercultural communication.

Intermediate level: in multilingual communication, the student does not always show the ability to be flexible, tactful, humane; most often conservative and not ready to accept qualitative changes in a multicultural environment; finds a solution only to the most acute problems in the dialogue of representatives of different nations. The student communicates with people from other cultures, is interested in cultural differences, but only under the influence of circumstances. Owns a range of communication skills in the information environment, the most important in intercultural communication.

Low level: in multilingual communication, the student may be tactless; impatient with the ideas and views of other cultures; often unwilling to accept change; not tuned in to finding solutions to problems and overcoming crises. The student does not show activity and desire to communicate with people from other nations, peoples. There is ethnocentrism. The range of communication skills in the information environment that are important in intercultural communication is very limited.

The students of the control group studied the topics of the disciplines "Psychology of professional activity of the individual", "Electronic resources in professional activity", "Foreign language", "Digital technologies in education" according to the work program in the traditional way through a series of lectures and seminars, with the support of multimedia presentations and information resources the Internet.

Table 1. The results of the level of formation of intercultural competence of students

Level	Groups			
	Experimental group (45 students)		Control group (45 students)	
	Before experiment	After experiment	Before experiment	After experiment
High	4	18	5	8
Intermediate	23	19	22	21
Low	18	8	18	16

4.3.3. Control stage of the experiment

After the inclusion of purposeful work with mobile applications in the system of university students training, another test was carried out. The questions for the test were designed in accordance with the principles described earlier. Information about the test results before and after the experiment is presented in [Table 1](#).

The following statistical hypotheses were accepted:

H₀: the level of formation of intercultural competence of students of the experimental group is statistically equal to the level of the control group.

H₁: The level of the experimental group is higher than the level of the control group.

In the online resource <http://medstatistic.ru/calculators/calchit.html>, the values of the criterion were calculated before ($\chi^2_{\text{observation 1}}$) and after ($\chi^2_{\text{observation 2}}$) the experiment. For $\alpha = 0.05$, according to the distribution tables, χ^2_{crit} is equal to 5.99.

Thus, we get: $\chi^2_{\text{obs.1}} < \chi^2_{\text{crit}}$ ($0.133 < 5.99$), and $\chi^2_{\text{obs. 2}} > \chi^2_{\text{crit}}$ ($6.61 > 5.99$). Therefore, the shift towards an increase in the level of formation of intercultural competence can be considered non-random. In other words, practical work to involve students in active group interaction on the project, educational practice, professional self-presentation and foreign language communication with the support of mobile technologies, helps form demanded intercultural competence among students. Corresponding changes in the pedagogical system are not accidental but have coherent pattern.

5. Limitations

The sample of students was not random: the experimental and control groups were formed in such a way as to guarantee the presence in each group of the same skills and personality traits that form the basis of intercultural competence, their identical distribution.

In the course of diagnostics, the results of the input control measure were taken into account. The selection of participants for the experiment and the sample size are justified by the specifics of the study, the volume of fundamental theory and the variety of seminars in the disciplines "Psychology of professional activity of the individual", "Electronic resources in professional activity", "Foreign language", "Digital technologies in education". In addition, the use of mobile technologies for educational purposes is included in the training program for a limited number of specialties. Throughout the experiment, practical activities in solving problems of intercultural communication, supported by mobile technologies, were carried out by the same teacher, using the same software equipment in special classrooms. During the implementation, the main principles and stages of the development of an educational project, the functionality of mobile technologies were taken into account.

6. Discussion

It should be noted that at the preparatory stage (before the purposeful integration of mobile applications into the educational process), it is necessary to organize consultations with participants on technical issues: the general procedure for individual and collective activities with mobile applications; work in MS Teams and possible network interaction problems; graphical user interface and basic tools; creating a new meeting and team; regulations for working with the selected mobile application (purpose, functionality, application in theory and practice); demonstration and oral presentation in an online format.

Further, general organizational aspects should be disclosed: the goals and objectives of using mobile applications in this topic, the role of this topic in the structure of the academic discipline, the practical significance of the mobile application used, the timing of the study, forms of information interaction, options for consulting and attracting other specialists. In the course of providing a theoretical block of information (vocabulary, grammar), electronic resources and references to sources, the material should be presented logically and consistently in accordance with the specifics of the training. At the same time, the use of mobile applications in teaching (foreign language, psychology, pedagogy, etc.) does not set the task for the teacher to fundamentally change the existing teaching technologies. Taking into account the described factors is necessary to adjust the didactic process in accordance with the spread of COVID-19 and the format of online learning.

Performing a quantitative analysis of the above results, we can conclude that after the completion of the experiment, 40 % of the students in the experimental group had a high level of indicators reflecting the degree of formation of intercultural competence (18 participants out of 45), while initially this percentage was 9 % (4 students out of 45). The number of students with a "low" level has significantly decreased from 40 % to 18 %.

In the control group, changes in the "high" level are not so significant (from 11 % to 18 %). The indicator on the level of formation "low" changed from 40 % to 36 %. So, the dynamics by levels in the control group is also present, but it is less significant.

The obtained results expand and supplement the conclusions of Ivanchenko D. A. about the potential of mobile devices for the educational space of the university (Ivanchenko, 2014). In addition, it was possible to confirm the position of the works of R. Günday, Y.T. Çamlıoğlu regarding the didactic capabilities of mobile applications for organizing multilingual communication (Günday, Çamlıoğlu, 2016). The research materials comply with the principles of the UN and UNESCO regarding the need to develop linguistic diversity, promote the dissemination of creative ideas, and include digital resources in education. In addition, the practical results of the study can be applied in the framework of international events to introduce new approaches to the development of foreign language communication (for example, in trainings, conferences for the exchange of experience).

7. Conclusion

During the research, the following didactic possibilities of mobile applications for the formation of intercultural competence were noted: activation of activity, cognitive interest, personalization, intercultural networking, support for scientific adaptation, professional self-determination, etc. However, mobile learning problems were identified: rationale for choosing a mobile application, correlating it with the didactic goals and needs of students, the requests of potential employers; organization of systematic evaluation and control; maintaining a balance in the principles of visibility, scientific and accessibility.

The conditions for the effective use of the didactic capabilities of mobile applications for the formation of intercultural competence are:

- a comprehensive study and analysis of m-learning technology to understand the essence, problems and prospects in learning;
- in the modern system of digital education, it is necessary to widely use such didactic capabilities of m-learning technology as the activation of cognition, personalization, intensification, adaptation to the professional aspirations of each student, interactivity, the possibility of distance interaction;
- mobile applications should be used along with traditional learning tools to build intercultural competence.

For the effective integration of mobile applications into learning and the formation of intercultural competence, the authors identified the following pedagogical conditions: purposeful nature of work with m-learning technologies; collaboration of teachers of related disciplines; active participation of the student at all stages of the selection and use of the mobile application; creation of cases of mobile resources for educational activities, scientific and intercultural cooperation, foreign language communication, professional self-realization. The proposed ideas were implemented at the following stages of integration: when defining the content of a specially designed module "Mobile Technologies: Opportunities to Support Online and Offline Learning"; in organizing group work and public defense of projects; in the course of a traditional classroom lesson; to apply the acquired knowledge in the course of educational practice; for self-presentation of the student in front of potential employers.

In the experimental work, thanks to mobile applications, communication skills, knowledge of grammar and vocabulary were developed; a comprehensive supply of educational material of various types and in different formats of training was organized. In other words, systematic work has been done on the formation of professional foreign language and intercultural competence by means of m-learning.

As guidelines for teachers planning to include technology in the learning process, we note: the need to regulate the time of using mobile applications; alternation of activities, traditional

methods and means of training with innovative ones; instructing students on how to work with services. Thus, it is important not only to form professional intercultural communicative competence, but also to teach students objective analytics and evaluation of information coming to them through mobile applications. The described factors of integration of mobile applications make it possible to widely use the m-learning technology in teaching at a university. This contributes to the optimization of the educational process, fills it with information, involves students in it and effectively influences professional self-realization.

So, it is advisable to use mobile applications as an auxiliary tool for organizing intercultural communication in the online interaction mode. The results of the study can serve as a basis for further applied research in the field of the formation of intercultural competence of students by means of innovative digital technologies.

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Exploring Assessment of Students in Physical Education: Nationally Representative Survey of School Community in Lithuania

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Abstract

Assessment in physical education lessons remains a relevant issue both among practitioners and in scientific discourse. There is also no consensus in Lithuania on the assessment of students in physical education lessons. Thus, the aim of the present study was to investigate Lithuanian students', their parents', teachers' and school administrators' opinions on the assessment in physical education. A total of 4073 participants (1497 students of 9-10th grades, 1498 parents, 317 physical education teachers, 443 teachers of other teaching subjects, and 318 school administrators) from different schools in Lithuania participated in a questionnaire survey. It was found that from the perspective of the study participants, effort and progress should be assessed most in physical education, then physical fitness, knowledge, and motor skills. The most important criteria for cumulative assessment of students in physical education lessons should be students' progress and achievements, activity in classes and attendance, with knowledge being considered the least important criterion. The study results highlighted the importance of encouraging teachers to more actively communicate learning goals as well as involve students into the evaluation processes.

Keywords: Physical education, assessment, school community.

1. Introduction

Assessment, regardless of the field of study or the stage at which it takes place, is an essential element of the educational process (Baird et al., 2014; Shepard, 2000). As in all courses of study, assessment in physical education (PE) is also very important. Assessment in PE is defined as any information gathering activity in the educational settings that is initiated to make certain interpretive/assessment decisions about students (Hay, Penny, 2013). Thus, the assessment in PE

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provides students with feedback on their current level of achievement, learning progress, and the effectiveness of teaching methods and the physical education program (Borghouts et al., 2017). Students' assessment in PE benefits both students and teachers, as learning goals, learning activities must be combined and other pedagogical decisions must be made based on the results of students' PE assessment (Marmeleira et al., 2020). However, research literature suggests that PE itself is sometimes underestimated both because of the insufficient quality of the curriculum (Collier, 2011; Sheehy, 2011) and because of the prevailing views that academic subjects developing cognitive skills are more important than those in which artistic, expressive, or bodily-athletic qualities are more valued (Bailey, 2018). Moreover, it is often easy for students to obtain high grades in PE, especially in comparison with the assessments in other subjects, which also contributes to the fact that PE is considered as the easiest subject in school by students (Marmeleira et al., 2020; Zhu, 2015). Similarly, assessment is identified as an existing problem in PE (Dinan-Thompson, Penny, 2015) or seen as "one of the most fraught and troublesome issues physical educators have had to deal with over the past 40 years or so..." (López-Pastor et al., 2013: 57).

Assessment in PE as an issue is also illustrated by the ongoing debate on traditional and alternative forms of assessment (López-Pastor et al., 2013). Both the physical fitness test as a form of assessment in PE and different techniques of assessment depending on the purpose of assessment are being widely discussed. In this sense, a distinction is made between formative and summative assessment techniques which related with the consideration of assessment of learning and assessment for learning differences. According to Smith (2007), assessment of learning is based on the information given to the student about learning that has already taken place, whilst assessment for learning is based on the information given to the student about the process for future learning in relation to an analysis of earlier learning. Therefore, the aim of assessment for learning is to provide feedback to learners regarding their progress toward the learning objectives and to allow students to take ownership of their own learning (Chng, Lund, 2018). The assessment for learning technique used when involving students in the whole assessment process has been found to increase their motivation to learn (MacPhail, Murphy, 2017; Ni Chróinín, Cosgrave, 2013). On the other hand, the way how assessment for learning is described in theory is not necessarily applied by teachers in practice, as it is not always easy for them to understand the concept of assessment for learning and its potential significance for it (Leirhaug, 2016; Leishaug, Annerstedt, 2016), or to find balance between different assessment versions (Tolgfors, 2018). This suggests that it is important to better understand the attitudes of the participants in the educational process towards assessment in PE.

When analysing students' assessment in PE, it is important to involve them in the assessment process and it is essential that they knew and understood the assessment criteria (Redelius, Hay, 2012). But what are the students' opinions about assessment in PE? Redelius and Hay (2012) investigated the assessment and grading of 15-16-year-old students in PE. Assessments appeared to be important for students, but students did not recognize the formal criteria as the basis for assessing their achievements. Similarly, Zhu's (2015) study of adolescents using a mixed method study revealed that students' expectations regarding their assessment in PE did not quite coincide with the established common standards that teachers adhered to. For example, not many students tended to value athletic performance in sport skills, and more of them valued participation and behaviours. Besides, they believed that previous involvement in sports outside the school also had an impact on students' assessment in a PE. Modell and Gerdin (2021) examined the 16-18-year-old students' experiences of equitable assessment and grading practices in PE and health. The results showed that students did not consider the assessment and grading of their knowledge and skills to be fair. They did not like their experience in sport to become important in order to achieve certain grades. In their opinion, it was not right when they had to demonstrate their knowledge and skills in the "right" sports, especially when not everyone had the same knowledge and skills in those sports. According to students, grading should better reflect their personal development. Lyngstad et al. (2020) studied Norwegian students' experiences of their teachers' assessment of and for learning in PE depending on student physical abilities. Physical education teachers were found to pay more attention to students with higher levels of physical fitness compared to those with lower levels. Despite the fact that all students received grades, they felt that less physically fit students received less teachers' attention when assessed, which could negatively affect these students' aspiration in PE and, at the same time, activity in the classroom. Aarskog (2020) studied how

students themselves participated in the assessment processes that occurred in PE. The results obtained revealed that while teachers did not commonly initiate strategies intended to engage students in self- or peer-assessment, students participated in different processes that could be understood as assessment. Thus, students participated in the assessment process by interacting with teachers, peers, taking into account their learning experience and interpreting the information available to gain a better understanding of where they were in their learning, where they were going and how to get there. It is therefore important for the physical education teacher to use more reflective feedback, thus encouraging students to utilize more reflective assessment processes. Another study with a large sample of 15-19-year-old students also confirmed that it was important for students to know how they were assessed and to get feedback on their assessment (Leirhaug, Annerstedt, 2016) because it was easier for them to understand what they were expected to learn in PE when they clearly understood their learning goals (Redelius et al., 2015).

Research including students is relevant because it reveals their experiences, opinions about the assessment process, which can provide important information about the discrepancy between students' expectations in PE and the content of teaching as well as the established assessment criteria for students. Besides, the findings of physical education teachers' research on assessment in PE are also important. Several studies have found that it is sometimes difficult for teachers to decide which criteria are most important in assessing students or when student assessments do not reflect what is considered important in assessing (Svennberg et al., 2018). In addition, although clear grading criteria are important for teachers, values and norms as additional criteria are sometimes used as well (Svennberg et al., 2018). Therefore, teachers are trying to find a balance between more specific criterion-referenced assessment and more process-oriented non-criterion-referenced learning. Actually, data from a survey of teachers in Greece revealed that there was also a discrepancy between what they thought about formal grading criteria and how they assessed students personally (Chatzopoulos et al., 2006). Another study with physical education teachers in the Netherlands also showed that contradiction existed between reported goals of PE and assessment practice (Borghouts et al., 2017).

We can say that there has been a lot of discussion in the scientific literature about different concepts of assessment in PE (López-Pastor et al., 2013). A number of empirical studies with teachers (Borghouts et al., 2017; Chatzopoulos et al. 2006; Leirhaug, Annerstedt, 2016; Svennberg et al., 2018; Tolgfors, 2018) and students themselves (Aarskog, 2020; Lieshaug, Annerstedt, 2016; Lynsgstad et al., 2020; Modell, Gerdin, 2021; Redelius, Hay, 2012; Tolgfors, 2018) have also been conducted examining both their experiences and attitudes towards assessment in PE. However, it is worth noting a few important aspects.

First, most of the research conducted with students and teachers was qualitative. Qualitative research is important because it reveals both the experiences of student assessment and the meaning of assessment itself to students and teachers. On the other hand, there is a lack of quantitative research analysing opinions about assessment and how students' achievements in PE in a given population should be assessed. Second, PE are sometimes seen as less important compared to other subjects (Bailey, 2018; Marmeleira et al., 2020). It is the question of the status of PE in the context of other subjects that encourages a deeper understanding not only of PE but also of the attitude of teachers of other subjects towards assessment in PE, which has so far been poorly studied. Some studies have found that parents of students have little interest in the goals and content of PE (Sheehy, 2011), although their attitudes towards PE in general (Earley, Fleet, 2021) and the fact that students are assessed are positive (James et al., 2005). However, we still know little about how parents believe children's achievement in PE should be assessed. Third, the PE is part of the whole educational process at school. Although the quality of the content of individual subjects, and at the same time the student assessment system, is primarily taken care of by the teachers of these subjects, the school administration takes care of ensuring the overall quality of education. Students' progress as well as its assessment are very important indicators of school progress in the assessment of administration (Targamadzè et al., 2018). Focusing on PE, and particularly on the assessment in PE, remains an important issue for school administration. Finally, a number of previous studies have sought to explore the nuances of assessment in PE in a country-specific context, in some cases in an attempt to understand how assessment changes in the context of education system reforms (Leirhaug, Annerstedt, 2016). Although the obtained data may be valuable in analysing assessment in PE in other countries, it should be noted that in Lithuania

we still lack research on how students' achievements in PE should be assessed. To date, just one study was conducted focusing on students' opinions about the assessment of their achievement in PE (Emeljanovas, Trinkūnienė, 2011).

In Lithuania, the purpose of assessment of students' learning outcomes and progress is to determine the level of students' achievements and progress, to establish the strengths of each student, to summarize the educational results of a separate study period (at the end of the semester or academic year), identify problems and make decisions on further learning steps together with the student and his/her parents (foster parents, caregivers), necessary support for the student (Description of Curriculum..., 2015). The need to change the system of assessment of Lithuanian students' learning outcomes and progress is enshrined in the most important strategic documents of Lithuania. The Lithuanian Progress Strategy "Lithuania 2030" (2012) envisages the improvement of the evaluation system as one of the tasks for achieving a smart society. In response to this public order, the State Education Strategy for 2013–2022 (2013) envisions the introduction of criterion-based cumulative assessment as a method of self-monitoring of learner outcomes at all levels of education. In Lithuanian secondary schools, the achievements and progress of students' in PE can be assessed with a grade or "passed/failed". The school makes decisions on PE assessment, crediting and conversion of student achievements on a ten-point grading scale if the student attends a sports school or a non-formal children's sports establishment. The school offers other activities (such as board games, computer classroom activities, library activities, social activities, etc.) to students who have been exempted from PE due to poor health or temporary illness, and also agrees on how such students' achievements and progress will be assessed. The school decides which cumulative assessment criteria to use in PE. By the way, all these choices are conditioned by the resolutions of the school council (On the Approval..., 2021). Therefore, in the absence of unanimous agreements in general education schools on the assessment of students' progress and achievements in PE, researchers and teachers are constantly discussing the following issues: what should be assessed (students' innate abilities, progress and achievements, motor skills, preparation for lessons or non-formal learning achievements); how to assess (grade or "pass/fail"); what cumulative assessment criteria should be used in PE; how to assess students' achievements and progress exempted from PE due to poor health and temporarily due to illness.

Therefore, it is important to let the voices of students, teachers, school administrators and parents (as of members of a school community) be heard about the assessment in PE. With this in mind, the aim of the current study presented in this article was to investigate Lithuanian students', their parents', teachers' and school administrators' opinions on assessment in PE. The central research questions were what the members of the school community think about what should be assessed in PE, what criteria should constitute a cumulative assessment in PE and what differences exist comparing opinions of all members of the school community about the assessment in PE.

2. Material and Method

2.1. Participants

This study was performed using data from four representative samples. Students of grades 9-10, parents of students of such grades, teachers of physical education, teachers of other school subjects and representatives of the school administration (director or deputy director for education) were surveyed. The sample size of students was calculated based on the number of students of that age in the country. Assuming a 95 % confidence level and +/- 5 % confidence interval around a proportion of 50 %, recommended sample size was approximately 1484 students (calculating for grades and gender). Participants were selected using a clustered hierarchical sampling design, where the initial sampling unit was the school class. Data collection methods ensured that the samples of students were representative by age and gender. A total sample of the present study included 1530 students (response rate 84.4 %). Assuming the amount of not fully completed questionnaires, final sample was 1497 students (50.8 % female). For more detailed characteristics of students see Table 1.

Sample size for parents was defined in a similar way as for the students. A total of 1523 parents returned their completed questionnaires (response rate was 92.9 %), but assuming that some questionnaires was not fully completed, the final sample of 1498 (65 % female) was used for data analysis.

We formed two independent samples of teachers: one for physical education teachers and the other one for the teachers teaching other subjects (i.e., physics, chemistry, biology, geography, mathematics, science technologies, music, languages, information technologies, art). Assuming 95 % confidence level and margin error of 5 %, recommended sample size was approximately 315 physical education teachers. Using a cluster random sampling, questionnaires were collected from 325 physical education teachers (response rate 86,1 %), of which 317 research participants correctly completed the survey and were used for statistical analysis. Taking teachers of other school subjects as one group, the recommended sample size was 375 participants. Of the 455 enrolees, 443 participants correctly completed the questionnaires and were used for data analysis. The final sample of school administration (school directors or deputy directors for education) was formed. Following the same system, recommended sample size for this study was 287 subjects. A total of 318 school administrators returned completed questionnaires (with response rate of 99 %). More detailed characteristics of the participants are presented in [Table 1](#).

Table 1. Sample characteristics

Characteristics		Children M(SD)/ n (%)	Teachers M(SD)/ n (%)	PE teachers M(SD)/ n (%)	Administration M(SD)/ n (%)	Parent M(SD)/ n (%)
Total		1497	443	317	318	1498
Age (years)		15.4 (0.74)	45.4 (0.09)	45.5 (9.26)	49.9 (8.79)	42.4 (6.07)
Gender	Male	736 (49.2 %)	84 (19.0 %)	129 (40.7 %)	72 (22.6 %)	525 (35.0 %)
	Female	761 (50.8 %)	359 (81.0 %)	188 (59.3 %)	246 (77.4 %)	973 (65.0 %)
School type	Primary	165 (11.0 %)	75 (16.9 %)	20 (6.3 %)	46 (14.5 %)	271 (18.1 %)
	Secondary	385 (25.7 %)	139 (31.4 %)	114 (36.0 %)	88 (27.7 %)	421 (28.1 %)
	Gymnasium	947 (63.3 %)	229 (51.7 %)	183 (57.7 %)	184 (57.9 %)	806 (53.8 %)
Teaching experience (years)		-	20.4 (9.61)	20.5 (9.67)	24.9 (10.11)	-
Education	Primary-secondary school	-	-	-	-	517 (35.3 %)
	Vocational, certificate	-	-	-	-	350 (23.9 %)
	University degree or higher	-	-	-	-	598 (40.8 %)

2.2. Measures

The data were collected by means of self-reported questionnaires. All questions were the same for students, parents, teachers, and school administration except for social-demographic items. The first two questions regarding evaluation of students in PE had been used in a previous nationally representative study ([Emeljanovas, Trinkuniene, 2011](#)). Specifically, participants were asked “How should a student’s progress and achievement in physical education lessons be

assessed?” with two answer options: *by grade* or *passed/failed*. Next, participants were asked “What should be assessed in physical education lessons?”. Several answer options were presented: *knowledge and ability to use it, effort and progress, physical fitness, motor skills, non-formal learning outcomes*. Research participants could choose all the response options that were appropriate for them.

In this survey, the questionnaire also included questions such as: “What criteria should constitute the cumulative assessment in physical education lessons?”. Nine answer options were given to this question: *attendance, progress and achievement, student activity, timely performing assignments, participation in school competitions, lesson preparation, student knowledge, student behaviour* and *I do not use such assessment*. The formulation of this question was based on the documents regulating the education process in the country ([Description of Curriculum..., 2015](#)), which specifically regulates cumulative assessment as one of the forms of assessment of student achievement in the country’s schools.

The questionnaire also included socio-demographic questions: gender, age, type of school (primary, secondary or gymnasium), education (only for parents), work experience at school (only for teachers and school administration).

2.3. Procedures

The study was conducted in 2018. The surveys were administered in randomly selected primary, secondary schools and also gymnasiums in five major Lithuanian cities (102 schools in total). Vocational schools were not included in the study. The heads of the selected schools were first contacted. Teachers were informed about the survey after receiving permission from the school administration (including their own oral consent to complete the questionnaires). They were explained the purpose of the investigation, ensuring anonymity and data confidentiality. It was also emphasized that participation in the study was entirely voluntary. Questionnaires were left in the staff room. Teachers were free to take the questionnaires and leave them in a specially made box. Physical education teachers were approached in person for participation in the survey. Parents were invited to the study during parent gatherings of grades 9-10. They were explained the purpose of the survey and how anonymity and confidentiality of data would be guaranteed. After agreeing to participate in the survey, parents were asked to complete questionnaires in the classroom in the presence of the survey organizer. Student surveys were conducted by selecting one grade 9 and 10 in each selected school. Students were also explained the purpose of the study, ensuring their anonymity and data confidentiality. It was also emphasized that their participation in the survey was voluntary and that they could withdraw from it at any time. The students filled in the questionnaires during the lessons.

2.3. Statistical Analyses

Data were analysed using the Statistical Package for Social Sciences (SPSS) software, version 25. Descriptive statistics calculating percentages were performed. Chi-square test was used to compare between-group differences with Bonferroni correction test. As our research samples, especially of students and parents, were quite big, in order to minimize Type I error, we minimized the significance level to 1 % (0.01).

3. Results

According to the survey, more than two-thirds of all respondents believe that students’ progress and achievements in PE should be assessed by a grade. In the opinion of the rest, it should not be assessed by a grade, but simply as passed or failed. It was found that the opinions of different survey groups differed, except for the representatives of parents and school administration ([Table 2](#)). Students’ opinions differed compared to those of teachers, parents and school administration. More than 80 % of students maintained that their progress and achievements should be assessed with a grade. Only more physical education teachers than students believed the same. On the contrary, teachers of other school subjects were the least supportive of assessing students’ achievements in grades in PE.

Table 2. Opinions on how a student's progress and achievements in PE should be assessed and what should be assessed in lessons

	Total	Children	Teachers ^a	PE teachers ^b	Adminis- -tration ^c	Parent s ^d	χ^2 (df)
<i>How students' progress and achievements in PE should be assessed (%)</i>							
Grade	77.1	84.8 ^{abcd}	61.2 ^{bcd}	91.5 ^{cd}	73.6	71.9	175.5(4)* **
Passed/Failed	22.9	15.2	38.8	8.5	26.4	28.6	
<i>What should be assessed in physical education lessons (%)</i>							
Knowledge and ability to use it	34.7	23.3 ^{abcd}	34.2 ^{bc}	55.3 ^d	57.4 ^d	37.2	220.9(4) ***
Efforts and progress	76.8	72.6 ^{abc}	83.3 ^{bd}	92.4 ^d	90.3 ^d	72.9	113.5(4)* **
Physical fitness	44.6	53.2 ^{absd}	33.6 ^{cd}	34.9 ^{cd}	21.1 ^d	46.3	151.5(4)* **
Motor skills	25.1	22.3 ^{bc}	28.0 ^b	39.0 ^d	31.4 ^d	22.6	52.5(4)** *
Outcomes of non – formal education	8.2	5.0 ^{abcd}	11.5	17.1 ^d	12.6 ^d	7.6	68.7(4)* **

Note: a, b, c, d indicates significant difference from the group of participants' group indicated by the respective letters (adjusted p value – Bonferroni method). *** p < .001

Nearly 80 % of the surveyed participants indicated that students' efforts and progress should be assessed in PE (Table 2). Also, every second respondent mentioned the importance of assessing physical fitness, but knowledge and ability to use it were mentioned only by every third one. Students and parents agreed least on the importance of assessing effort and progress in PE compared to teachers and school administration. Comparing the opinions of teachers of physical education and other subjects, the first ones pointed out the importance of assessing students' efforts and progress. There were also statistically significant differences between the opinions of respondents about the importance of assessment of other components in PE. Students and parents were much more in favour of assessing physical fitness in PE, and at least supportive of that were the school administration members. However, it was mainly reported by the school administration that it was important to assess students' knowledge and the ability to use it in PE. Conversely, this was least supported by the students themselves compared to all other respondents. Statistically significantly fewer students, parents and teachers of other subjects, compared to physical education teachers, indicated that motor skills should be assessed in lessons.

The survey revealed the respondents' opinions on what criteria should form a cumulative assessment in PE (Table 3). Most respondents noted such criteria as students' activity, progress and achievement, and class attendance. The least mentioned were students' participation in school competitions and students' knowledge. Students and parents were less likely than teachers and administrators to mention such criteria as students' activity, progress and achievements. More physical education teachers, compared to all other participants in the study, mentioned class attendance as a criterion for cumulative assessment. A less important criterion for students and parents was participation in the competition, especially when compared to the opinions of physical education

teachers and school administration representatives. The lowest number of students, compared to other study participants, indicated students' knowledge as a criterion for cumulative assessment.

Table 3. Opinions on what criteria should form a cumulative assessment in physical education lessons

	Total %	Children %	Teachers ^a %	PE teachers ^b %	Adminis- - tration ^c %	Parents ^d %	χ^2 (df)
Attendance	59.0	52.0 ^{abcd}	65.2 ^{bcd}	79.4 ^{cd}	69.4 ^d	57.4	106.6(4) ^{***}
Progress and achievements	65.2	58.6 ^{abcd}	66.8	72.2 ^d	74.8 ^d	65.2	46.8(4) ^{***}
Student's activity	61.4	58.2 ^{abc}	71.8 ^d	75.4 ^d	69.2 ^d	56.9	73.9(4) ^{***}
Timely performance of tasks	37.9	38.0	45.1 ^d	37.2	43.7 ^d	34.5	21.8(4) ^{***}
Participation in school competitions	28.9	22.5 ^{abc}	34.8 ^{cd}	44.1 ^d	47.5 ^d	26.2	131.3(4) ^{***}
Preparing for the lesson	33.7	36.5 ^d	36.1	30.9	40.9 ^d	29.2	28.4(4) ^{***}
Student's knowledge	22.4	14.0 ^{abcd}	27.8 ^d	30.0	38.8 ^d	23.9	128.3(4) ^{***}
Student's behaviour	30.6	30.2	28.4	28.4	26.1	33.1	9.2(4)
Do not use such an assessment	3.7	5.4	1.8	3.5	4.1	2.5	22.2(4) ^{***}

Note: a, b, c, d indicates significant difference from the group of participants, group indicated by the respective letters (adjusted p value – Benferroni method). *** p < .001

4. Discussion

The study sought to examine the opinions of school community members about the assessment of students in PE. Quantitative survey revealed that most members of the school community agreed that students' progress and achievements in PE should be assessed with a grade. However, opinions of different community members differed. Physical education teachers were most in favour of assessing progress and achievements in PE with a grade. Most students also believed that their achievements and progress should be assessed with a grade. By the way, a survey conducted in Lithuania ten years ago found that half of the students wanted to be graded (Emeljanovas, Trinkuniene, 2011). It is worth noting that only 61 % teachers of other subjects believed that students' progress and achievements in PE should be graded. Based on previous research, the status of a PE is not the same as that of other subjects (Hardman, 2008), and it is easier to get higher grades in PE (Marmeleira et al., 2020; Zhu, 2015), it could be speculated that the teachers in our study also expressed a similar view when expressing their opinions on assessment. Although the nature of the study does not allow to empirically substantiate the assumptions made about different positions of teachers of other subjects in relation to the subject

of PE, it shows very different opinions about assessment in this teaching subject, especially when comparing them with those of physical education teachers.

The survey revealed the views of school community members on what should be assessed in PE. Assessment of motor skills, physical fitness, knowledge and ability to use it are less important to research participants than the assessment of efforts. By the way, opinions of physical education teachers and administrative staff were the same about the assessment of students' efforts and progress. In other studies, too, the effort was most often reported by teachers as one that has been evaluated in PE (Borghouts et al., 2017; Chatzopoulos et al., 2006). Physical education teachers consider it less important to assess students' knowledge, which replicates the results of other research (Borghouts et al., 2017). However, it is worth noting that only a third of teachers of other subjects believe that knowledge should be assessed in PE. Perhaps teachers of other subjects see PE as a subject the content of which is more related to the development of physical skills and less of cognitive skills (Bailey, 2018). As with assessment of knowledge, students demonstrate similar scepticism about assessment of motor skills. Zhu (2015) found that students were reluctant to be assessed on their skill performance although they expected to learn sports skills in PE.

When commenting the results of our study, we would like to draw more attention to the respondents' opinions about the assessment of physical fitness. Health related physical fitness is assessed as one of the most used curriculum theme in PE (UNESCO, 2014). Similarly, physical fitness testing is considered to be one of the most practical ways to teach the components of health-related physical fitness in PE (Garn, Sun, 2009). On the other hand, a critical approach to the assessment of physical fitness has emerged in recent years (López-Pastor et al., 2013). Students may feel anxious that they will receive less teacher's attention due to their lower physical fitness (Lyngstad et al., 2020) or their ranking according to physical fitness data may adversely affect their motivation (Jaakkola et al., 2013). Although some studies show that students have positive attitudes towards fitness testing (O'Keeffe et al., 2021), their perceptions of enjoyment are lower in fitness testing classes compared to PE in general (Huhtiniemi et al., 2021). An interesting finding to emerge from the current study was the disparity between students and physical education teacher as only 35 % teachers, compared to 53 % of students, think physical fitness should be assessed in PE. Interestingly, teachers in Lithuania must assess physical fitness of students (Description of the Procedure..., 2019), however, grades are not given and this may explain the more positive opinions of students about the assessment of physical fitness. However, the question arises as to the scepticism of physical education teachers. Only various assumptions can be made as to why the majority of physical education teachers do not consider it necessary to assess the physical fitness of students. Perhaps this scepticism among teachers is due to the fact that students' testing is mandatory. As other studies have shown, physical education teachers are not always inclined to assess students according to formally defined assessment criteria (Chatzopoulos et al., 2006). It should also be noted that the existing regulations provide not only for testing, but also for assigning students to one of the three zones of physical activity, as well as for informing parents. As O'Keeffe et al. (2021) revealed, data on students' physical fitness may indeed be of interest to students' parents and it is advisable to inform them about that. However, in Lithuania, if a student is placed in a "health risk zone" (which indicates the student's health risk due to his or her level of physical fitness), an individual meeting of the student, parents, teacher and public health professionals must be organized to discuss potential risks to the student. While this is in the best interests of the student, it can also pose additional challenges for teachers, especially when parents have negative attitudes towards physical activity in general and even try to protect their children from it and from PE (Guzauskas, Sukys, 2021). In terms of physical fitness, another interesting result is worth mentioning. Although the documents regulate the compulsory assessment of students' physical fitness, only one in five representatives of the school administration considers that this should be assessed.

The study revealed not only the opinions of respondents what should be assessed, but also what criteria should form the cumulative assessment in PE. The most important grading criteria mentioned were students' progress and achievements, activity in lessons and attendance. It is the activity of students in lessons that has been mentioned as one of the most important assessment criteria in other studies (Matanin, Tannehill, 1994; Borghouts et al., 2017; Redelius, Hay, 2012). However, unlike in our study, physical education teachers are much less likely to use attendance as an assessment criterion (Matanin, Tannehill, 1994; Borghouts et al., 2017). It should be noted that

both physical education teachers and the school administration have the same opinion on attendance and student activity in the lessons as assessment criteria. As class attendance is compulsory for all students, this approach of teachers and administration is somewhat debatable.

Students' activity in the lessons is a very important criterion, as it is the active involvement of students that is important not only to ensure physical activity at school, but also to develop their motor skills and attitudes towards physical activity as well as systematic physical activity habits. However, students are not so sure that their activity should be graded. It can be assumed that such opinions may also be related to the students' low physical activity during PE classes, as illustrated by the recent meta-analysis (Truelove et al., 2020). However, the extent to which this assumption is correct could be revealed by perceptions of students of different activity levels on assessment in the lessons. In addition, the approach to the assessment of students' activity in the lesson may be related to the peculiarities of the lesson organization itself and a clear understanding of the lesson goals.

Only one in five respondents mentioned students' knowledge as an assessment criterion. By the way, it is the students who do not feel that the assessment of their knowledge should be included in the cumulative assessment. Although this seems to contradict some research data that students wanted to be graded on their knowledge in PE (Zhu, 2015), however, other studies may provide greater clarity in trying to explain our results. Studies that have interpreted students' expectations regarding assessment have revealed that students least expect to gain conceptual health/fitness related knowledge (Zhu, 2013). Teachers may not communicate enough what knowledge students need to gain (Aarskog, 2020) and just do not give students opportunities to develop their knowledge (Aggerholm et al., 2018), or they assess knowledge only in relation to certain sports, which calls into question the fairness of the assessment in general (Modell, Gerdin, 2021). As not all students have the same good skills in certain sports, this may also explain why there are significant differences between students and physical education teachers regarding the assessment of students for participation in school competitions. In Lithuania, even 58.1 % of adolescents are not physically active enough (Sukys et al., 2021), thus, when you do not personally exercise or compete, you probably do not want to be graded for that. Similarly, the unfavourable opinion of many parents that students' assessment for participation in school competitions would constitute a cumulative assessment could be explained. However, opinions of school administration are interesting because they, like physical education teachers, argued that the criterion for participation in school competitions should be included into cumulative assessment.

The views of all members of the school community were in favour of the cumulative assessment that includes students' behaviour, although this was not the most important criterion mentioned. Previous research has also found that students' behaviour is not most used grading criterion by physical education teachers (Chatzopoulos et al., 2006; Redelius, Hay, 2012). This attitude may be due to the fact that it may be more difficult to assess behaviour than students' knowledge, motor skills or, finally, attendance. On the other hand, as a variety of positive behaviours can be developed in PE, assessment of these behaviours remains an important pedagogical challenge for teachers and also an interesting issue for research.

In summary, the study revealed interesting views of the school community on student assessment in PE. The main strength of this study was that it was the first study to reveal the attitudes of different members of the school community towards student assessment. However, this has also led to some challenges in commenting on differences of opinions, which can also be identified as a limitation of this study. In particular, the differences between the opinions of physical education teachers and students are easier to explain simply because data from previous studies can be used. However, in order to explain the opinions of teachers of other subjects, administrative staff and parents, it is often possible to make only assumptions. Nevertheless, the results obtained can be considered as a good initial stage for further research, in which it is possible to delve into the differences that emerged in this study in detail. It is worth mentioning several research shortcomings related to the research methodology. Although the main questions were based on a previous study, we believe that it would be better to use a Likert-type scale instead of the possibility to choose the answers. We believe that such a scale would allow to more accurately distinguish the importance of the assessed traits in the groups of research participants. Another limitation related with the study participants. Specifically, only students in grades 9-10 were surveyed in this study. Therefore, it remains not clear to what extent younger and older students may have different views on assessment in PE.

5. Conclusion

This study provided insights into assessment in PE in Lithuania. From the perspective of the study participants, effort and progress should be assessed most in PE following physical fitness, knowledge, and motor skills. The most important criteria for cumulative assessment of students in PE should be students' progress and achievements, activity in classes and attendance, with knowledge being considered the least important criterion. Members of the school community have different views on student assessment. The most significant differences between physical education teachers and students concerning the assessment of students' progress and achievements, knowledge, activity, attendance, and participation in competitions, were identified. At the same time, it is interesting to note that the opinions of physical education teachers and the school administration on student assessment tend to coincide. The study results highlighted the importance of encouraging teachers to more actively communicate learning goals as well as involve students into the evaluation process.

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Development of Engineering Students' Motivation and Independent Learning Skills

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Abstract

The current study examines ways of engineering students' development of motivation and independent learning skills which are considered to be the most influential factors for effective language learning in the groups of young adults. As the discipline "Foreign language" is not a major subject in most technical universities in Russia, the number of academic hours allocated for it is limited, moreover, engineering students show low motivation to practice a second language outside the classroom. Besides, as teaching practice shows the first-year students' independent learning skills are not yet developed enough. Therefore, the authors aimed to find ways to enhance their students' motivation to master English and teach them how to manage their extracurricular time more effectively. A two-stage survey was conducted in the 2020-2021 academic year in experimental and control groups of the first-year students at Saint Petersburg Mining University for which special questionnaires were designed. The analysis of the participants' responses allowed selecting the most efficient language learning tools and their effectiveness was assessed at the end of the academic year. The authors also determined the relation between the selected various teaching tools and non-technical competences mastering. The authors managed to define how the selected teaching tools can be beneficial for developing each of these core competences, viz. critical thinking, project work, team-building, leadership, communication, cross-cultural interaction and self-development.

Keywords: competences, motivation, independent learning skills, engineering students, learning English.

1. Introduction

According to the Federal State Education Standard of the Russian Federation future engineering specialists are to acquire general competences which can be mastered in the course of

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second language learning: critical thinking, project work, team-building, leadership, communication, cross-cultural interaction and self-development. As the Mining University trains future engineering specialists the authors need “to analyze professional goals in programs” (Goman, 2019: 012013), to develop students’ competencies “in order to adapt or relate expertise needed for future job with the graduates’ competence assessment” (Sishchuk et al., 2020: 810) and indicate that the quality of students’ professional education is connected to such aspects as “academic staff; content of courses; educational environment” (Goldobina, Orlov, 2017: 264). The international authoring teams point out “the need for international integration in the issues of training and continuous professional development of mining specialists” (Kazanin, Drebenstedt, 2017: 369) like “involving foreign professors in the educational process by means of electronic learning tools” (Katuntsov et al., 2017: 503) and stress that “the global focus of training and provision of academic mobility for students” (Kretschmann et al., 2020: 248) are of great importance nowadays. Apart from attaining professional competences it is widely recognized that the “21st century is a new era of social diversity and information technology, therefore in order to keep up with the times, constant learning is required from everyone” (Lin et al., 2016: 387).

Therefore, mastering English is a key to successful academic mobility and professional development but the discipline “Foreign language” is not considered a major subject in technical universities. It leads to a limited number of academic hours allocated for it and engineering students seem to have lack of motivation for learning English as a second language. They need to learn how to manage their extracurricular time more effectively. In this research an attempt was made to analyze the correlation between engineering students’ motivation and improvement of their independent learning skills and specify its importance for mastering general competences by students.

2. Literature Review

It is widely acknowledged that motivation plays a pivotal role in achieving success in many students’ learning activities. Generally, motivation is defined as “a set of intrinsic and extrinsic motive forces” [Tarasova et al., 2015: 190] that enhance people to carry out activities, find forms of their implementation, and focus on achievement of certain goals. The integrative – instrumental dichotomy of motivation [Gardner, 2006] combines interest and willingness to find out about culture and traditions, to communicate with native speakers and practical purposes of learning a second language.

Several research frameworks offer various descriptions of extrinsic and intrinsic motivation. For instance, extrinsic motivation (Topîrceanu, 2017) includes external regulation, introjection (assimilation of external motivators), identification (alignment with personal needs), integration (complete internal alignment); intrinsic motivation means reward in itself, fun and pleasure. Self-determination theory defines intrinsic motivation as “spontaneous feelings of enjoyment” while extrinsic motivation is represented by “an external reward or social approval, avoidance of punishment, or the attainment of a valued outcome” (Ryan, Deci, 2017: 14).

Most researchers agree that there are “several influential factors” that affect students’ competence development (Asfani et al., 2016: 416). Some of them have recently identified a number of issues closely related to motivation aspects in entrepreneurship education (Haneberg, Aaboen, 2020), positive self-esteem through positive psychology (Chen et al., 2021), “trajectory of intrinsic reading motivation” (Miyamoto et al., 2020: 101921), blended learning for health sciences students (Alabdulkarim, 2021), readiness for online learning (Rafique et al., 2021; Tang et al., 2021), perception, motivation and attitude analysis approach among undergraduate students (Saini et al., 2020), the mediating role of achievement motivation (Moghadam et al., 2020), correlation between academic achievement and professional identity (Wasityastuti et al., 2018).

Scholars underline that motivation is a complex, multi-faceted system of stimuli, including needs, interests, aspirations, emotions, values, etc. Intrinsic motivation facilitates cognitive, physical and social development of a student. It has resulted in a lower dropout rate, higher-quality learning, and better learning strategies. Extrinsic motivation is connected with receiving higher academic grades, awards and prizes. Motivated students take part in learning activities with much more interest, effort and perseverance. Therefore, different learning tools can be used to engage students into a greater variety of communication activities. Information and communication technologies play a significant role in competences mastering. For instance, computer assisted

translation and Lingvo Tutor “improve the skills of text processing and analyzing” (Vinogradova et al., 2020: 407).

To enhance students’ motivation they can accomplish online course “focused on information technologies in learning” and developed “for accessing to learning materials, such as texts, audio, video materials” (Murzo et al., 2019: 143), use “the integration of social media” on the example of Instagram “as a teaching tool” and English for Specific Purposes/English “as medium of instruction” training (Pushmina, 2020: 475, 481), adhere to a model “aimed at cultivating technically relevant environment ... and fostering translation skills” (Pushmina, Karter, 2021: 150). Development of engineering students’ motivation can also be enhanced within the framework of the concept of “edutainment”, strategy of learning technologies aimed at raising interest due to analogy with popular forms of recreational leisure time (Rassadina, 2016).

Motivation is also a key factor facilitating development of independent learning skills among students. At the tertiary level students cannot always count on the support of their teacher, therefore, they will need to learn on their own a lot. Being a rather continuous process, independent learning skills acquisition requires changing the traditional roles of both teachers and students (Hassan, 2018).

The Federal State Educational Standard of the Russian Federation allocates a certain number of hours (as a rule, about a half of the total labor intensity of the discipline) for independent work of students. Thus, training at university consists of two complementary, interrelated, and equally important components – the actual educational process carried out in the classroom or remotely under the teacher’s continuous supervision (synchronous and asynchronous distance learning as it was organized during coronavirus lockdown) and independent work of students. Only high-quality systematic and conscious involvement in both components results in forming a competent specialist of the appropriate level, competitive in the labor market, responsible, and ready for constant professional growth, social and professional mobility.

Among the benefits of possessing independent learning skills, we should mention the fact that autonomous students are likely to be more effective as a whole, because of a more personal and focused nature of the learning process. By being autonomous, they are expected to be lifelong learners (Khaidir et al., 2020). Also, the skills necessary for language independent learning are similar to those they will need to apply in the future in the workplace.

According to Encyclopedia of the Sciences of Learning independent learning is a learning process or method implying that learners have control and ownership of their learning, act on their own, direct, and regulate their own learning. Independent learners are capable of setting goals, making decisions and choices, meeting their learning needs, taking responsibility for constructing and carrying out their learning, monitoring their progress, and self-assessing the learning outcomes (Livingston, 2012). Becoming an independent learner is a vital aspect of being a successful learner in general but this does not happen automatically although independent learning skills can be integrated into the English classroom step-by-step via different resources, for example, videos as a means of challenging students and providing relevant context (Westbrook, 2015). Some authors suggest creating an educative environment where students can cultivate their own self-regulative skills making use of role-play strategies during ESP speaking classes due to the fact that students are aware of the goals of learning, participate in goal-setting procedures, and apply classroom content creatively in role-play activities (Baranovskaya, Shaforostova, 2018). Students’ independent learning can also be enhanced as a result of their critical thinking skills development through the project technology based on interaction, cooperation, and mutual aid instead of competition of learners (information and research projects, performance and organizational projects, survey projects, etc.) (Kopzhassarova et al., 2016). Gradual development of independent study skills by using certain scaffolding strategies will enable independent learners to feel confident and motivated (Martín de León, García Hermoso, 2020). Flipped classroom work with text material by means of the online cloud-based student response system Socrative, where students master types and strategies of reading as a part of independent learning skills formation, can significantly increase the educational, cognitive and communicative competencies of future specialists (Kulikova, 2020). Aminatun and Oktaviani (2019) offer to promote building independent learning skills outside the class with the use of the language learning application named Memrise which helps students learn English and especially improve their vocabulary whenever they want to, because they can be accessed anywhere and anytime.

Although much has been written about the importance of motivation and independent learning and the need for students to develop these skills, the question remains the same: how to do this, what conditions should be created for the idea implementation. Also, we should keep in mind that the insufficient level of psychological literacy of teachers, ignorance of modern educational and professional standards, and backwardness of teaching practices are among the factors that “can easily ‘kill’ students’ motivation” (Aripova, 2021).

3. Materials and methods

Bachelor students of the Saint Petersburg Mining University start their Foreign Language course in their first year. During the 2020–2021 academic year a two-stage questionnaire survey was conducted to analyze the students’ needs and interests in learning English. The survey was organized on a non-attributable basis using Google-forms.

The key research method is a questionnaire survey of students (N = 410) conducted in September 2020 and in May-June 2021. The participants were offered a set of 8 closed-ended questions concerning their English learning motivation and self-assessment of their success in this field. The research was carried out with the first-year engineering students of six different faculties. At the beginning of the academic year the Saint Petersburg Mining University students are to do a placement test according to which they are divided into study groups with a similar level of English. The experimental and control groups were formed by the randomization method. The experimental group (N = 223) consisted of students from fourteen B1+ study groups taught by the authors of the article where they could implement their teaching strategy. These students were offered a greater variety of activities aimed at motivation and independent learning skills development. The control group (N = 187) also included students from other fourteen B1+ study groups where classes were conducted by the colleagues of the authors. The students of this group studied English on the basis of the traditional language learning methods for technical universities in Russia.

The aim of the research was to determine the importance of the university subject for the students, to understand what language learning techniques the students are used to and what independent learning skills they have. It was organized not only to monitor the changes in the students’ motivation, but also to get some feedback on the organization of the English classes in the university. The responses were measured on a 5-point Likert scale (‘1’ meaning ‘I absolutely agree’, ‘2’ meaning ‘I agree’, ‘3’ meaning ‘I’m not sure’, ‘4’ meaning ‘I disagree’, ‘5’ meaning ‘I absolutely disagree’).

To evaluate the effectiveness of the proposed tools the validity and reliability of the responses were tested using STATISTICA Version 12 by StatSoft. The values of qualitative attributes are presented in the form of the observed frequencies and percentages. Pearson’s chi-square test χ^2 criterion was used to assess standard deviation between the experimental and control groups. With small frequencies ($> 5 \dots < 10$) Yates’s correction for continuity was used. For frequencies < 5 , we used Fisher’s exact test for four-field contingency tables. To assess the significance of within-group changes that occurred during the training period, the paired McNemar’s test was used. When using the above-mentioned statistical criteria, we calculated the *P* value between the groups.

It should also be mentioned that the students indicated their preferred types of activities which were taken into consideration for working out a roadmap for developing their motivation and independent learning skills.

4. Results

To achieve the set goals the authors used personalised roadmaps for their first-year students based on a motivational spectrum including both extrinsic and intrinsic motivation and their relationships with various learning tools and core competences. The engineering student’s motivational spectrum designed by the authors is presented in [Figure 1](#).

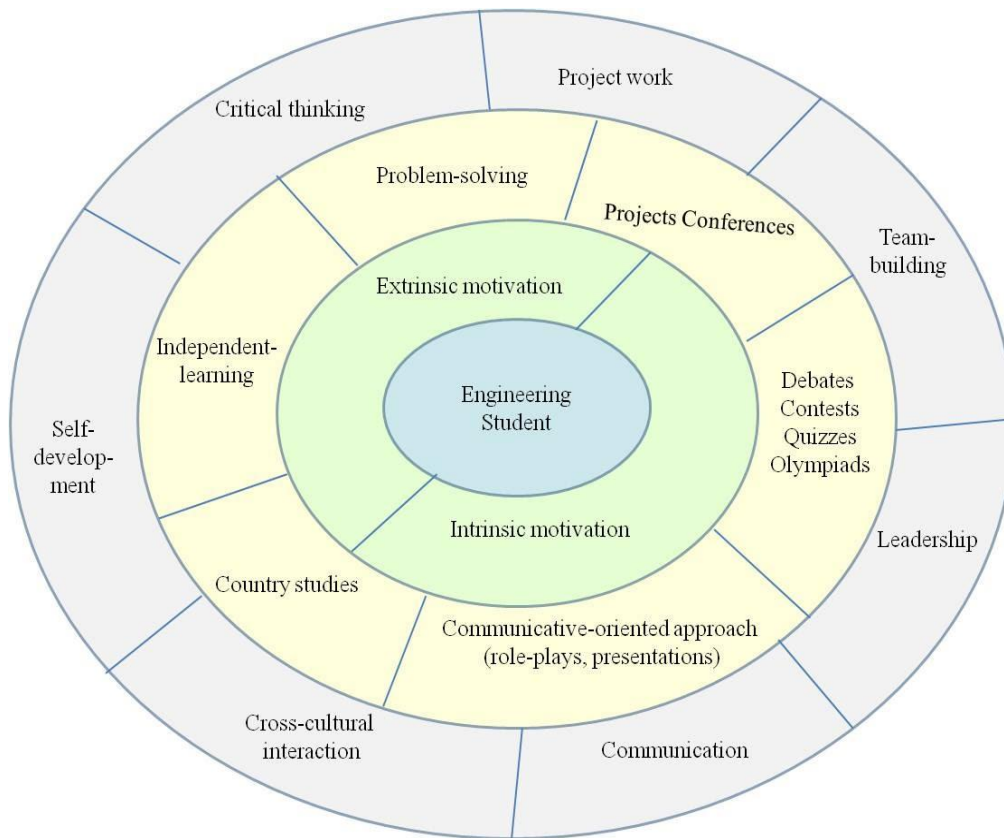


Fig. 1. Engineering student’s motivational spectrum (compiled by Elvira Skornyakova)

To evaluate the impact of different learning tools on student’s motivation the conducted survey additionally included a multiple choice question where students could choose up to 2 of their preferred activities in the English classroom (Figure 2).

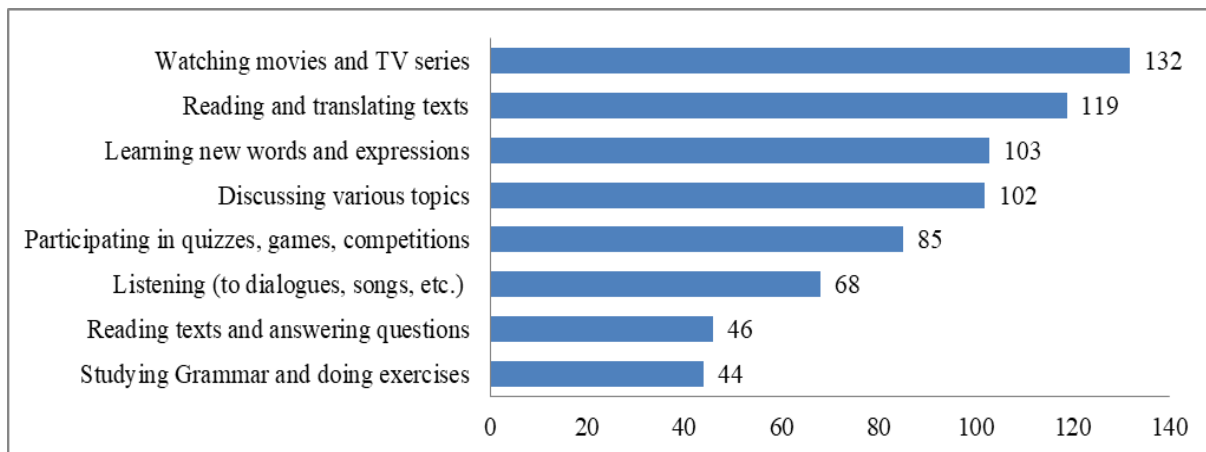


Fig. 2. What activities do you like most?

According to the authors’ interpretation of the data in Picture 2 students enjoy watching films in English with subtitles (132 votes), vocabulary-building (103 votes), speaking activities and discussions (102 votes) that is activities that they find the most joyful and entertaining or those which can be done effortlessly (e.g. reading and translation of texts (119 votes)). On the other hand, most students dislike activities which are considered boring, monotonous and demanding like grammar drilling exercises (44 votes). Thus, working out a roadmap for motivation development the authors tried to select the most appropriate learning tools to enhance their engineering

students' engagement in the classroom via watching a lot of interesting videos and discussing topical problems, playing various language games and participating in communicative and problem solving activities.

According to the students' responses the following most effective learning tools were selected to develop their language skills and core competences:

- the students' critical thinking the authors applied problem-based learning tools for analysis of text, audio and video resources, as well as grammar explanation during classes;

- involving students in writing reports and making presentations improves their project work competence;

- team-building and

- leadership competencies acquisition can be achieved by means of students' engagement into mini-group discussions, participating in debates, contests, quizzes and Olympiads;

- further development of communication competence is carried out through the following learning tools: role plays, real life dialogues and business games which are based on communicative-oriented approach;

- to encourage the students' cross-cultural interaction the authors made use of various country studies materials and multimedia resources (modern pop-music, TV series, documentaries, etc.) for reconstructing a near-authentic learning environment;

- to stimulate the students' independent learning and self-development the authors provided a lot of helpful Internet resources, recommended language learning applications to build up vocabulary and practice grammar and encouraged the students to participate in language online contests and conferences.

The comparison of students' responses to a set of 8 closed-ended questions concerning their English learning motivation and self-assessment between the experimental group and the control group at the beginning and at the end of the 2020–2021 academic year made it possible to assess the effectiveness of the proposed teaching strategy.

The data analysis showed that before and after the use of personalized motivation roadmap and independent learning skills development there were no statistically significant differences between the experimental and control groups ($P > 0.05$). However, the share of 'I agree' responses increased statistically significantly, it was 1.31 times ($P = 0.006$) higher in the experimental group, and the share of 'I'm not sure' responses decreased: it was 1.66 times ($P = 0.002$) after the implementation of the proposed teaching methods. There were no statistically significant changes after the course in the control group ($P > 0.05$). Thus, these facts indicate a greater effectiveness of the suggested methods in the experimental group (Table 1).

Table 1. Question 1: I enjoy learning English

Groups	Scale points	September, 2020			May-June, 2021			Fold change	P value
		N	%	Standard Deviation	N	%	Standard Deviation		
Experimental group, n = 223	I absolutely agree	17	7.6 %	-	25	11.2 %	-	1.47	0.195
	I agree	94	42.2 %	-	123	55.2 %	-	1.31	0.006
	I'm not sure	73	32.7 %	-	44	19.7 %	-	-1.66	0.002
	I disagree	31	13.9 %	-	24	10.8 %	-	-1.29	0.313
	I absolutely disagree	8	3.6 %	-	7	3.1 %	-	-1.14	0.793
Control group, n = 187	I absolutely agree	15	8.0 %	0.881	19	10.2 %	0.732	1.27	0.472

Groups	Scale points	September, 2020			May-June, 2021			Fold change	P value
		N	%	Standard Deviation	N	%	Standard Deviation		
	I agree	79	42.2 %	0.985	88	47.1 %	0.102	1.11	0.349
	I'm not sure	54	28.9 %	0.400	42	22.5 %	0.499	-1.29	0.155
	I disagree	33	17.6 %	0.298	30	16.0 %	0.115	-1.10	0.679
	I absolutely disagree	6	3.2 %	0.833	8	4.3 %	0.541	1.33	0.586

The analysis of the data showed that before the course there were no significant differences between the experimental and control groups ($P > 0.05$). However, after the implementation of the developed roadmap the proportion of responses 'I absolutely agree' in the experimental group was 2.01 times higher than in the control group ($P = 0.013$), and the proportion of responses 'I disagree' in the experimental group was 2.05 times lower than in the control group ($P = 0.003$). Moreover, the share of 'I agree' responses increased statistically significantly by 1.34 times ($P = 0.019$) in the experimental group after the use of the personalized roadmap, and the share of 'I'm not sure' responses decreased: it was 1.43 times ($P = 0.011$). There were no significant changes after the course in the control group ($P > 0.05$). These facts demonstrate a greater effectiveness of the use of the suggested teaching methods in the experimental group (Table 2).

Table 2. Question 2: I'm satisfied with my progress

Groups	Scale points	September, 2020			May-June, 2021			Fold change	P value
		N	%	Standard Deviation	N	%	Standard Deviation		
Experimental group, n = 223	I absolutely agree	26	11.7 %	-	36	16.1 %	-	1.38	0.171
	I agree	71	31.8 %	-	95	42.6 %	-	1.34	0.019
	I'm not sure	83	37.2 %	-	58	26.0 %	-	-1.43	0.011
	I disagree	25	11.2 %	-	22	9.9 %	-	-1.14	0.644
	I absolutely disagree	18	8.1 %	-	12	5.4 %	-	-1.50	0.257
Control group, n = 187	I absolutely agree	18	9.6 %	0.508	15	8.0 %	0.013	-1.20	0.584
	I agree	65	34.8 %	0.532	73	39.0 %	0.465	1.12	0.391
	I'm not sure	63	33.7 %	0.457	53	28.3 %	0.596	-1.19	0.264
	I disagree	28	15.0 %	0.258	38	20.3 %	0.003	1.36	0.175
	I absolutely disagree	13	7.0 %	0.669	8	4.3 %	0.606	-1.63	0.261

The data analysis showed that before the use of personalized motivation roadmap and independent learning skills development statistically significant differences were observed between the experimental and control groups. Thus, the proportion of responses 'I absolutely agree' in the experimental group was 2.11 times higher ($P = 0.001$), the proportion of responses 'I disagree' in

the experimental group was 2.32 times lower ($P = 0.001$) and the proportion of responses 'I absolutely disagree' in the experimental group was 5.94 times lower ($P < 0.001$) than in the control group. This indicates that initial optimism in the experimental group was lower. However, after implementing the suggested methods the proportion of responses 'I absolutely agree' in the experimental group was no longer different from the control group ($P > 0.05$), while the proportion of responses 'I disagree' and 'I absolutely disagree' in the experimental group was still higher than in the control group. 1.91 times ($P = 0.002$) and 2.39 times ($P = 0.033$) respectively. In addition, the proportion of those who were not sure in the experimental group increased ($P < 0.001$). In addition, the share of 'I agree' responses decreased statistically significantly: it was 1.57 times ($P = 0.015$), and the share of 'I'm not sure' responses increased by 1.38 times ($P = 0.013$) in the experimental group after the use of the motivation and independent learning skills methods. There were no statistically significant changes after the use of these methods in the control group ($P > 0.05$). The combination of these facts also indicates a greater motivation level in the experimental group (Table 3).

Table 3. Question 3: Learning English takes a lot of time and effort

Groups	Scale points	September, 2020			May-June, 2021			Fold change	P value
		N	%	Standard Deviation	N	%	Standard Deviation		
Experimental group, n = 223	I absolutely agree	58	26.0 %	-	37	16.6 %	-	-1.57	0.015
	I agree	75	33.6 %	-	59	26.5 %	-	-1.27	0.098
	I'm not sure	66	29.6 %	-	91	40.8 %	-	1.38	0.013
	I disagree	20	9.0 %	-	28	12.6 %	-	1.40	0.222
	I absolutely disagree	4	1.8 %	-	8	3.6 %	-	2.00	0.242
Control group, n = 187	I absolutely agree	23	12.3 %	0.001	19	10.2 %	0.059	-1.21	0.512
	I agree	53	28.3 %	0.250	64	34.2 %	0.087	1.21	0.220
	I'm not sure	52	27.8 %	0.690	43	23.0 %	0.000	-1.21	0.285
	I disagree	39	20.9 %	0.001	45	24.1 %	0.002	1.15	0.457
	I absolutely disagree	20	10.7 %	0.000	16	8.6 %	0.033	-1.25	0.483

The analysis of the data showed that before the course there were no statistically significant differences between the experimental and control groups ($P > 0.05$). However, after the course the share of 'I agree' responses in the experimental group was 1.24 times higher than in the control group ($P = 0.029$). Moreover, in the experimental group after the course there was a statistically significant 1.40-fold ($P = 0.001$) increase in the proportion of 'I agree' responses, a 1.88-fold ($P = 0.006$) decrease in the proportion of 'I'm not sure' responses and a 2.00-fold ($P = 0.009$) decrease in 'I disagree' responses. There were no statistically significant changes after the course in the control group ($P > 0.05$). This also proves a greater effectiveness of the chosen roadmap for development of motivation and independent learning tools in the experimental group (Table 4).

Table 4. Question 4: Learning English is essential for my future professional expertise

Groups	Scale points	September, 2020			May-June, 2021			Fold change	P value
		N	%	Standard Deviation	N	%	Standard Deviation		
Experimental group, n = 223	I absolutely agree	44	19.7 %	-	49	22.0 %	-	1.11	0.560
	I agree	90	40.4 %	-	126	56.5 %	-	1.40	0.001
	I'm not sure	45	20.2 %	-	24	10.8 %	-	-1.88	0.006
	I disagree	36	16.1 %	-	18	8.1 %	-	-2.00	0.009
	I absolutely disagree	8	3.6 %	-	6	2.7 %	-	-1.33	0.587
Control group, n = 187	I absolutely agree	45	24.1 %	0.289	41	23.0 %	0.800	-1.04	0.817
	I agree	68	36.4 %	0.408	81	45.5 %	0.029	1.25	0.076
	I'm not sure	36	19.3 %	0.814	30	16.9 %	0.076	-1.14	0.552
	I disagree	32	17.1 %	0.793	22	12.4 %	0.155	-1.38	0.201
	I absolutely disagree	6	3.2 %	0.833	4	2.2 %	0.777	-1.43	0.574

The analysis of the data showed that before the course statistically significant differences were observed between the experimental and control groups. Thus, the share of 'I'm not sure' answers in the experimental group was 2.72 times lower ($P < 0.001$) than in the control group. This indicates an initial difference between the groups' respondents. However, after the course the proportion of responses 'I agree' in the experimental group was 1.26 times higher ($P = 0.023$), while the proportion of responses 'I'm not sure' in the experimental group was still 1.81 times lower than in the control group ($P = 0.015$). There were no statistically significant changes after the course in the experimental and control groups ($P > 0.05$). The combination of these facts suggests that the level of motivation and independent learning skills was approximately the same in the experimental and control groups (Table 5).

Table 5. Question 5: Learning English is necessary for personal needs (e.g. while travelling)

Groups	Scale points	September, 2020			May-June, 2021			Fold change	P value
		N	%	Standard Deviation	N	%	Standard Deviation		
Experimental group, n = 223	I absolutely agree	66	29.6 %	-	55	24.7 %	-	-1.20	0.241
	I agree	108	48.4 %	-	123	55.2 %	-	1.14	0.155
	I'm not sure	15	6.7 %	-	23	10.3 %	-	1.53	0.175
	I disagree	23	10.3 %	-	14	6.3 %	-	-1.64	0.122
	I absolutely disagree	11	4.9 %	-	8	3.6 %	-	-1.38	0.482

Control group, n = 187	I absolutely agree	53	28.3 %	0.780	56	29.9 %	0.231	1.06	0.733
	I agree	85	45.5 %	0.548	82	43.9 %	0.023	-1.04	0.755
	I'm not sure	34	18.2 %	0.000	35	18.7 %	0.015	1.03	0.894
	I disagree	11	5.9 %	0.105	9	4.8 %	0.521	-1.22	0.646
	I absolutely disagree	4	2.1 %	0.133	5	2.7 %	0.599	1.25	0.736

The analysis of the data showed that before the course statistically significant differences between the experimental and control groups were observed only in the share of 'I agree' answers; it was 1.54 times higher in the experimental group than in the control group ($P = 0.037$). However, after the course there were no longer statistically significant differences between the experimental and control groups ($P > 0.05$). Additionally, the share of 'I absolutely agree' answers statistically significantly increased by 1.42 times ($P = 0.036$), the share of 'I agree' answers increased by 1.62 times ($P = 0.001$) and the share of 'I'm not sure' answers decreased by 2.00 times ($P < 0.001$) in the experimental group after the course. However, similar changes after the course were also observed in the control group: the share of answers 'I agree' increased by 2.55 times ($P < 0.001$) and the share of answers 'I'm not sure' decreased by 2.00 times ($P < 0.001$). Thus, the results were approximately the same in the experimental and control groups (Table 6). The fact could be explained that most language learners recognize the importance of the subject for personal reasons like travelling or studying abroad.

Table 6. Question 6: Learning English fosters soft skills

Groups	Scale points	September, 2020			May-June, 2021			Fold change	P value
		N	%	Standard Deviation	N	%	Standard Deviation		
Experimental group, n = 233	I absolutely agree	45	20.2 %	-	64	28.7 %	-	1.42	0.036
	I agree	53	23.8 %	-	86	38.6 %	-	1.62	0.001
	I'm not sure	78	35.0 %	-	39	17.5 %	-	-2.00	0.000
	I disagree	36	16.1 %	-	29	13.0 %	-	-1.24	0.348
	I absolutely disagree	11	4.9 %	-	5	2.2 %	-	-2.20	0.127
Control group, n = 187	I absolutely agree	45	24.1 %	0.344	42	22.5 %	0.151	-1.07	0.713
	I agree	29	15.5 %	0.037	74	39.6 %	0.835	2.55	0.000
	I'm not sure	58	31.0 %	0.396	29	15.5 %	0.591	-2.00	0.000
	I disagree	40	21.4 %	0.173	35	18.7 %	0.112	-1.14	0.518
	I absolutely disagree	15	8.0 %	0.201	7	3.7 %	0.369	-2.14	0.079

The analysis of the data showed that before the course there were no statistically significant differences between the experimental and control groups ($P > 0.05$). However, after the course the proportion of 'I agree' responses in the experimental group was 1.84 times higher than in the control group ($P = 0.002$), and the proportion of doubting respondents was 1.63 times higher in the control group ($P = 0.002$). In addition, the share of 'I agree' responses increased statistically significantly by 1.29 times ($P = 0.033$) in the experimental group and the share of 'I disagree' responses decreased by 1.56 times ($P = 0.010$). There were no statistically significant changes after the course in the control group ($P > 0.05$). It is possible to state a greater effectiveness of the suggested methods in the experimental group (Table 7).

Table 7. Question 7: I am interested in culture and traditions of English-speaking countries

Groups	Scale points	September, 2020			May-June, 2021			Fold change	P value
		N	%	Standard Deviation	N	%	Standard Deviation		
Experimental group, n = 223	I absolutely agree	23	10.3 %	-	33	14.8 %	-	1.43	0.153
	I agree	76	34.1 %	-	98	43.9 %	-	1.29	0.033
	I'm not sure	55	24.7 %	-	49	22.0 %	-	-1.12	0.502
	I disagree	64	28.7 %	-	41	18.4 %	-	-1.56	0.010
	I absolutely disagree	5	2.2 %	-	2	0.9 %	-	-2.50	0.253
Control group, n = 187	I absolutely agree	21	11.2 %	0.765	20	10.7 %	0.217	-1.05	0.869
	I agree	69	36.9 %	0.552	54	28.9 %	0.002	-1.28	0.099
	I'm not sure	54	28.9 %	0.336	67	35.8 %	0.002	1.24	0.151
	I disagree	39	20.9 %	0.068	41	21.9 %	0.372	1.05	0.801
	I absolutely disagree	4	2.1 %	0.943	5	2.7 %	0.167	1.25	0.736

The analysis of the data showed that before the course there were no statistically significant differences between the experimental and control groups ($P > 0.05$). However, after the course the proportion of 'I agree' responses in the experimental group was 1.30 times higher than in the control group ($P = 0.013$), and the proportion of doubting respondents was 2.38 times higher in the control group ($P = 0.002$). Moreover, the share of 'I agree' responses increased statistically by 1.31 times ($P = 0.008$) in the experimental group after the course and the share of 'I'm not sure' responses decreased by 2.57 times ($P < 0.001$). There were no statistically significant changes after the course in the control group ($P > 0.05$). It leads us to the conclusion that the motivation level of the students in the experimental group after the course was higher (Table 8).

Thus, the results of the statistical analysis showed that the responses to six of the eight questions in the questionnaire demonstrate a clear advantage of the chosen teaching methods used in the experimental group.

Table 8. Question 8: When the University course of English is over, I'm going to continue learning English

Groups	Scale points	September, 2020			May-June, 2021			Fold change	P value
		N	%	Standard Deviation	N	%	Standard Deviation		
Experimental group, n = 223	I absolutely agree	59	26.5 %	-	69	30.9 %	-	1.17	0.295
	I agree	90	40.4 %	-	118	52.9 %	-	1.31	0.008
	I'm not sure	44	19.7 %	-	16	7.2 %	-	-2.75	0.000
	I disagree	21	9.4 %	-	14	6.3 %	-	-1.50	0.218
	I absolutely disagree	9	4.0 %	-	6	2.7 %	-	-1.50	0.431
Control group, n = 187	I absolutely agree	54	28.9 %	0.585	57	30.5 %	0.920	1.06	0.734
	I agree	71	38.0 %	0.621	76	40.6 %	0.013	1.07	0.597
	I'm not sure	28	15.0 %	0.207	32	17.1 %	0.002	1.14	0.573
	I disagree	23	12.3 %	0.348	14	7.5 %	0.629	-1.64	0.119
	I absolutely disagree	11	5.9 %	0.387	8	4.3 %	0.378	-1.38	0.480

5. Conclusion

The survey data confirmed that there is a dichotomy between the students' attitude to the subject and their ability to study on their own, i.e. in spite of the fact that most students enjoy learning English; they claim that it takes much time and energy. It means that the first-year students' independent learning skills are not developed enough and along with the limited number of academic hours in technical universities for classroom activities it can be an obstacle to their progress. The peculiarity of the discipline is that it is a really time-intensive process which requires much effort from students. Language learners who are eager to succeed in mastering a second language are expected to practice their language skills more often and regularly and increase workload and the level of difficulty step by step as the process requires memorizing new words to expand one's vocabulary and doing a great number of various skill-building exercises. Therefore, foreign language teachers should spend more time on developing students' motivation and their independent learning skills.

This study aimed at developing the teaching tools to enhance students' motivation and independent learning skills showed that the proposed strategy proved quite effective. At the end of the 2020–2021 academic year the students in the experimental group reflected on their experiences during the course. They pointed out that they had a greater satisfaction with the tools used in their English classes and highly appreciated the expertise of their teachers. The students also stated that face-to-face tutorials with their teachers were also significant for their progress. They claimed that communicative activities and gamification were consequential for their involvement and motivation. But they also understood the importance of finding more time for grammar practice: learning rules, doing exercises and analyzing mistakes. More students got interested in the culture and traditions of the English speaking countries. They were better at finding the information they needed in a foreign language using different resources. Taking part in a variety of activities presented in the motivational spectrum made students more confident and skillful in using self-development techniques, managing their time more effectively and in the long

run, being more independent learners. The share of students who see the correlation between the knowledge of English and a successful career has increased by 18 % in the experimental group which laid a good foundation for starting the ESP course next term.

6. Limitations

In this study, we also recognized some limitations. Firstly, the analysis of the suggested roadmap was implemented within the scope of all the above mentioned tools; we have not thoroughly studied the level of efficacy of each learning tool separately. Secondly, the authors conducted the experiment only with first-year Bachelor students who studied the course of General English. Thirdly, there was no special selection of the participants into experimental and control groups apart from their English proficiency level and age. As previously stated, it was a random choice of the fourteen B1+ study groups (the experimental group) taught by the authors and the fourteen B1+ study groups taught by their colleagues.

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Assessment of Cognitive Engagement and Interest of Medical Students in a Serious Game Design Activity

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Abstract

This study aimed to assess the cognitive engagement and interest of third-year medical students by offering them an educational activity in the designing of a serious game.

Methods: four successive groups of twelve students each (a total of 48 students) in the third year of medical training participated in an activity of designing serious games. This study was carried out during a summer internship in the cardiology department of Habib Thameur Hospital. The course of the designing of serious games with students spread over 4 weeks with 10 hours face-to-face and 10 hours of remote work.

Results: a total of 48 students were enrolled. Of these 48 students, 36 were female. The means and standard deviations of the cognitive engagement scale experienced by the students were high. The means and standard deviations of the interest scale experienced by the students were high. There are significant and positive relationships between sustained and maintained situational interest and the different cognitive engagement scales. The correlation between individual interest and peer collaboration, cognitive problem solving, interactions with instructors, and learning management was significant.

Conclusion: using serious game development-based learning as a learning method for medical students' suggests a promising approach for developing cognitive engagement and interest.

Keywords: serious game, motivation, interest, collaboration, learning, creativity, design.

1. Introduction

Cognitive engagement of students towards an educational intervention has been positively correlated with learning outcomes and behavior change (Donkin et al., 2011; Perski et al., 2017).

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Designing educational interventions to support the engagement of medical students is therefore important to improve their performance (Wang et al., 2016). A higher level of student engagement generates deep learning, active participation, and a positive response to challenges

Developments in digital technologies now offer teachers the opportunity to diversify the media they use for teaching. Faced with a new generation of educational media that has recently emerged, it is recognized that serious games or serious games can improve the acquisition of knowledge and skills by learners and increase student motivation (Laurent, 2010; Alvarez et al 2006). Computer gaming technology has increased the opportunities for delivering immersive learning experiences (Bonk, Dennen, 2005; Hill et al., 2006; Smith, Smith, 2006), and so has the challenge of creating pedagogically efficient experiences (Hussain, Feurzeig, 2008; Juzeleniene et al., 2014).

Research indicates that serious games (SG) can improve student performance in many tasks and cognitive skills (Boot et al., 2008).

Learning in SGs occurs through gameplay which is a combination of challenges and design elements (DEs) (Nevin et al., 2014) that engage the learner in challenges that seek the learners' competence (Hamari et al., 2016) and improve the learner's engagement in SGs (Nevin et al., 2014; Wang et al., 2016; Sailer et al., 2017). Challenges can require the learner to experiment, collaborate or compete with other learners (Westera et al., 2008). Three different, but not exclusive, approaches are presented to a teacher to integrate Serious Games into his teaching practice: the use of existing Serious Games with his students, the creation of "tailor-made" Serious Games for his students, and having them create Serious Games directly (Djaouti, 2016).

Indeed, thanks to the "game factories" and "modifiable games" that the teacher can use to create Serious Games that correspond to his needs, it is also possible to imagine educational activities in which the learners create a Serious game (Djaouti, 2016). This approach to designing serious games by students is part of the so-called "active pedagogy" or "project-based learning" approaches, in which the teacher prioritizes pedagogical strategies that promote students' cognitive engagement and interest.

Cognitive engagement in education

From a constructivist perspective, cognitive engagement refers to the extent to which students are attending to and expending mental effort on the learning tasks encountered (Chapman, 2003). According to Pintrich and Schrauben (1992), students' cognitive engagement represents a motivated behavior associated with their persistence on difficult tasks and the usage of cognitive strategies. In education, using written tasks that focus on personally meaningful experiences can facilitate behavioral and/or cognitive changes that lead to knowledge and skill reconstruction (Mason, 2001).

Interest as a motivation source in education

Constructivist learning theory acknowledges that learner motivation is a key component in learning (Resnick, Klopfer, 1989). Among many motivation sources, interest has been considered powerful and effective in engaging students during the learning process (Dewey, 1913). In educational research, interest is conceptualized as situational and personal (Hidi, 1990; Hidi, 2000).

The role of interest in cognitive engagement

Interest is often conceptualized as a relational construct that reflects an affective-cognitive relationship between a person and an object, event, or idea (Krapp, 2002).

In education, two types of interest, individual and situational, have been studied concerning the relationship between interest and learning. In research, individual interest is considered to be an individual's predisposition characterized by high attention given to certain events and objects. Individual interest is activity-specific and associated with value and previous knowledge (Wade, 2001). Situational interest, on the other hand, is characterized by instantaneity. A highly, situationally interesting activity can immediately attract students' attention, involve them in the process, and provide instant, positive feelings about the activity (Hidi, Harackiewicz, 2000).

As a construct, situational interest is structurally more complex than individual interest, which depends on a person's existing knowledge and value about an activity. Situational interest has been articulated as multidimensional. Deci (1992) proposed that it encompasses person, activity, and social context dimensions. The Person dimension consists of experiential and dispositional components. In a situationally interesting environment, the individual will experience

quality attention, a sense of delight, exploration intention, time alteration, and desire. A person evaluates enjoyment based on the attentional demand and sense of delight that occur when he/she engages in an activity. Exploration intention, time alternation, and desire represent the stimulation the activity generates. Deci (1992) assumed that these components were more likely to arouse a person's perception of situational interest and might increase the person's intrinsic motivation to engage in the activity. In the Activity dimension, the challenge and novelty of activity are central to situational interest. People are likely to experience situational interest when the activity is optimally challenging or novel to them. Challenge is defined as the difficulty level associated with the activity and has been identified as a motivational factor that may attract individuals to engage in an activity (Harter, 1978).

However, to our knowledge, no empirical study has delved into an in-depth understanding of the links between student cognitive engagement and interest in a serious game design activity in medical education.

This study aimed to assess the cognitive engagement and interest of third-year medical students by offering them an educational activity in the designing of a serious game.

2. Methods

2.1. Study design

This was a prospective study performed for 2 years (2018–2019 and 2019–2020).

2.2. Population and location of the study

Four successive groups of twelve students each (a total of 48 students) in the third year of medical training participated in this study carried out during a summer internship in the cardiology department of Habib Thameur Hospital, the third-year medical student must do a summer internship in the department of cardiology.

2.3. The course of the educational activity on the designing of serious games with students

The training schedule spread over 4 weeks with 10 hours of face-to-face and 10 hours of remote work. The course is structured in five main periods to create prototypes (Figure 1).



Fig. 1. Prototype of the course on serious game design

The first step: Introduction and discovery of Serious Games

Reception of the students by the facilitator with an explanation and introduction of the objectives of the training and the concept of "Serious Game", After this short introduction, we invite the students to discover examples of Serious Games for themselves. The goal of this phase is for students to experience the immense variety of affordable themes through video games.

The second step: Theoretical course on video game design methodologies and tools

The students are introduced to digital game design to facilitate the decision-making concerning game and learning mechanics and evaluation. The table below introduces the methodological procedure and reflective questions in each of the six steps of the proposed methodology (Table 1).

The design elements in a serious game to be assessed are (Maheu-Cadotte et al., 2018): avatars, levels of difficulty of the challenges, performance tables or graphs, a narrative discourse that serves to organize the events of a story in a logical or temporal order, points and the time limit that is allowed for the learner to achieve a specific challenge.

We reveal to our students the theme they will have to deal with through their Serious Game design by setting the learning objectives to be achieved. The themes set for the training were chest pain and dyspnea. The students were divided into two teams and started working on their projects. Throughout this phase, the teacher will have to support and guide the students as to the relevance of their game to the subject.

Each team should develop the prototype for their game design. The students are not required to engage in the development of the game. They are only required to produce a prototype of the look and feel and interface that could help a third person to understand the game interface and interact.

Table 1. Game design methodology

Heading level	Font size and style
Learning objectives	Learning objectives are the key point in starting to design the digital game-based learning (DGBL) activity. In this step, the students are invited to identify the formal or informal learning context, define which of the learning objectives will be part of the learning assessment and which type of feedback (or group awareness) will be offered as a display of progression to the learners during the game or gamification activity
Learner-centered need analysis	The learner-centered need analysis aims to analyze the learners' prior knowledge and competencies (PKC) to organize the learning objectives and the optimal difficulty to try to achieve a certain level of flow (Csikszentmihalyi, 1990). Based on the learners' diversity in terms of PKC, the team could decide to organize the learning modalities to adapt the game to the diversity or evaluate the cooperative game dynamics that could help overcome the learners' PKC diversity. The learner-centered need analysis should also analyze the learners' language and computer literacy, their preferences, context, and technological resources to make decisions in the following steps
Game modalities	To decide the game modalities, the learners are invited to identify the existing serious games that could fit the learning objectives. In case an existing serious game matches the objectives, they should identify the pedagogical integration requirement. In case there is not an existing serious game fitting the requirements, the teams could decide to repurpose an existing game. A third alternative is to design and create a game. Furthermore, the teams can opt for educational gamification and add the game components (e.g. public scoring and competitive team, reward system...) to an educational situation. All the students enrolled in our course the students decided to create their game because no existing serious games fitted the learning objectives
Heading level	Font size and style
Game rules, learning and game mechanics	The teams should decide the individual or collaborative context of the game and define the game rules. The game rules should be aligned with the learning objectives and the learning assessment and feedback to incentivize the learning progression in the game. The game mechanics structures the interaction and control processes allowing the player to advance in the game. The teams are introduced to the existence of primary and secondary game mechanics (Fabricatore, 2007) and are invited to identify the learning mechanics and game mechanics based on the LM-GM model proposed by Arnab and collaborators (Arnab et al., 2015).
Learning assessment and feedback	In this phase of the game design methodology, the team should analyze the effective impact of the game on the learning objective achievements. The learning assessment and feedback should derivate from the learning objectives. According to the needs identified in the second phase (learner-centered need analysis), three main types of assessment could be introduced in the game: diagnostic, formative, and summative assessment.

Gaming and learning experience

Individual and collective feedback could be displayed to the players through knowledge group awareness widgets (Chavez, Romero, 2012) to ensure the learner is aware of her/his progression
This last phase aims to evaluate the player gaming and (positive) learning experience. The teams are introduced to the works of Kiili concerning the flow experience (Kiili, 2005) and the criteria for improving it. Kiili focuses on the importance of immediate feedback, clear goals, and challenges that are matched with the current learners' knowledge and skills to place them in the flow activity state

The third step: design and production of Serious Games

As a design tool, we offer them a free version of the "VTS Editor" software with an introductory course in its handling.

The fourth step: Presentation and evaluation of completed projects

- At the end of the training, an anonymous self-assessment questionnaire composed of 39 items [All items were measured using Likert scales ranging from one (very much disagree) to seven (very much agree)], and was submitted to the student in two parts:

The first part of the questionnaire measure student cognitive engagement. For the design of the questionnaire for this study, we adapted questions focused on measuring student cognitive engagement from the study of J. Lee (2019).

In this research through a questionnaire, they analyzed six factors in student engagement in the e-learning environment: factor 1. Psychological motivation (6 items), factor 2. Peer collaboration (5 items), factor 3. Cognitive problem solving (5 items), factor 4. Interactions with instructors (2 items), factor 5. Community support (3 items), and factor 6. Learning management (3 items). Averages and medians of the students' responses to the questionnaire were calculated. An average of 7 expresses that, on average, the students are very engaged in the serious game design activity. However, an average of nearly 1 express that, on average, students are not engaged in serious game design activity.

The second part of the questionnaire evaluates the three models of interest using the individual and sustained scale for the serious game (Chainon et al., 2014); composed of 12 items subdivided into three sub-scales assessing the three types of interest: individual interest, sustained situational interest and maintained situational interest.

2.2. Statistical analysis

Data were analyzed using SPSS software version 19.0.

Three different statistical methods were employed. To determine the degree of students' cognitive engagement as well as their interest, the means (M) and the standard deviation (SD) were utilized. The links between 2 quantitative variables were studied by the Pearson's rank correlation coefficient.

We also conducted a series of hierarchical multiple regression analyses to see the influence of interest on students' cognitive engagement, and factorial ANOVA was run to analyze the effect of age, and gender on learners' cognitive engagement.

In all statistical tests, the significance level was set at 0.05.

2.3. Ethical approval

The study was approved by the research ethics board at the institution, project reference HTHEC-2021-17. Participants provided informed consent before participation.

3. Results

3.1. Demographic Characteristics of Participants

A total of 48 students were enrolled. Participants ranged in age from 20 to 22 years (M = 21.25, SD = 0.6), and of these 48 students, 37 were female

3.2. Results of cognitive engagement

The reliability of the instrument used to test levels of cognitive engagement, the relationships between these levels and test variable, and the highest predictor of cognitive engagement were highly

reliable. The reliability of the Survey of student cognitive engagement was determined by using a statistical analysis program, SPSS. The alpha reliability for the 24-items instrument was 0.84.

The scores for cognitive engagement ranged from 5.6 to 6.2.

Table 2 shows that the means and standard deviations of the cognitive engagement scale experienced by the students were high.

The results displayed in Table 2 showed that the students generally felt motivated in the serious game design activity, with a mean of psychological motivation (M = 5.6, SD = 0.6). More interestingly, the results suggested that students' learning management level was quite high (M = 6.2, SD = 0.4). Interaction with the instructor showed almost the same results.

3.3. Results of interest dimensions

Reliability for the Survey of student interest using the individual and sustained scale for the serious game interest was determined by using a statistical analysis program, SPSS. The alpha reliability for the 12-items instrument was 0.83.

The scores for interest ranged from 6.3 to 6.4.

Table 3 shows that the means and standard deviations of the interest scale experienced by the students were high.

The results displayed in Table 3 showed that the students generally felt an individual interest in the activity of serious game design. The results suggested that students sustained situational interest level was quite high (M = 6.4, SD = 0.3).

3.4. Correlation between cognitive engagement and interest

We examined the bivariate correlations between learners' cognitive engagement and interest. Table 4 show significant and positive correlation between individual interest and peer collaboration, cognitive problem solving, interactions with instructors (p = .00 < .01), community support and learning management (p = .05), between sustained situational interest and psychological motivation, peer collaboration (p = .00 < .01), cognitive problem solving and interactions with instructors (p = <.05).

3.5. Students' interest based on age, gender, psychological motivation, peer collaboration, cognitive problem solving, interactions with, community support, and learning management

The multifactorial analysis of variance (factorial ANOVA) was performed to investigate students' individual interest based on age, gender, psychological motivation, peer collaboration, cognitive problem solving, interactions with, community support, and learning management. In particular, the factorial ANOVA analysis indicates significant interaction effect only between individual interest and peer collaboration (p = .00 < .01), and learning management (p = .07),

3.6. Students sustained situational interest based on age, gender, psychological motivation, peer collaboration, cognitive problem solving, interactions with, community support, and learning management

The multifactorial analysis of variance (factorial ANOVA) was performed to investigate students' individual interest based on age, gender, psychological motivation, peer collaboration, cognitive problem solving, interactions with, community support, and learning management. In particular, the factorial ANOVA analysis indicates significant interaction effect only between sustained situational interest and peer collaboration (p = .00 < .01).

Table 2. Means, medians, and standard deviations of cognitive engagement (N = 48)

	Mean	Me dian	Standard deviations
psychological motivation	5,6	6	0,6
peer collaboration	5,9	6	0,7
cognitive problem solving	6	6	0,6
interactions with instructors	6	6	0,6
community support	6,1	7	0,6
learning management	6,2	6	0,4

Table 3. Means, medians, and standard deviations of interest scale (N = 48)

	Mean	Median	Standard deviations
Individual interest	6,3	6	0,4
Sustained situational interest	6,4	6	0,3
Maintained situational interest.	6,4	6	0,4

Table 4. Correlation between cognitive engagement and interest

	Individual interest	Sustained situational interest	Maintained situational interest.
psychological motivation	,274 ,059	,378** ,008	,415** ,003
peer collaboration	,608** ,000	,536** ,000	,319* ,027
cognitive problem solving	,453** ,001	,326* ,024	,239 ,102
interactions with instructors	,506** ,000	,322* ,026	,323* ,025
community support	,350* ,015	,264 ,070	,325* ,024
learning management	,452** ,001	,264 ,069	,198 ,177

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

4. Discussion

The purpose of this study was to examine the relation between students' situational interest, and cognitive engagement during a serious game design activity. This study highlights that the educational activity of creating a serious game by the students can enhance the cognitive engagement and interest, of medical students.

The use "in the field" of the various approaches of the Serious Game to its educational practice is far from being equivalent. The "use" approach seems to be the most common in the teaching community. The "create" and "create" approaches remain confined to the experimental scale, as they are more complex to implement.

It seems that serious games allow a better engagement of the students in the task (Girard et al., 2013).

Kafai (2012) experimented with the creation of the serious Game by pupils in primary school and concluded that this pedagogical approach leaves a greater part to personal creativity and makes it possible to respect the different styles and rhythms of specific learning.

The work of Djaouti and Alvarez (2013) carried out by Masters level students on the creation of Serious Games, revealed a strong motivation of the students to carry out documentary research to be able to create a game on the chosen theme and the opportunity.

Several authors (Kafai, 2006; Seymour, 1993; Harel, Papert, 1991; Ouahbi et al., 2017), have specified that the creation of serious games by learners, defined as a constructivist approach, appears to be potentially more suited to taking into account the different learning styles specific to learners and makes it possible to stimulate their cognitive engagement and interest. Our results are consistent with these studies. The activity of creating serious games with the students helped to develop their cognitive engagement, individual interest, and sustained interest with a good overall scale.

In line with interest theories (Dewey, 1913; Hidi, Harackiewicz, 2000; Schiefele, 2009) and our hypotheses, results suggested that students' experience of interest during serious game design activity predicted all forms of cognitive engagement assessed, as well as an increase in their interest in ways that might maximize their learning experience.

Such findings provide insight into pathways through which situational interest may come to influence students' cognitive engagement. These various forms of engagement are considered to be precursors to learning and achievement (Roderick 2001; Willingham, 2002), as well as attendance and graduation over the long term (Croninger, Lee, 2001).

This study suggests that the experience of interest during serious game design activity serves as a platform to set these pathways into motion each day.

The relations between situational interest and peer collaboration, individual interest, peer collaboration, and learning management were stronger, a finding that may point to the relative strength of individual versus situational interest for supporting learning-related outcomes over the long run (Hidi, Renninger, 2006).

Our study indicates that the interest scale experienced by medical students was high. This finding strongly confirms the findings of other studies which state that serious games manage to trigger and maintain situational interest for a longer time, and it might have positive effects on the subsequent individual interest (Meyer, Sørensen, 2008).

These results provide evidence for our expectation that interest would play a greater role in guiding students' cognitive engagement when the student is placed in a creative situation, he has greater freedom to develop his relationship with educational content, and therefore to choose his way of assimilating it.

As the consequences of the learning approach, we suspect that extrinsic motivation, that is, a state of wanting to perform a specific activity in each situation for the sake of some external outcome (Ryan, Deci, 2000), became a more powerful predictor of students' learning-related thoughts and behavior, subtly "crowding out" the role of interest.

We have identified many examples of constructivist approaches based on the creation of video games, such as the work of Overmars (2004) and Claypool (2005) which are based on Game Maker, or those of El-Nasr (El-Nasr, Smith, 2006) which use "modding" tools.

According to studies that have been carried out with modding tools (Laukkanen, 2005; Yucel et al., 2006; De Prato, 2010), the choice of tool is very important and must be aligned with the audience and the intended educational objectives.

In our study, which aimed to make students aware of "Game Design", while bringing them to work in groups, the choice of a simple tool allowing to create modest achievements turned out to be more relevant than a more elaborate tool allowing to obtain richer creations. That's why we used the free version of the VTS Editor software, which is easy to use with built-in tutorials.

The evidence points towards the suitability of serious game design activity in supporting a learning design for cognitive engagement. It provided an engaging learning environment by allowing for higher levels of self-pacing, multi-modal representation, multiple points of access, collaborative discussion, and reiterative learning. This success in facilitating cognitive engagement supports findings from the literature which suggest that learning technologies, when used effectively, can play a key role in stimulating curiosity and interest and in facilitating and sustaining engagement (Arnone et al., 2011).

Serious games might also encourage learners to hold positive attitudes toward academic tasks with strong self-regulation if they were immersed in the gaming situation. Positive attitudes help learners to produce better academic achievements. Thus, it is reasonable to conclude that serious gaming leads to significantly more positive attitudes than traditional learning (Hwang, Chang, 2011).

However, the implementation of such an educational activity comes with several conditions. First, it seems obvious that it is above all necessary for the teacher to be interested in this approach and to fully master the serious theme that he is proposing to his learners. But the teacher must also be able to support them in handling the different tools they will use to create their Serious Games.

In terms of constraints, the question of choosing a "game factory", or a game to "modify", which is suited to the skills and time available, remains as central as the "create" approach. However, this approach also poses a new problem: that of the teacher's posture. Indeed, this kind of activity fits in so-called "active pedagogy" or "project-based learning" approaches, in which the teacher must, for a time, leave his masterful posture to take on a supportive role. This refers more generally to the question of support for teachers opting for this kind of approach (Alvarez, 2006; Djaouti, 2016).

The limits of the study

- The small number. But, considering the time devoted to this activity, it was difficult for us to recruit a larger sample.

- the students who took part in the study are possibly more engaged since they were volunteers, which could generate a positive prejudice at the start, and which would cause the results on cognitive to indicate that it is higher than it is in reality.

- students may underestimate themselves or even overestimate themselves in terms of their cognitive engagement; therefore, care must be taken in interpreting data relating to different perceptions.

Reflection and future practice

What was presented here was an evidence-based learning tool, that could be used as an aid in a task designed to promote deep cognitive engagement and interest amongst students. It was the experience of a serious game design activity; the task was seamless and easy to manage from an educator's perspective. As such, this should encourage educators to seek ways to innovate their teaching methods and to consider ways in which technologies can be employed pedagogically to promote learning and engagement.

This study also promotes exploring what other technologies could be used to support learning designed to promote cognitive and interest

On reflection, the introduction of a serious game design activity in medical education intervention is a worthy cause to facilitate cognitive engagement and interest. However, it is important to note that technology can be used superficially and in ways that are of no added value to students; thus, it is vital to ask the question of whether the incorporation of technology into an instructional design is an enabler or a distraction.

5. Conclusion

The diversification of educational strategies can be hampered by certain obstacles, in particular the additional planning time required for their designs. The results obtained within the framework of this study show that the activity of creating serious games by students seems to have a positive effect on their cognitive engagement and demonstrate that it is profitable to counter these obstacles, to place student learning, and opt for a variety of instructional strategies to maintain strong engagement and interest to learn in students throughout the course. Thus, this research provides educational actors with results based on empirical research data that encourage further reflection on the use of diversified educational strategies in the faculty of medicine. However, given the small number of students who took part in this study, these results will need to be confirmed by other experiments repeated throughout the academic year.

6. Funding

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7. Conflict of interest

No conflict of interest.

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Impact of the Pandemic on the Learning Process of Foreign Students Studying in Russia and Prospects for Educational Migration

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Abstract

Globalization in the field of science and education has intensified the so-called student migration. However, during the COVID-19 pandemic, universities have been forced to quickly reorganize their educational activities with the help of distance learning technologies.

The article is aimed at identifying the COVID-19 impact on student migration and the development of distance learning.

The article presents a brief review of the current state of student migration all over the world and identifies the approaches to the concept of student migration, as well as its advantages and disadvantages for all participants in the educational process. In the course of the study authors used several general scientific and special methods: comparison and generalization, applied in the process of analysing researchers' views, the abstract logical method applied in the process of formulating research conclusions. The main method of the research was expert survey. Based on an expert survey, the authors identify the key aspects of the COVID-19 impact on student migration, the conditions necessary for improving the quality of distance learning services for foreign students at the university level, and the ways of enhancing the cognitive activity of foreign students during distance learning in the context of the pandemic. In the conclusions, the author determines that COVID-19 leads to serious structural changes in higher education institutions due to the development and spread of new learning technologies, as well as changes in world educational migration.

Keywords: COVID-19, international students, distance learning, cross-border education, student mobility.

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1. Introduction

Migration processes play a huge role in the formation of the cultural, educational, and professional environment in the world in general and in countries in particular. The world becomes a single entity, and this process is facilitated by both the activities of international organizations, in which graduates of various higher education organizations work, and communication on the Internet. Today, the scientific, educational, and professional environment becomes international and acquires more and more qualities of migration mobility, that is, the ability of an individual or a social group to respond to the challenges of the time by changing the environment and updating the way of life. The educational environment quickly reacted to global trends and created new migration conditions for the applicants. Student migration, in addition to economic benefits, is a source of resupplying the economy with highly qualified workers. In many countries, it is considered to be the first step towards labor migration (mainly on account of the representatives of missing categories of specialists).

Over the past years, before the pandemic, the number of international students, especially from East Asia, increased rapidly, and the number of international students within the sub-regions also continued to grow. A large number of international students attend educational institutions in the countries of the European Union, the USA, Canada, and the UK, trying to get a better education (Waters, 2012).

The UNESCO Global Education Monitoring Report notes that in 2018 China continued to be the main source of international students worldwide (UNESCO, 2018). Thus, in the 2017–2018 academic year, there were more than 360 thousand Chinese students in the US. According to the Ministry of Education of China, the number of Chinese students studying abroad in 2018 reached 662,100 people. However, East Asia was not only a major source of international students but also an important destination for international students, who mainly came from the sub-region. Thus, the number of foreign students in higher education organizations in China in 2018 exceeded 490 thousand people. Students from South Korea accounted for the largest number of international students in China. This number was followed by the number of students from Thailand, Pakistan, and India. New Zealand and Australia have also attracted a large number of international students. The number of international students in Australia has grown since 2012, reaching a record level of nearly 760,000 people in 2019 (a 9.7% increase in comparison with 2018). In New Zealand in 2016/2017, there were more than 91 thousand international students, mainly from China and India.

According to the study, the share of student migration is 2.1% of the total number of international migrants, which is three times less than migrant workers (European Migration Network, 2019). However, the outbreak of the COVID-19 and the measures taken by the countries to prevent the spread of the virus have both direct and indirect impacts on student migration.

Considering the above-mentioned information, the study of the future of study migration and the development of distance education in the context of the COVID-19 makes it possible to improve the functioning of higher education institutions, to foresee the possible consequences of the choice of educational options by applicants, to plan measures to respond to trends in the educational process, and to develop measures to adapt policies in the field of education.

There are various approaches to the concept of student migration in the scientific literature (Table 1).

Table 1. Approaches to the concept of student migration

Source	Definition
Findlay, 2010	A mass socio-cultural phenomenon, when people leave their places of permanent residence and move to a different region or country to receive education
King, Raghuram, 2013	Temporary stay of students on the territory of the educational institution with the subsequent return to the place of residence. On the one hand, speaking about the territories of arrival and departure, it can be considered to be a set of relocations of students. On the other, from the point of view of a student, it is a set of relocations necessary for the achievement of the goal of migration

Raghuram, 2013	Relocation of people who belong to different age groups and who are either consumers of educational services in another country or participants in academic exchange programs outside their country
Hawthorne, 2012	Intentional temporary relocation of people, who move to a foreign country to receive higher education

The main institutional forms of student migration, according to Jenny McGill ([McGill, 2013](#)), can be considered to be student mobility and cross-border education.

Cross-border education is considered to be all types of higher education programs and other types of educational services when their consumers (students or listeners) are outside the borders of the country of the educational organization ([Chetro-Szivos, 2010](#)). Thus, cross-border education does not always require the physical movement of a person to another region or country of the world for educational purposes. The latest methods of e-learning allow acquiring knowledge remotely in the home country. This type of education, according to C.A. Farrugia and J.E. Lane, is almost deprived of the features of student migration, since there is no integration of a student into another culture. It also reduces the possibility of the transformation of student migration into labour migration, therefore the consequences of this type of education will mainly have only a personal effect ([Farrugia, Lane, 2012](#)). Jane Knight ([Knight, 2014](#)) singles out two main forms of cross-border education dissemination: 1) education at a foreign university for a limited period or the entire period of study; promotion of the educational programs in a traditional form through the creation of representative offices, affiliates or campuses; 2) educational programs abroad with electronic resources for distance learning; franchising educational programs (up to 75 % of all exports of educational services), which is granting a foreign provider of exclusive rights to implement their educational program abroad.

The authors of works devoted to student mobility distinguish between two types of it: vertical and horizontal ([Collins, 2012](#); [Knight, 2012](#)). Vertical student mobility is considered to be the education only in a foreign university, and horizontal student mobility is considered to be the education abroad for a limited period. According to Laura Prazeres, a set of legal, organizational, economic, and informational actions of the state is needed to activate academic mobility. These actions should be aimed at creating such an environment, which would be appropriate for the implementation of the right to academic mobility for those who are involved in the educational and scientific process ([Prazeres, 2013](#)). The researcher considers organizational actions to mean infrastructure support, the basis for the formation of which should be open access to educational programs and related services. The tools of the state regulation economic mechanism of the process of enhancing academic mobility, according to the researcher, should be aimed at ensuring the affordability of education abroad and ensuring motivation and stimulation for the return of the young specialists.

The generalization of the researchers' views indicates the presence of the following positive features of student migration: a degree certificate recognized all over the world; improved foreign language skills; communicative experience in an intercultural environment; communication practice in international organizations; employment opportunities in international companies ([Adnett, 2010](#); [Crossman, Clarke, 2010](#)).

Several researchers note that in general, student migration positively affects the home country ([Skovgaard-Petersen, 2013](#); [Alghamdi, Otte, 2016](#)). The most important condition for this process is the return of emigrants from abroad. Thus, on condition of the migrant's return, the country receives a more educated specialist, since the social and cultural experience, gained during the years of studying abroad, presupposes better adaptive characteristics. Among the positive consequences, the researchers also mention the establishment of academic and business networks, the exchange of information between highly qualified specialists, promising scientific research, and saving money on the education of qualified specialists.

At the same time, the researchers note several advantages of student migration specifically for foreign countries ([Gribble, 2008](#); [Choudaha, de Wit, 2014](#)). They are geopolitical, economic, demographic, and social advantages. To be more precise, they are significant financial inflow to the national economy, the development of the tourism industry, and an increase in profit from the growth of tourist flows; the development of innovative material and technical components of the

educational industry, the expansion of the range of educational services, and accelerated integration of national universities into the international scientific and educational space; the improved demographic indicators due to the rejuvenation of the population and its quantitative increase; intellectualization of human capital and potential provision of the national economy of the country with highly qualified specialists, which, in turn, accelerates scientific and technological progress and economic development.

Speaking about the negative consequences of student migration for the migrants' home country, the researchers name the risk of loss of labour potential and the transformation of student migration into labour emigration; deteriorating population structure due to the increased average age of the working population; the threat associated with the slow development of scientific and technical progress of countries (Oosterbeek, Webbink, 2011).

According to J.-J. Soon (Soon, 2010), an effective migration policy may help to mitigate these negative consequences, including the simplification of the procedure for the recognition of degree and qualification certificates obtained abroad; the introduction of loans for study abroad, which would contain financial mechanisms to encourage return.

Research hypothesis: COVID-19 causes important structural changes in higher education institutions due to the development and further spread of new educational technologies which can ultimately change world educational migration.

Research objectives:

- to identify key aspects of the COVID-19 impact on student migration;
- to identify the conditions necessary for improving the quality of remotely provided educational services at the university level and the ways of enhancing the cognitive activity of foreign students during distance learning in the context of the pandemic.

2. Methods

To achieve the goal of the study, we applied several general scientific and special methods. First of all, it is necessary to single out the methods of comparison and generalization, applied in the process of analyzing researchers' views, the abstract logical method applied in the process of formulating research conclusions, and the expert survey method.

The database of the research is represented by two types of literature. The first one includes research aimed at examining the features of student migration, and the second one includes research aimed at analyzing the viability of using distance learning technologies.

It should be noted that the method of literature analysis is used in the vast majority of studies on student migration, which became the basis for its application in this study. At the same time, the expert survey method is not used often; however, the results of studies (Chetro-Szivos, 2010; Collins, 2012; Crossman, Clarke, 2010) indicate its effectiveness, which also served as the basis for choosing this method in our study.

The literature review was carried out using the methods of theoretical generalization, comparative analysis, analysis, and synthesis, which made it possible to identify the approaches to the concept of student migration, as well as its advantages and disadvantages for all participants of the educational process.

The main research method was the expert survey.

The study was conducted from December 1, 2020 to February 31, 2021.

The survey involved experts in the field of providing educational services to foreign applicants for higher education and distance education from Russia, Kazakhstan, and Belarus (40 people), whose professional activities had been carried out for more than 10 years. The age of the experts was 35-45 years; 17 of them were men and 23 were women.

The experts were asked to fill out a semi-formalized online questionnaire using e-mail.

The questionnaire included the following questions, which had to be answered in a free form without limiting the number of answer options:

What, in your opinion, are the key aspects of the impact of the COVID-19 pandemic on educational migration?

What, in your opinion, are the conditions for improving the quality of distance learning services for foreign students at the university level?

In your opinion, indicate possible ways to enhance the cognitive activity of foreign students in distance learning during the pandemic.

Using the expert survey method, key aspects of the impact of the COVID-19 pandemic on educational migration were identified, including the impact on the prospects for educational migration, the conditions for improving the quality of remotely provided educational services at the university level, and ways to enhance the cognitive activity of foreign students during distance learning during the pandemic.

Next, the experts ranked the expert opinions. The consistency of expert opinions was assessed by the value of the concordance coefficient for

$$W = \frac{12S}{n^2(m^3 - m)}$$

where S is the sum of the squared deviations of all estimates of the ranks of each evaluation object from the average value; n is the number of experts; m is the number of evaluation objects.

Statistical processing of the survey results, obtaining descriptive statistics (percentage of expert mentions), and determining the concordance coefficient were carried out using the SPSS software product.

All the participants were informed about the purpose of the survey and knew that the authors of the survey would publish a summary of the results.

3. Results

Based on the expert survey, we identified the key aspects of the COVID-19 impact on student migration (Table 2).

Table 2. The key aspects of the COVID-19 impact on student migration

No.	The aspects of the COVID-19 impact	%*	Rank
1	Difficulties associated with administrative procedures of admission to a foreign higher education institution (a university) and travel to a foreign country for education. Most countries have closed their borders trying to stop the spread of the virus on their territory, and many universities have also been closed during the pandemic	85 %	1
2	Several countries have changed or adapted their migration procedures at the national level, often in collaboration with higher education institutions. Many universities have also adapted their admission procedures	82.5 %	2
3	Several countries have issued guidelines for universities to facilitate the migration of international students as much as possible while respecting the safety measures adopted to prevent the pandemic spread. Different countries have different views on allowing foreign students to enter the country if they study online. Some countries have urged students to get their visas in advance to be able to enter immediately as soon as entry restrictions are lifted	80 %	3
4	Travel restrictions imposed in many countries can jeopardize the ability of international students to be present at the institution where they were enrolled or planned to enroll. This has prompted some countries to introduce exceptions aimed at preventing the revocation of visas or permissions and giving international students additional time to complete their studies	80 %	4
5	In general, international students are allowed to stay in the country for a certain period after graduation to find a job or start a business. However, the pandemic could jeopardize the ability of international students to achieve such goals within the usual period because of its negative impact on the labor market	77.5 %	5
6	Many international students are unable to return to their home countries due to travel restrictions, which potentially entails an	72.5 %	6

	uncertain legal position for students that could prevent future migration		
7	The crisis has impacted the ability of international students to provide for themselves while studying since many of them are often dependent on student work. The ability of the student's family in the home country to provide for the student may also be negatively affected by COVID-19. This situation affects both future international students and students who are studying abroad now	7.5 %	7

Note: compiled based on the expert survey; * – the percentage of expert references

The value of the concordance coefficient $W = 0.82$ ($p < 0.01$), which indicates a strong agreement of expert opinions.

Thus, most experts believe that the main aspect of the impact of the COVID-19 pandemic on educational migration (Table 2) was the difficulty in completing the administrative procedures necessary for entering a foreign university and arriving at the place of study. Most countries introduced quarantine restrictions on entry. Universities, in turn, were also closed for quarantine, despite the fact that several countries and universities changed or adapted the procedures for admitting foreign students. For those who are already studying, they introduced exceptions necessary to complete their studies.

The experts noted that COVID-19 encourages higher education institutions to introduce innovative solutions in a relatively short period and introduce distance learning using a variety of web servers, platforms, resources, and social media. According to the experts, the following conditions are necessary for improving the quality of distance learning services for foreign students at the university level (Table 3).

Table 3. The conditions necessary for improving the quality of distance learning services for foreign students at the university level

No.	Conditions	%*	Rank
1	to choose educational platforms on which distance learning of foreign students will be carried out, to define the forms of work of teachers with foreign students, the principles of students' progress evaluation, to specify strategies for teachers' behavior in various problem situations that may arise during distance learning of foreign students	85 %	1
2	to clearly define and unify the requirements for the educational process participants in the context of distance learning	82.5 %	2
3	to create instructions, including in the form of a video, for the work on recommended educational platforms and post them on the university website	80 %	3-4
4	to define and unify the methods for creating and using distance courses in the educational process that would meet modern requirements; to create variable methods for distance learning for foreign students	80 %	3-4
5	to organize professional filming of teachers' lectures	77.5 %	5
6	to ensure the protection of intellectual property rights of teachers as developers of distance courses for foreign students	72.5 %	6

Note: compiled based on the expert survey; * – the percentage of expert references

The value of the concordance coefficient $W = 0.79$ ($p < 0.01$), which indicates a strong consistency of expert opinions.

Thus, the main measure for improving the quality of distance learning services at the university level for foreign students (Table 3) is an adequate definition of the distance learning educational platform, forms of work of teachers with students, the policy of evaluating learning outcomes, and the behavior of teachers in problem situations associated with distance learning.

At the same time, clear regulation of requirements and timely communication of them to foreign students, as well as the development of instructions for distance learning and their placement on the university website, become no less significant.

The experts identified the main ways of enhancing the cognitive activity of foreign students during distance learning in the context of the pandemic (Table 4).

Table 4. The ways of enhancing the cognitive activity of foreign students during distance learning in the context of the pandemic

No.	Ways of enhancing the cognitive activity	%*	Rank
1	to maintain communication with foreign students through various communication channels (mobile communications, instant messengers, e-mail, social networks, free educational platforms) not only during the classes	85 %	1
2	to obligatorily turn on the video camera during online classes: the responsibility of both students and teachers increases significantly when they see each other and have feedback	82.5 %	2
3	to make classes regular; it is advisable not to change the time and duration of online classes (from an hour to an hour and 20 minutes)	80 %	3
4	to send messages or e-mails with an exhaustive and logically structured list of tasks for every class	80 %	4
5	to alternate the types of educational activities and tasks, for example: preparation of computer presentations and their further presentation, participation in discussions of the speeches, solving tests and situational problems, reading/listening/watching lectures, drafting documents by hand and using a computer, creation of test questions and cases, preparation of projects, writing essays and scientific publications (abstracts), etc.	77.5 %	5
6	to conduct online classes in the form of consultations with explanations of the most difficult to understand or controversial issues and various visual aids (presentations, videos, slides with structured text, etc.)	75 %	6
7	to involve foreign students in discussions, which include the preparation of relevant and interesting topics and questions	75 %	7
8	to use the individual approach in education, which includes the student's ability to choose the topic of coursework, the form of education and the way of communication with the teacher, etc.	72.5 %	8
9	to abandon the traditional online lectures in favor of the so-called "flipped" lessons: students get acquainted with the electronic version of the lecture and then discuss it during an online class	70 %	9

Note: compiled based on the expert survey; * – the percentage of expert references

The value of the concordance coefficient $W = 0.83$ ($p < 0.01$), which indicates a strong agreement of expert opinions.

Thus, the main method to enhance the cognitive activity of foreign students during distance learning in a pandemic (Table 4) is to ensure constant communication with them through various communication channels. At the same time, it is desirable to have video contact, observe the regularity of online classes and assignments, alternate types of educational activities and tasks, conduct online classes in the form of consultations and discussions, and introduce flipped lessons.

4. Discussion

Despite the working experience in the field of the distance education system, the surveyed experts noted certain difficulties in the processes of distance learning organization and support for foreign students.

The first group of difficulties common for teachers and students is associated with the transition to the distance learning format. The second group is related to the educational migration of students under the influence of the transition to distance learning.

Firstly, for the majority of teachers who work with foreign students, especially for those who do not work in the field of information and communication technologies, the problem was the materials and digital resources preparation and their further arrangement on a digital platform. Experience has shown that all the developments that teachers used during the past years do not fit the distance learning format. The experts cited examples when qualified teachers with a high teaching level easily hold lectures for foreign students while having only a plan or the key points of the lecture. However, the digital presentation of educational material means a completely different way of teaching. However, the digital format for presenting educational material suggests a completely different way of teaching.

According to one of the respondents (Expert 12), today it is no longer enough to have text content, created in a text editor. For a high-quality distance presentation of the materials, it is necessary to transform the teacher's experience into the form of symbols, select illustrative material, learn how to create presentations, etc. Besides, the format of the e-course includes not just simple slides, but such slides that connect the text with graphs, that include animation, explanations, video recordings, etc. It is also necessary to know how to use tools for creating e-courses, tests, interactive simulators, etc.

Secondly, there appeared a problem with the organization of education in a different format and the development of other methods and techniques for working with the audience remotely. According to one of the respondents (24 years of work experience), this means that the teacher should be able not only to compile an electronic textbook and fill it with appropriate content but also to develop such tasks for students, the solution of which would contribute to the comprehensive development of the person and the formation of relevant competencies. For this purpose, it is advisable to examine and implement methods of working with digital content, methods of remote work, ways of organizing group, collective, or creative work for foreign students during self-study time.

The experts noted that the methods for working with digital content do not replace traditional methods, but enrich and expand them. Therefore, it is advisable to learn how to harmoniously combine them, expand, and add interactivity, which will help optimize the learning process.

To other difficulties, the experts attributed the problems that are characteristic of the training of all students. Summarizing the experience of researchers and the results of our expert survey, we highlighted the four most important problems that arise in distance learning:

- the difficulty of identification. The problem lies in the impossibility in certain cases to identify the person performing the task or test; this is especially true for international students.

- the difficulty of control. The risk of incomplete assessment of students' competencies because most forms of control in distance learning are carried out in the form of tests or writing answers to the questions. In this case, according to the experts, it is difficult to assess the level of formation of general and professional competencies, especially communicative competencies, which are important for certain professions. Changes in the form of student assessment in the shortest possible time led to great difficulties, especially in areas with specific requirements for working with information or testing certain skills. The organization of online exams became a test not only of students' professional knowledge but also of their ability to quickly adapt to learning conditions.

- the problem of supporting student motivation. S. Brammer and T. Clark (Brammer, Clark, 2020) note that students have become the most vulnerable part affected by COVID-19, and the universities pay special attention to their interests in the development and implementation of appropriate measures. However, not every student can maintain motivation for independent work due to the absence of either an internal motivator for effective learning activities or external constant control from the teacher.

- the transformation of pedagogical activity. Researchers and teachers have also been significantly affected by COVID-19, as the pandemic has necessitated the largest and fastest transformation of teaching activities and assessment methods that has ever been observed in modern universities. This caused an increased workload for researchers and teachers required a combination of the efforts, including software training and co-working.

The presence in students and teachers of such character traits as discipline, clarity of implementation, and thoroughness in work made it easier to adapt to these changes. An important problem for teachers in this regard was the need to combine work at home and control over homework with other household duties, which blurred the lines between work and household

chores and led to longer work hours and greater workloads. In our opinion, this factor is one of the most negative for teachers in the transition to distance education.

Turning to the second block of difficulties, let us consider the problem of educational migration.

According to the Inform by the European Commission, before the COVID-19 pandemic, international university education, which was entirely conducted on the Internet, was quite rare and generally did not provide a basis for admission to foreign countries (EMN/OECD, 2020). As distance learning has gained popularity because of the pandemic, there appeared a problem of admission to full-fledged university distance learning. As many universities have switched to online education, countries are evaluating whether international students should be admitted and under what conditions.

For example, the Australian Department of Education, Employment and Workplace Relations includes Tertiary Education Quality and Standards Agency (TEQSA) which oversees university standards. With the entry restrictions, Australian universities which offer online courses risked not meeting the quality standards. TEQSA has developed exceptions to the usual regulatory requirements and published a news bulletin for the providers of distance learning services for international students to help universities meet not only the minimum quality standards. In France, the Minister of Higher Education, Research, and Innovation and related institutions promoted the online course program during the lockdown to attract international students who were reluctant to come to France to study due to the pandemic. In Finland, online education did not prevent the issuance of an extended study permit, and the residence permit was not canceled due to the switch to distance learning caused by COVID-19. If an applicant for an extended permit cited COVID-19 as the cause of the constraints, and if before the COVID-19 this applicant studied well, the decision was in the applicant's favor, even if the learning outcomes did not meet the existing requirements. Israel has decided to admit foreign students for the 2020/2021 academic year, regardless of the type of education (distance or traditional form of education).

The limitations of the study include the size of the expert sample and the lack of experts from far abroad.

The prospect of further research may be an analysis of the prospects for educational migration in the post-pandemic period after the complete lifting of quarantine restrictions.

5. Conclusion

The following conclusions can be drawn from the study.

Global natural disasters, which include the COVID-19 pandemic, significantly affect the world, the development of the economy, and the transformation of social institutions.

COVID-19 challenges the main activities of higher education institutions based on a wide range of curricula significantly complicates the implementation of interactive, person-centered traditional classroom learning, based on many years of the university experience. To adapt to a long-term pandemic, universities need flexible and reliable educational models that enable them to constantly adapt to changes. COVID-19 has accelerated and enhanced long-term pedagogical trends by creating a natural experiment that tests and evaluates numerous innovations that will benefit students after the crisis.

One of these innovations is the active use of a new type of educational tool, which is distance learning technologies. They were used during the quarantine in conditions when the opportunities for visiting higher education institutions by applicants are limited or absent.

Thus, the research hypothesis is that COVID-19 causes important structural changes in higher education institutions due to the development and further spread of new educational technologies changing world educational migration.

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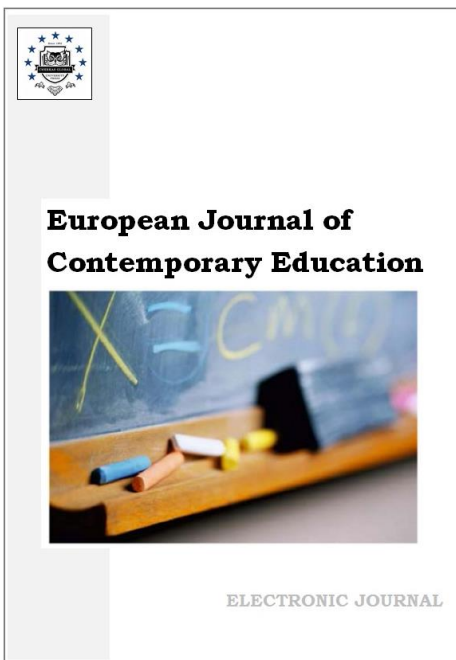
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The History of Education

Legal Education in the Russian Empire in the 18th century

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Abstract

This paper examines the efforts to organize legal education in the Russian Empire undertaken by the Russian government in the 18th century. Primary use was made of research findings from scholars researching the system of public education in Russia in the period between the 18th and 19th centuries, as well as the statutory framework relating to the topic.

By and large, the Russian Empire did not yet have in place a robust system of public education in the 18th century. This, in turn, reflected on the pace of the development of legal education in the country. At the same time, the idea of developing this area was quite a popular one, including at the governmental level. However, legal education was only in its infancy throughout the 18th century. One of the reasons behind this, arguably, was that at that time there was no social need in the Russian Empire for training future lawyers. The provision of legal education sought to fulfill a purely utilitarian goal – to train future functionaries capable of ensuring the proper operation of government institutions. To this end, legal training was first organized by the government at collegiums, where young people could combine training with public service (in entry-level positions). Afterwards, jurisprudence classes were introduced in cadet corps. With the opening of Moscow University, the nation's first law department was also established. The teaching of legal disciplines in the Russian Empire left much to be desired for a long time, with the primary reasons including severe shortages of instructors and textbooks and instruction often being conducted in a foreign language.

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Keywords: education, education policy, education reform, legal education, Russian Empire, collegiate education, cadet corps, 18th century.

1. Introduction

In the first half of the 18th century, not everybody in Russia was fully aware of the importance of education in society. Many believed that one needs to be educated in order to broaden one's ken and nurture one's moral qualities exclusively. It is such individuals that were most sought-after in public service, with one's narrowly professional qualities relegated to secondary factors (something possessed by not too many, anyway).

A more or less full realization of the social value of attending school was attained in Russia at the time of the reign of Empress Catherine II. The issue of organizing the nation's system of public education was raised by the Commission for Preparing a New Draft Legal Code, concerned with codifying Russia's laws passed subsequent to the Council Code of 1649, from 1767 to 1771. A whole raft of draft legislation was proposed dealing with lower and secondary educational institutions. Yet the issue of organizing vocational legal education was not raised by the Commission's deputies.

Vocational education as we know it today virtually did not exist in Russia throughout the 18th century. Certain government officials expressed an understanding that educational institutions ought to provide vocational training for youth to help them get ready for ecclesiastical, military, medical, or civil service, which, in essence, was an underlining of the need to vocationalize the nation's system of public education.

In the early 18th century, several ideas were proposed as to how to reform the system of public education in such a way as to have educational institutions prepare young people for work in professions, most importantly, dealing with enhancing the efficiency of the country's bureaucratic apparatus and its military and economic spheres. The government also stressed the importance of legal knowledge as something needed for the operation of the nation's public institutions and its legal system.

This paper will examine the efforts to develop the legal education sphere undertaken in the Russian Empire in the 18th century.

2. Materials and methods

In putting together this work, reference was made to a relatively limited set of relevant laws and regulations published in 'The Complete Collection of the Laws of the Russian Empire' (Collection 1) (PSZ-1). In addition, use was made of relevant research findings from both past and contemporary researchers.

The work's methodological basis is grounded in the principles of historicism and objectivity. The use of these principles helped take account of the specific historical circumstances of the era under review and explore various events and phenomena that took place in the Russian Empire's public education sphere at the time in an unbiased manner. In particular, account was taken of the various viewpoints of scholars concerned with the policy of the Russian government in the educational sphere and trends in the development of the Russian system of legal education. There being a variety of scholar interpretations and views regarding the development of legal education in the Russian Empire in the 18th century prompted taking a critical approach. The principle of comprehensiveness helped take account of the influence of various social and political factors on the development of the education system in Russia, including the nation's legal education sphere.

3. Discussion

There is a rich and extensive historiography on education in the Russian Empire. Yet issues related to the emergence and development of legal education in the Russian Empire have been researched much less. Most of this research is focused on 19th-century legal education in Russia.

There are very few studies where legal education is the central focus of research. Most of these studies tend to cover only the main stages in the making and development of this area in education. The most informative works on this subject include the dissertation research by I.Yu. Alekseyeva (Alekseyeva, 2000) and O.V. Yehorova (Yehorova, 2004) and the books by F.L. Moroshkin (Moroshkin, 1834), A.V. Borisov and L.M. Kolodkin (Borisov, Kolodkin, 1994), and Ya.I. Barshev (Barshev, 1876). More specifically, a separate section of the dissertation by I.Yu. Alekseyeva is devoted to the making of the nation's system of legal education in the period

from the 18th to the early 19th centuries. The researcher provides an insight into the key characteristics of historical processes associated with the development of legal education in the Russian Empire (Alekseyeva, 2000: 17-61). O.V. Yehorova, who explores the development of legal education in universities in the Ukrainian lands in the period from the 19th to the early 20th centuries, attempts to establish a link between lawyer training and the development of jurisprudence as a science and political and socioeconomic processes in the Russian Empire. In addition, the scholar explores some of the key characteristics of the formation of the teaching staff at the law departments (Yehorova, 2004).

Some insight into the topic comes from the findings by Ye.A. Andreyanov (Andreyanov, 2007), N.V. Koloshinskaya (Koloshinskaya, 2004), S.V. Kodan (Kodan, 2001), and V.A. Zmeyev (Zmeyev, 2000).

Some of the works devoted to the development of public education in the Russian Empire touch upon legal education too. For instance, well-known historian of Russian law M.F. Vladimirskiy-Budanov devotes in his doctoral dissertation separate attention to the making of legal education and its content in Russia in the first half of the 18th century (Vladimirskiy-Budanov, 1874: 155-187). A certain amount of attention to legal training at particular educational institutions was devoted by D.A. Tolstoy, a prominent statesman in the Russian Empire and historian of education (Tolstoy, 1883).

Issues related to the operation of law departments, their teaching staff, and the content of legal education have also been explored in a number of works devoted to the history of particular educational institutions – above all, Moscow, Kharkov, and Kazan Universities (Bagaley, 1893-1898; Chubinskiy, Bagaley, 1908; Lebid, Shevchenko, 2021: 550-552; Lebid, 2022: 270-272; Shevyrev, 1855; Shutov, 2009: 32-51; Zagoskin, 1900: 101-123).

4. Results

The idea of establishing educational institutions where one could learn the basics of legal knowledge emerged back during the reign of Peter I, known to have directed that “jurisprudence books begin to be translated” into Russian (Vladimirskiy-Budanov, 1874: 149). At his request, one of the projects on the development of the education system was entrusted by Gottfried Wilhelm Leibniz, a great German scientist. Leibniz suggested establishing universities in Moscow, Kiev, and Astrakhan. The scholar proposed the idea of setting up a law department in each university. These departments were to consist of two divisions – Law (practical jurisprudence) and Politics (public law and general history) (Vladimirskiy-Budanov, 1874: 152-153). However, the project never materialized.

Public service was, essentially, the only profession back then in Russia that required some kind of legal knowledge. Public officers at the time (scribes and clerks) were expected to have the ability to work with statutory acts and apply them in practice and maintain internal documentation in a proper manner. To the historian of law M.F. Vladimirskiy-Budanov the term ‘jurisprudence’ denoted the following:

- study of existing statutory acts (Council Code of 1649, regulations, and edicts);
- practical study of records management.

Thus, legal education in the Russian Empire was reduced at the time to gaining a set of practical skills needed for future civil service (Vladimirskiy-Budanov, 1874: 180).

Yet the training of young people preparing for such service was, essentially, reduced to learning arithmetic, writing, and how to use internal books and documents. They were taught this at so-called arithmetic schools. Apparently, special schools for training scribes and clerks were not opened even up until the 18th century. It, doubtless, would be too early and somewhat incorrect to call such education legal.

The period between the 1720s and 1730s witnessed the emergence of another area of vocational training for public officers that could be regarded as a primordial form of legal education in the Russian Empire – provision of training to future public officers right at existing public institutions, so-called collegiate education, i.e. training combined with public service. This was available to members of the noble estate. Starting in 1737, they would stage in Saint Petersburg special talent shows for 15–17-year-olds, with those who displayed sufficient skill in writing and reading going to become junkers at collegiums.

Each collegium would enroll six-to-seven junkers. Furthermore, institutions subordinate to collegiums and those not subordinate to them would each enroll four and seven individuals, respectively (PSZ-1. Vol.XIII. №9928: 587). Young people would join such public institutions called collegiums in entry-level clerical positions. There they would engage in rewriting (creating copies of) various documents and perform various petty work assignments. Concurrently, under the guidance of secretaries at such institutions they would study existing law and records management. In addition, such young clerk-junkers were to devote two days a week to studying subjects such as arithmetic, geometry, surveying, geography, and grammar (Vladimirskiy-Budanov, 1874: 175-176). This collegiate education content was captured in a whole raft of statutes issued in 1737, 1752, and some other years (PSZ-1. Vol.X. №7201: 81-83; PSZ-1. Vol.X. №7248: 141-143; PSZ-1. Vol.XIII. №9928: 587-589).

Junkers were divided into titular and actual. Titular junkers ranked lower in the junker hierarchy. Those with proper achievement in learning the required disciplines and in performing their work assignments would be promoted to the status of actual junker. Being successful in school and service work was conducive to exciting future career prospects for actual junkers.

At first, junkers who in the course of their study at a collegium did not show a capacity to pursue a legal education and a career in civil service would have to become soldiers. Over time, this practice was discontinued and such individuals were allowed to join a cadet corps or a maritime academy to receive a military education.

Starting in 1740, legal education at collegiums was provided to young nobles who not just demonstrated sufficient knowledge in terms of writing and reading but also expressed a willingness to devote themselves to civil service in the future.

There even was in place a practice of capturing the achievements of junkers and assessing their future academic and professional prospects. A document of this kind would periodically be submitted by collegiums to the Governing Senate (PSZ-1. Vol.XIII. №9928: 588-589).

Note also that at that time the Russian Empire was increasingly composed of numerous regions dominated by an ethnicity other than ethnic Russian (e.g., the lands of the Ukrainian, Baltic, and Caucasian peoples). These regions had long retained originality in public administration and other areas, which was based on local traditions, including those related to law. Local languages were often used in handling correspondence and paperwork (e.g., German and Polish). The bureaucratic apparatus in these ethnic regions was composed of Russian functionaries and members of the local elites. In governing these regions, the Russian government often relied on local legal documents and special statutory acts dealing with these areas specifically, i.e. having no force in other regions of the Russian Empire.

Accordingly, there was a need to dispatch to some of those regions special officers (in our case junkers) who would have to study the local ways of life and language. For instance, in 1761, the Senate directed that junkers be sent to the newly annexed Baltic Provinces to join the Collegium of Livland and Estland Affairs. At clerk's offices subordinate to this collegium, one would study the region's law, records management, and German (Vladimirskiy-Budanov, 1874: 177-178). This was highly important, as the Baltic governorates, incorporated into Russia as a result of the Northern War with Sweden, had a special status (up until the start of the 20th century). This status was captured through the Charter to the Livland Nobility (1710), the terms of the Treaty of Nystad (1721), and a few other documents. The local elites kept their privileges, estate bodies, and self-government. Public administration was grounded there in local legislation.

On the whole, it is to be noted that collegiate education in the Russian Empire was not universal. According to M.F. Vladimirskiy-Budanov, "this type of education could not have been the same at all collegiums and in all branches of administrative service" (Vladimirskiy-Budanov, 1874: 176). The composition of legal knowledge was not uniform for all – it became increasingly diverse, being in direct dependence on the distinctive nature of the activity of a particular institution where one served and trained.

The drawbacks of collegiate education include the fact that this format of training was unable to provide all spheres of public life with the required number of functionaries. For instance, collegiums did not control spheres such as police, (public) education, medicine, and postal service. It was not always possible to provide the schools at collegiums with the required number of instructors either. Besides, the overwhelming majority of collegiums with their clerk's offices were in Saint Petersburg, and almost all junkers continued their career there after receiving the

necessary knowledge. Essentially, the rest of the regions across the vast Russian state were devoid of the opportunity to get functionaries with sufficient legal knowledge to work in public authorities. And that is considering that at that time one was increasingly witnessing the formation and entrenchment of general administrative principles for the activity of public institutions, as well as a streamlining of the forms of records management. Thus, collegiate legal education did not meet in full measure the state's need for officers with the right legal skills.

Over time, the government itself acknowledged the impossibility of providing the schools at collegiums with teachers and the low level of legal training of junkers, many of whom were encumbered with clerical work assignments (PSZ-1. Vol.XVI. №11989: 467). In 1763, collegium training was revoked, with junkers having to complete their training at a different school – Moscow University and the land and naval cadet corps (Tolstoy, 1883: 32).

Pursuant to an edict issued in 1763, the Senate was to keep track of the need of public institutions for specialists in jurisprudence. The Senate would place an order for such personnel with Moscow University and the Naval Cadet Corps. These educational institutions had “Russian jurisprudence classes” set up at them specifically for the purpose (PSZ-1. Vol.XVI. №11989: 467). It is worth understanding that these two educational institutions were not able to provide the state with specialists with the required level of skill.

The Noble Cadet Corps was established in 1731. The purpose of this institution was to prepare young nobles for future military and civil service. The idea of establishing the cadet corps belonged to Field Marshal Münnich, who was the one to eventually put it into effect.

Initially, this educational institution was to accommodate 200 nobles. This number increased continuously:

1732 – 360;

1760 – 490;

1762 – 600;

1784 – 661;

1790s – 700 people (Tolstoy, 1883: 28-29, 34).

Scholar M.F. Vladimirskiy-Budanov refers to training for civil service in this cadet corps as legal education (Vladimirskiy-Budanov, 1874: 178). Some of the period's statutory acts refer to this as “training in jurisprudence”. Of course, today it is something completely different. Back then, the curriculum included the following subjects: history, Russian, rhetoric, jurisprudence, morality, heraldry, and political science. The post of associate professor of jurisprudence here was held by a German named Flüg, who was to teach natural and civil law (Vladimirskiy-Budanov, 1874: 182).

Civil service was highly unpopular amongst the nobility at the time. The overwhelming majority of young nobles preferred military service. This can be explained by the fact that it is via military service that one could build a highly successful career in a short period of time (getting one's first officer rank was enough). In addition, military people enjoyed a very high social status, which was something associated with an officer's personal bravery (Degtyarev, 2012; Degtyarev, 2014: 61; Degtyarev, 2015).

As early as the 1740s, the government issued a number of edicts in order to implement legal education more systematically within the academic environment of the Noble Cadet Corps. To this end, on September 21, 1748, the Senate issued an edict enjoining that 24 individuals with a capacity for civil service be selected annually from among the nobility. These individuals were mainly to study jurisprudence and arithmetic and attend twice a week lectures on Russian civil legislation (legal codes, regulations, statutes, edicts, etc.). The post of lecturer was to be held by practitioners – civil officers from the sidelines. With that said, such cadets were exempt from taking the subjects required for military service and from standing guard (PSZ-1. Vol.XII. №9532: 894).

Note that D.A. Tolstoy, a historian of education and prominent statesman, had an overall negative view of the quality of education, including legal education, in the cadet corps. He mainly attributed its low quality to the curriculum being heavily encumbered with various subjects. On one hand, future military personnel or functionaries simply did not need many of those subjects. On the other hand, there were too many academic subjects for a cadet to focus on one properly. For instance, in 1733 each cadet had to take divinity, arithmetic, and military exercise as core subjects, with there also being electives to take such as various sciences and languages. Out of the 245 cadets

enrolled at the time, just 11 studied jurisprudence (Tolstoy, 1883: 30-31). This state of affairs persisted all the way to the end of the reign of Empress Catherine II.

The level of legal education was not particularly high in the period under review at Moscow University either. This institution was established in 1755. It had a law department consisting of the following three divisions: General Jurisprudence, Russian Jurisprudence, and Politics.

Prior to 1774, Moscow University enrolled an average of 20 people per year. And up to 1767 instruction was conducted there in French and Latin (Madariaga, 2002: 775). Students who did not speak the required foreign language well enough to comprehend the lectures were to be helped by their fellow students who could translate the lectures. This, obviously, was not the best way of going about it. Even all of the university's documentation was maintained in French (in Latin, starting in 1765), and official speeches, too, were delivered there in foreign languages (Tolstoy, 1883: 38-39).

Moscow University experienced a shortage of professors for a long period of time. Its first-ever professor of law, P.H. Dilthey, taught all the legal disciplines at it alone up until the 1770s. Moscow University did not even have the required number of professors needed to confer academic degrees on worthy students. To this end, the university would have to additionally invite the Procurator General and one of the chief secretaries of the Senate's departments in Moscow to attend the exams. Furthermore, it is these individuals who would compose the exam questions (in Russian and Latin). Yet the number of students capable of attaining the level of knowledge required for them to be eligible to sit the exam was very small. For instance, in 1765 the Law Department had just one such student (Tolstoy, 1883: 39, 41).

Starting in 1768, public lectures on legal disciplines were delivered at Moscow University in Russian. With that said, there was no special literature intended for lawyers available at the time. In teaching jurisprudence, use was made of compositions by certain ancient thinkers, Dutch legal works (e.g., 'Corpus Juris Civilis'), materials from lawmaking commissions, certain Russian edicts, and collections of secular and ecclesiastical laws (so-called *nomocanons*) (Shevyrev, 1855: 149).

Back in Moscow University's early years, the issue was raised of insufficient learning time during the school year – exclusive of holidays and breaks, "students [were] in school learning for no longer than 100 days during a school year". With that said, some students would be absent from the university for various reasons (e.g., through illness or family circumstances), with their program of study being 30–40 days long during the school year (Tolstoy, 1883: 39).

One of the barriers inhibiting the development of higher legal education in Russia in the period under review was represented by the parents of students. Students often were forced by their parents to quit university prematurely and begin public service sooner so that they could make their way in the world and attain a decent social and material standing sooner. Thus, the value of education, including legal education, was pretty much affected by the attitude of Russian society itself. As of 1770, 300 students at Moscow University had quit school prematurely. It is not known how many of those had attended the Law Department, but it is known that in that year legal education was fully completed by just two students (Tolstoy, 1883: 42).

In addition, in 1767, as many as 18 students, mainly from the university's Law Department, were enlisted to help with the composition of the new draft legal code. That left the entire Law Department with just four students. The administration of Moscow University even had to move into this department five students from the Department of Philosophy (Tolstoy, 1883: 41-42).

In 1775, the great French thinker Denis Diderot shared with Catherine II his vision of what the Russian university would have to be like. In his view, ideally the university would have to have three departments: Medicine, Law, and Divinity. The Law Department would have to be attended for four years. It would have to consist of just two divisions: Civil Justice and Criminal Justice. Diderot also proposed what he thought was a very easy way to resolve the issue of a shortage of instructors and suitable textbooks – translation of foreign textbooks into Russian. This would enable anybody who understood what was written in the textbook to teach the subject to young people. In that case, it would not be necessary to invite "foreigners to Russia and appoint them to the posts of professors and instructors" (Tolstoy, 1883: 82, 84). Diderot, basically, suggested entrusting young students to the care of "robot teachers", who often did not fully understand and merely reproduced the contents of a textbook. His project did not even propose dispatching Russian candidates for professorial posts to other countries so that they could undergo some

training there and gain the necessary professional skills. The shortcomings of this project were obvious, and it eventually never materialized.

The latter years of the reign of Catherine II witnessed an increase in the number of students in many educational institutions across the Russian Empire. During this period, there also was a significant increase in the amount of preferential treatment enjoyed by college graduates (e.g., Moscow University graduates) in admission to public service. However, the Russian government did not manage to put in place a robust system of university legal education in the second half of the 18th century (as was the case with lower and secondary legal education in the country as well).

5. Conclusion

In monarchical Russia, the legal education sphere developed extremely slowly. This especially was the case in the 18th century. Apparently, there was no other way. While the idea of developing legal science in the Empire was quite a popular one in the 18th century and was expressed repeatedly both within the university environment and at the governmental level, very little progress was being made in this area. In essence, legal education was only in its infancy throughout the 18th century. There was no social need in the Russian Empire for turning out lawyers capable of engaging in human rights work or taking part in adversarial trials (in the period under review, there were of an inquisitional nature). Thus, the provision of legal education to young people sought to fulfill a purely utilitarian goal – to produce future functionaries with sufficient knowledge to ensure the proper operation of the state's bureaucratic apparatus.

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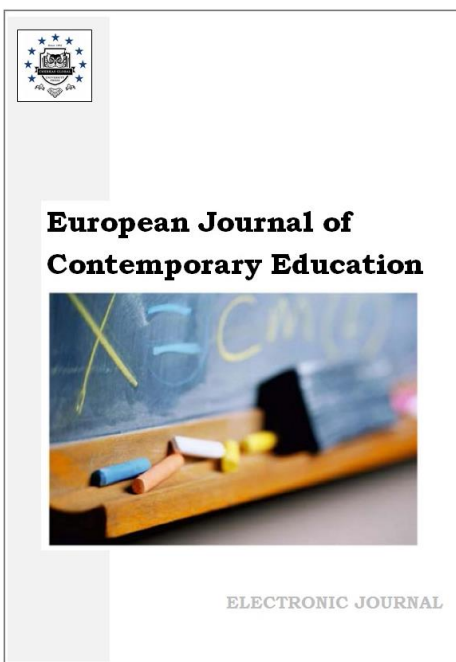
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Kharkov Imperial University as a Crucial Center for the Development of the Don Cossack Intelligentsia (1800–1810)

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Abstract

This paper examines the interaction between Kharkov Imperial University and Don Cossackdom in the period 1800–1810. The conclusion drawn herein based on an analysis of relevant works by prerevolutionary authors on the history of Kharkov Imperial University and those on the history of education in the Don region is that Kharkov Imperial University and the Don Host formed a single scientific-educational space together and that this university is where the bulk of the Don Cossack intelligentsia formed. It is to be noted, however, that after 1917 there were some zoning changes in both education and geography in Eastern Europe at large, with the once-existing single scientific-educational space gradually ceasing to be of interest to researchers.

The paper shows that the development of cultural ties between the Don Host and Kharkov began no later than the mid-18th century, and that was something done on the initiative of local figures. The government creating the Kharkov Educational District and making Kharkov University its center only formalized the already existing ties. The Don Host and Kharkov University worked together in the following three major areas: (1) Kharkov University providing support to the Don region's educational institutions (above all, substantial financial and organizational assistance for the only gymnasium in Novocherkassk); (2) educating Don students (27 individuals over the course of 11 years, with 5 of those going on to play a major role in the history of Don science and culture); (3) publishing the first-ever research on Don Cossackdom (which would turn out to be a failure). Note that attending Kharkov University both facilitated the integration of young Cossacks into the common imperial cultural space and, on the contrary, helped cultivate in them a distinct Cossack identity. It is by individuals who graduated from Kharkov University during that period that the

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classic work 'A Historical Description of the Land of the Don Host' would be created, and it is Kharkov University that would publish works by Don students imbued with local color.

Keywords: Don Cossackdom, Don intelligentsia, Kharkov Imperial University, history of education, M.I. Platov.

1. Introduction

The interaction between Kharkov Imperial University and the Don Host has been long neglected as a subject of dedicated research, although the contribution of Kharkov University to the development of science and culture in the milieu of Don Cossacks in the 19th century can hardly be overestimated. Indeed, a whole host of figures with a significant role in the history of Don Cossackdom, as it will be shown below, went to school in Kharkov, while the Don Host's main educational institution, Novocherkassk Gymnasium, worked with the university's professorial staff on a regular basis. In essence, thanks to the successful operation of the Kharkov Educational District, it is with Kharkov, not Moscow or Saint Petersburg, that Don Cossackdom formed part of a single scientific-educational space.

However, in the 20th century this scientific-educational space split between two countries – Russia and Ukraine. And up to now the existing scant research on the history of education in the Don region has shed almost no light on the subordination of local educational institutions to the Kharkov Educational District and, correspondingly, on their ties to Kharkov Imperial University. For instance, the article by A.N. Karpenko 'The Development of the System of Education in the Province of the Don Cossack Host in the Second Half of the 19th Century' mentions that in the 1860s one witnessed an intensification of a trend for Don Cossacks to seek education at various educational institutions in Moscow, whereas there is absolutely no mention of cases of Don Cossacks going to school in Kharkov (Karpenko, 2006: 242). The most substantial work on the history of prerevolutionary education in the Don region so far is S.Yu. Grechko's candidate's dissertation entitled 'Public Education in Ust-Medveditsky District in the Province of the Don Cossack Host', defended in 2019. Compared with the majority of other similar works, Grechko's not only speaks of the formal subordination of educational institutions in Ust-Medveditsky District to the Kharkov Educational District but mentions multiple visits to these educational institutions by Kharkov professors (Grechko, 2019: 41, 46, 172). However, S.Yu. Grechko offers no conclusions regarding the significance of such visits. What appears to hamper the study of narratives about the ties between the Don intelligentsia and Kharkov Imperial University is the actual model of examining the history of education in the Don region in the context of Russian history, whereby the local system of education is explored mainly in conjunction with common imperial processes and decisions that impacted on it, with little attention devoted to entities that are between the local and imperial levels. Yet to this model there appears to be no alternative in the work of contemporary Russian historians who have explored the subject of education in the Don region, including not only the already-mentioned A.N. Karpenko and S.Yu. Grechko but, for example, S.M. Sit'ko (Sit'ko, 2009) and the duo M.A. Kolomeitseva and A.N. Komandzhaev (Kolomeitseva, Komandzhaev, 2014) as well.

On the other hand, the works of Kharkov authors focused on the history of the local university quite predictably devote to the Cossack subject no attention. In this respect, of particular interest is the classic work by D.I. Bagaley 'Best Practices from the History of Kharkov University (Based on Unpublished Materials)' (Bagalei, 1898; Bagalei, 1904). During the period covered in the work, Kharkov University was attended by V.D. Sukhorukov, a major Don prerevolutionary historian and, doubtless, a seminal figure within the Don intelligentsia. Don statistician N.I. Krasnov wrote this about him in the second half of the 19th century: "Neither before nor after him was there ever a Don writer, opinion journalist, or public figure as popular in his native land as Sukhorukov was" (Korolev, 1991: 241-242). However, D.I. Bagaley says nothing about V.D. Sukhorukov's schooling at Kharkov Imperial University. And that appears to be logical to do within the framework of the university history model adopted by him, whereby the primary focus is on the university as a scientific-cultural institution, rather than on its prominent graduates. This model is followed by many Kharkov historians to this day. Specifically, of particular interest is the highly detailed bibliographic collection 'History of Kharkov University (1804–2006)', published in 2007 (Istoriya Kharkivs'kogo universitetu, 2007). It, too, contains no material on V.D. Sukhorukov, who, it must be acknowledged, indeed played no part in the history of Kharkov University.

Finally, in existing works of a more general nature devoted to the history of Cossackdom or that of education in Eastern Europe the material tends to be geographically structured based on contemporary national borders. In this context, of particular interest is the following relatively recent book by a group of prominent experts on the history of Cossackdom, released as part of a Russian Academy of Sciences project, – ‘Essays on the History and Culture of Cossackdom in the South of Russia’ (Ocherki istorii..., 2014). It examines, along with the cultural sphere, the history of Don, Kuban, Terek, and Astrakhan Cossacks. While there, obviously, is nothing wrong with bringing together the histories of four Cossack communities in one book, it must be noted that, as part of the process of geographic zoning in the Russian Empire in the 19th century, the lands of Kuban and Terek Cossacks even formally belonged to Caucasus Krai, while the Don Host was a standalone administrative unit (the Don Ataman was vested with the authority of Governor General in the 1860s) (Volvenko, 2017: 173). Larger territorial units were treated the following way – the land of the Don Host was joined not with Caucasus Krai but with the neighboring Ukrainian governorates. In ‘Russian Empire Military-Statistical Review’, one of the country’s more reliable publications in the 19th century, the contemporary areas of Ukraine, the Don Host, and Bessarabia were covered in Volumes 10 through 12 (the Don Host (Voенно-статистическое обозрение..., 1852), along with the Kherson (Voенно-статистическое обозрение..., 1849a), Taurida (Voенно-статистическое обозрение..., 1849b), and Yekaterinoslav governorates (Voенно-статистическое обозрение..., 1850b) and Bessarabia (Voенно-статистическое обозрение..., 1850a), was covered in Volume 11). Caucasus Krai was covered in Volume 16. Thus, the 19th-century Don Host was geographically perceived as belonging to the Black Sea locus, which brought it into affinity with the areas of contemporary Ukraine, while the Kuban and Terek hosts, along, for example, with Georgia, were part of the Caucasus locus. They even were often referred to in official documentation together as the ‘Cossack hosts of the Caucasus’ (RGIA. F. 560. Op. 41 D. 147. L. 130b.). Yet today historians focused on Cossackdom are building, after the fact, a distinct historical locus, ‘The Cossackdom of the South of Russia’, which combines lands that are geographically contiguous but, from the standpoint of contemporaries, belong to different regions. Furthermore, the territory of that Cossack locus is almost entirely within the boundaries of the Russian Federation, which aligns with contemporary notions about geographic zoning but distorts the research optics. Accordingly, in the work of contemporary authors the question of why, from the standpoint of 19th-century educated individuals, the Don Host was geographically closer to the Ukrainian governorates than to the Cossack hosts of the Caucasus is not even raised.

So, in contemporary historiography, narratives on Don history belong to the subject area of Russian history, while those on the history of Kharkov – to the history of Ukraine. On top of that, Russian authors focused on the study of the history of the education system in the Don region are characterized by having embraced a traditional state-oriented narrative whereby entities that are between the Don Host and the imperial authorities and are within a different country geographically are not given special attention. On the other hand, historians focused on Kharkov University are not interested, either, in narratives dealing with Don Cossacks who attended the university at some time but did not have a serious influence on its development. As we can see, a tear in the unity of the scientific-educational space between the Don region and Kharkov led to the memory of its existence getting forgotten – not only for political reasons but for purely historiographical ones as well. This paper aims to demonstrate how this unity formed and how significant Kharkov Imperial University was as a cultural center where the formation of a large portion of the Don Cossack intelligentsia took place. It can be suggested that a lack of attention to this issue precludes a definitive insight into the history of the development of science and culture in the Don region, one into where education came to this region from.

2. Materials and methods

There is a large amount of research on Kharkov Imperial University, with new materials and sources on its history, some quite specialized, appearing to this day. For example, the following works were published after 2010 alone: ‘Reminiscences of Professor Ludwig Jakob about Kharkov University’ (an excerpt from the memoirs of one of the university’s first professors) (Posokhov, 2014); the articles ‘A Rather Interesting Find Made in the Central Research Library of Kharkov National University’ (a description of an 18th century manuscript that somehow became part of the university’s library collection) (Eliseeva, 2018), ‘Foreign Professors at Kharkov Imperial University’

(Pavlova, 2018), and ‘The Organization of the Educational Process in Kharkov Imperial University (1835–1863)’ (Lebid, Shevchenko, 2021). The problem, however, is that it is somewhat difficult to extract from these texts information about the ties between Kharkov University and the Don Host. Even A.E. Lebid’s study on the social composition of the university’s student body in the second half of the 19th century does not set the Cossacks apart into a separate category (Lebid, 2022: 266-274). Education in the Don Host has been explored in fewer research studies, with Kharkov Imperial University often not mentioned in them at all (Karpenko, 2006; Kolomeitseva, Komandzhaev, 2014).

Therefore, reference in the present work will be made mainly to works by prerevolutionary authors, including the already-mentioned classic research on the history of Kharkov Imperial University by D.I. Bagaley (Bagalei, 1898; Bagalei, 1904), a book by I.P. Artinsky on Novocherkassk Gymnasium (Artinskii, 1907), and several publications by Don local studies experts on education and culture in the Don region in the period between the 18th and early 19th centuries (Kirillov, 1905; Filonov, 1859). While these works do not specially address the narrative about the ties between the Don Host and Kharkov University, they offer a lot more relevant details, including the name list of all Don Cossack students who attended Kharkov Imperial University in the period 1808–1818 (Delo o direktore..., 1906: 183-184). Such details help trace the way the interaction between the Don authorities and Kharkov Imperial University began, who organized it, what forms this cooperation took on, and the way a single scientific-educational space gradually developed based on this cooperation.

In light of the latest events, the caveat must be made that the authors of the present work do not consider this space specifically Russian or specifically Ukrainian. In fact, most of the first-ever instructors to teach at Kharkov Imperial University were foreigners. D.I. Bagaley writes of 18 Germans, several French individuals, and several “Slavs” (Serbs, apparently) – a total of 29 foreign instructors versus 17 “Russian” ones (meaning Russians, Ukrainians, and Belarusians) (Bagalei, 1898: 538-541). Thus, the scientific-educational space within which the Don Host developed throughout the 19th century was built by members of a number of ethnicities guided by a common educational, rather than political, mission. It can be suggested that gaining insight into the characteristics of spaces like those that existed in Eastern Europe in the 19th century is methodologically crucial for the study of the history of education. Therefore, the aim in this paper is also to trace, through a descriptive method, the way Kharkov University, i.e. an institution created from above, by the government of the Russian Empire, simultaneously both drew Don Cossackdom into the imperial supranational cultural space and facilitated the study of the local history of the Don Host, taking thereby part in the formation of the distinct Cossack intelligentsia.

3. Discussion

The orientation of the Don Host administration toward Kharkov as a cultural center emerged long before it became home to Kharkov University. Unfortunately, cultural life in the 18th-century Don region remains much underresearched due to a lack of relevant sources, which may remain a problem in the future for researchers willing to explore the ties between Don atamans and Kharkov Collegium which emerged back then. In any case, as early as 1753 a group of poets from the collegium led by Yakov Semonovich dedicated a large apologetic poem (panegyric) to ataman S.D. Yefremov (Filonov, 1859: 106-129). At this time, nothing is known of either the circumstances of writing this poem or the reaction it was met with in the Don Host. Its original survived into the mid-19th century, when it came to the attention of A.G. Filonov, an instructor at Novocherkassk Gymnasium (Filonov, 1859: 106). What is more, as asserted by this author, there was one more such poem, of which no more information is, unfortunately, provided by him (Filonov, 1859: 106). The very fact that poets from Kharkov Collegium dedicated to S.D. Yefremov as least two large poems, something that must have required long work, while the manuscripts for these poems were kept for a century somewhere in the Don region, indicates that one is dealing here not with situational interaction between the authorities and cultural figures but with some form of cultural patronage, something that the Don ataman provided Kharkov poets with repeatedly.

In the late 18th century, a priest named A.G. Oridovsky, who was a former junior school teacher at Kharkov Collegium, moved to Cherkassk (Kirillov, 1905: 7-8). According to himself, this was initiated by Don ataman A.I. Ilovaysky personally (Shadrina, 2016: 157-165). Indeed, the ataman is known to have petitioned for creating a new post at the Cherkassk Resurrection

Cathedral, making A.G. Oridovsky its fourth priest, which he supported with the assertion that “the city of Cherkassk is in need of educated priests capable of composing and verbally delivering sermons, as well as providing instruction in catechism; this need leaves many a blighting superstition in place” (Kirillov, 1905: 7-8). Later, researchers characterized A.G. Oridovsky as an ardent educator who, while forgotten to most, was, without exaggeration, an outstanding figure in Don history. A.A. Kirillov, a prominent local studies expert, describes him as “a brilliant pedagogue, an ardent champion of education, a top-class instructor, a truly “senior” teacher in the newly-opened gymnasium” (Kirillov, 1905: 8). Without going into the details of A.G. Oridovsky’s rich and controversial biography, which is yet to be subjected to dedicated research, it is to be noted that the priest enjoyed the patronage of not only A.I. Ilovaysky but another Don ataman as well, the famed M.I. Platov, who would even personally provide funds to get one of his sermons published (Oridovskii, 1811: forzats). Under M.I. Platov, A.G. Oridovsky influence in the Don region reached its acme – it was A.G. Oridovsky who represented the local clergy at the ceremony of breaking ground for the city of Novocherkassk and supervised the construction of the first chapel in the new capital of Don Cossackdom (Savel'ev, 1906: 39-41).

Since the post of Don ataman at the time of the opening of Kharkov Imperial University was held by M.I. Platov and A.G. Oridovsky was a leader in the local clergy, it is no wonder that the Don and university administrations developed a great relationship right from the outset. Curiously, not only Don historians who are not always objective in respect of M.I. Platov but D.I. Bagaley too note the ataman’s special attention to the university and his desire for having young Cossacks attend it. D.I. Bagaley even furnishes an excerpt from a letter written by M.I. Platov to the principal of Novocherkassk Gymnasium, A.G. Popov, in which the famed ataman states the following: “I am much pleased that through their hard work Don Cossacks not only have managed to earn enrollment at an institution of higher learning but attract the attention of the university’s rector and staff with the fact that their tuition is funded by the Don Host and that they always wear their Cossack uniform” (Bagalei, 1898: 800-801). D.I. Bagaley matches M.I. Platov’s position against the conduct of certain members of the clerical hierarchy who opposed persons of ecclesiastical status attending the university (Bagalei, 1898: 801).

On the other hand, Kharkov Imperial University played a significant part in terms of establishing and supporting Novocherkassk Gymnasium (which initially was based in Cherkassk, later Starocherkassk, and was known as Don Host Gymnasium). Of particular importance in this respect is the activity of professor I.F. Timkovsky, a prominent education organizer. Around 1805, A.G. Popov, who at that time was the principal of Cherkassk’s main public school, reported to his superiors that there was a shortage of individuals with a sufficient level of knowledge to be junior-level students at the gymnasium (Artinskii, 1907: 23). Consequently, they dispatched I.F. Timkovsky to Cherkassk with the task of finding out for the university what needed to be done “to expedite the transformation of the school into a gymnasium” (Artinskii, 1907: 24). As a result, the gymnasium opened on July 11, 1805, with the ceremony attended by M.I. Platov and A.G. Oridovsky delivering the event’s most inspiring address (Filonov, 1859: 168-169). I.F. Timkovsky gave a speech there as well, in which he said the following: “The university, which is duly grateful to the Don Host for its patriotic contributions to the education of youth, has ordained to institute in this, the Don Host’s main, city a gymnasium and a primary school” (Artinskii, 1907: 34). Thus, it was Kharkov Imperial University that instituted in the public field the first gymnasium in the Don region.

I.P. Artinsky provides several cases where it is the university that stood up for the rights of Don Host Gymnasium during the first years of its establishment. For instance, I.F. Timkovsky succeeded in having the Host’s administration provide 3,000 rubles annually toward classroom and library fit-out (Artinskii, 1907: 46). In 1806, the university provided 2,000 rubles of its own funds toward ordering from London some “physical instruments for Don Host Gymnasium” ((Artinskii, 1907: 47). The university provided help to primary schools as well. The same I.F. Timkovsky visited primary educational institutions in the Ust-Medveditsky and Second Don okrugs. Of particular interest is the fact that it was I.F. Timkovsky, not A.G. Popov, who, as Don Host Gymnasium’s first principal, reported to the administration of the educational district that the schools were ready to be transformed as per the new school statute (Iz otchetov..., 1905: 145-146).

Almost immediately subsequent to the opening of the gymnasium, that same year 1805, the issue was raised of inviting its more talented students to Kharkov Imperial University.

Apparently, I.F. Timkovsky had doubts about the gymnasium's ability to prepare them the right way on its own, so he requested that its best second-graders be sent to the university's preparatory department. A fact that is telling of the professor's involvement in matters dealing with education in the Don region is that he personally proposed three specific candidates from among the gymnasium's student body (Filonov, 1859: 178). In the end, the Don authorities would arrange for sending not three but six students to the university, laying down the tradition of having Don scholarship holders attend Kharkov Imperial University (Filonov, 1859: 178).

D.I. Bagaley shares the following characterization of Kharkov Imperial University's first Don Cossack students, which is based on the account of professor H. Rommel: "Amongst the students, there are young and handsome Don Cossacks distinguished by alacrity and humility, some even by poetical talent" (Багале́й, 1898: 834-835). At first glance, it follows from the above characterization that Don students were quite active individuals and were in good standing with others. Indeed, the university's publishing house even released in 1811 a book entitled 'Compositions by Nurselings of the Don Host at Kharkov Imperial University' (Bagalei, 1898: 833). Here, however, one comes across a curious phenomenon – the bulk of the active Donian students mentioned by D.I. Bagaley would not do anything exceptional after finishing school and would not become major figures in Don history, while D.I. Bagaley makes no mention of several Kharkov Imperial University alumni who would go on to become key figures in Don history.

However loud its title may seem, 'Compositions by Nurselings of the Don Host at Kharkov Imperial University' was written by just two persons, S. Grechanovsky and V. Kondrat'yev. Tellingly, they dedicated this book to M.I. Platov (Багале́й, 1898: 833). The book contains an article by S. Grechanovsky, 'A Description of Where Don Host Cossacks Live and What They are Like' (perhaps, the first-ever published study on Cossacks by a Cossack), and a set of lyrical miniatures in poetry and in prose, some of which are imbued with local color (e.g., the poem 'Don Sturgeon') (Bagalei, 1898: 833-834). It is revealing that this book, despite obviously being a seminal work, remains unknown within Don historiography. Another interesting fact is that initially S. Grechanovsky was a very difficult student – not only did he "not have the slightest inclination to do good in school", but one of his acts "could in no way be tolerated at a university" (Bagalei, 1898: 988). The issue of expelling S. Grechanovsky was raised more than once, but the university's administration let him stay. As asserted by D.I. Bagaley, the student's erratic behavior eventually changed for the better, which can be attested to by the university publishing his compositions (Bagalei, 1898: 988). V. Kondrat'yev was not particularly disciplined either, although at first he was doing pretty good in school. In his case, it took just one threat of expulsion to get him to reform himself (Bagalei, 1898: 989). Lastly, there also was a Don Cossack student, named I. Rubashkin, who, despite much tolerance on the part of the teaching staff and all exhortations and threats, actually ended up getting expelled for drinking (Bagalei, 1898: 989).

Furthermore, according to M.I. Platov's letter about Kharkov Imperial University's first Don students cited by D.I. Bagaley, it enrolled just three Don Cossacks in 1808 – Kondratov (who must be Kondrat'yev), Grechenovsky (Grechanovsky), and Rubashkin (Bagalei, 1898: 800). All three had serious problems with discipline, and were even on the brink of expulsion, with one eventually getting expelled. This casts doubts over H. Rommel's positive characterization of the University's first Don students. In fact, praising them, just like publishing their works dedicated to M.I. Platov, may very well have been a political move aimed at preserving a good relationship with the Don ataman and inviting new students from the Don region.

It is worth remembering that the mid-19th-century Don Host was a poorly developed region scientifically and culturally. According to an anonymous contemporary, "prior to Platov, the Don region was dominated by age-old ways of life, with all the strict requirements of patriarchy, like having to regularly attend church services, fast, celebrate holidays and birthdays, and engage in various inter- and intrafamily activities, both quiet and noisy" (Krasnov, 1875: 718). Most Don officers were listed in records of service at the time as either "illiterate" or "capable of reading and writing in Russian but not knowledgeable of any other sciences" (Zakharevich, 2005: 67). Coming from a society like that, many Cossacks were simply not prepared for university life. It could take some time to adapt to it, and many struggled to do so. Nevertheless, things would change very quickly – as early as the 1820s, with the post of Don ataman going to A.V. Ilovaysky. This period was described by contemporaries as follows: "Under Ilovaysky, they would remunerate every educated Donian. His Staff included the best of our youth, like Sukhorukov, Selivanov, Kushnarev,

Kucherov, Kolesnikov, and other university alumni” (Krasnov, 1875: 718). Unfortunately, little is known of specific persons on that list, but, judging by the close ties between the Don Host and Kharkov Imperial University, it can reasonably be supposed that all of them had graduated from this particular university.

It was owing to a lucky accident (a confrontation between Don ataman A.K. Denisov and the principal of Novocherkassk Gymnasium, A.G. Popov) that Kharkov Imperial University would in 1819 put together a report containing the number of Don Cossacks students enrolled at it for the first time in its history (exclusive of those attending the preparatory department and the boarding school). Based on the report, the university enrolled 3 such students in 1808 (the already-mentioned S. Grechanovsky (Grechenovsky), V. Kondrat'yev (Kondratov), and I. Rubashkin), 7 – in 1809 (including M.G. Kucherov, who was on the above-mentioned 1820 “best youth” list and who is known within Don historiography owing to the help he provided V.D. Sukhorukov with in putting together a historical-statistical description of the Don Host), 2 – in 1810, 1 – in 1811, 3 – in 1812 (including V.D. Sukhorukov himself and another assistant of his from among “the best youth”, A.K. Kushnarev), 2 – in 1813 (including another assistant of V.D. Sukhorukov’s – V.P. Posnov), 0 – in 1814, 1 – in 1815, 2 – in 1816 (including I.Ya. Zolotarev, a poet who was the first Don Cossack to teach at the university and a long-time principal of Novocherkassk Gymnasium), 5 – in 1817, and 1 – in 1818 (Delo o direktore..., 1906: 183-184). Thus, in the period 1808–1818, Kharkov Imperial University enrolled Don Cossacks almost each year, with the total number being 27, 5 of which would go on to play a major role in the development of Don science and culture.

Among the above individuals, the most researched within Don historiography are V.D. Sukhorukov and the three of his assistants – A.K. Kushnarev, M.G. Kucherov, and V.P. Posnov. These men put together between 1820 and 1830 a work that would go on to occupy a seminal place within all of the subsequent prerevolutionary historiography and continues to be reprinted to this day – ‘A Historical Description of the Land of the Don Host’ (Sukhorukov, 2001). A.A. Kirillov had the following to say about it back in the early 20th century: “This work is fundamental in Don history” (Kirillov, 1909: 17-18). Starting in as early as the 1830s, members of the Don intelligentsia repeatedly matched this study against works on Cossackdom by Russian authors which they viewed as poor research (Morozova, 2007). Thus, one is dealing here with a text that appears to have been crucial in cultivating a Don Cossack identity in the 19th century, one that was fundamental in shaping the notions of many Cossacks in that era about their history. It, however, must be noted that, while working on ‘A Historical Description of the Land of the Don Host’, V.D. Sukhorukov and his assistants interacted with historians based not in Kharkov but in Moscow and Saint Petersburg, including N.M. Karamzin (Korshikov, Korolev, 2001: 8). Nevertheless, what appears to be quite an important fact here is that this groundbreaking work on the history of Don Cossackdom was put together by graduates of Kharkov Imperial University, two of whom were in the same year at it, with the third being just a year below them there, which suggests that they may have had contact with each other back in university. Thus, Kharkov Imperial University appears to have stood at the origins of both Don education and Don science. Unfortunately, it is somewhat difficult to discuss this narrative in more detail, as there is this paradox, which was already mentioned earlier – there, apparently, was nothing special about the activity of V.D. Sukhorukov, A.K. Kushnarev, M.G. Kucherov, and V.P. Posnov, i.e. figures whose role in the development of science in the Don region was significant, with regard to Kharkov Imperial University, so they do not figure in any research on its history.

Of much more significance in the history of Kharkov Imperial University was I.Ya. Zolotarev. Information about this man is available not only in D.I. Bagaley’s monumental work specifically devoted to 19th-century Kharkov University but also in a bibliographic reference book for this university released in the contemporary period (Istoriya Kharkivs'kogo universitetu, 2007: 153, 157). It is known that I.Ya. Zolotarev was the son of a Don officer. He graduated from Novocherkassk Gymnasium in 1816, and in 1820 he graduated from Kharkov Imperial University, where he majored in philology. Afterwards, he served up until 1830, attaining the post of associate professor of Russian and philology (Artinskii, 1907: 314). It follows from the information provided by D.I. Bagaley that the young Cossack tried his hand at poetry back in college, with some of his work published in the university’s publications. For instance, ‘Works by Students with a Penchant for Domestic Philology at Kharkov Imperial University’ carried in 1819 for the first time two of his

verses – ‘Singer (for A.V. Sklabovsky)’ and ‘To Delius (An imitation of Horace)’, which later were reprinted in ‘Student Compositions and Translations Read on June 30, 1820, Following the Exams’ (Bagalei, 1904: 919-920). Of interest is the fact that A.V. Sklabovsky wrote epistles to I.Ya. Zolotarev too (Bagalei, 1904: 919). A.V. Sklabovsky was not just a poet – he was a prominent figure in literary Kharkov, working as the editor of *The Ukrainian Journal*, published from 1824 to 1825 (Kiselev, 2015: 69). Apparently, the relationship between the two was not limited to literature, for in 1821 A.V. Sklabovsky worked as the head of a student Bible society, where I.Ya. Zolotarev was his secretary (Bagalei, 1904: 98). Moreover, D.I. Bagaley actually considers A.V. Sklabovsky the most outstanding exponent of the religious-mystical views so popular at 1820s Kharkov Imperial University, while claiming that I.Ya. Zolotarev “aligned himself with Sklabovsky” (Bagalei, 1904: 693, 695).

Apparently, individuals who were part of V.D. Sukhorukov’s circle and I.Ya. Zolotarev followed extreme models of behavior, something done by Don Cossack students at Kharkov Imperial University later too. Some Don students wished to pursue a service-based career back home in the Don region – this group would eventually enjoy greater prominence in Don history than those who had other plans. Those within this second group hoped for the continuation of a scholarly career, which, if successful, would inscribe them into the history of particular Russian universities – although, in actual fact, this would write them out of the history of the Don region. Tellingly, the return to the Don region of I.Ya. Zolotarev, incorporated into the Kharkov university environment ever since his student years, was a forced move – he was brought back by the Don administration, which for some reason resolved to appoint him as a line officer in a regiment; it was only upon the intervention of the administration of the educational district that he became the principal of the gymnasium in Novocherkassk (Bagalei, 1904: 604). By contrast, there is no evidence of any ties individuals from V.D. Sukhorukov’s circle may have had to the Kharkov university environment subsequent to graduation. Of course, there were in-between variants, but, in general, those inclined to pursue service in the Don region tended not to keep in long-term touch with the university, despite all the exposure to science and arts at it, while those willing to pursue a university-based career detached themselves easily from the Don environment (e.g., the figure of G.K. Ul’yanov, a Don Cossack who went to Moscow, not Kharkov, University and who in the early 20th century became the rector of Warsaw University, is virtually not covered within Don historiography, and no information is available on his ties to the Don intelligentsia). Thus, the scientific-educational space linking Kharkov Imperial University and the Don Host provided as early as the period 1800–1810 Don Cossack students with a choice of two models of behavior to pick from: 1) a model envisaging gradually detaching oneself from regional identity and getting incorporated into the common imperial scholarly environment; 2) a model envisaging applying the knowledge acquired in university with a view to developing one’s regional identity. In this regard, it is quite telling that all famous compositions by V.D. Sukhorukov, whose other noteworthy work is ‘A Statistical Description of the Land of the Don Cossacks Composed in the Period 1822–1832’ (Sukhorukov, 1891), are devoted to the Don region, whereas, by contrast, the verses of I.Ya. Zolotarev, including those published in capital-based publications (I. Z-v", 1826), are, by and large, devoid of local color.

The scope of this paper does not allow a detailed exploration of I.Ya. Zolotarev’s activity as the head of Novocherkassk Gymnasium, which is brilliantly described by I.P. Artinsky. Suffice it to note that under him this gymnasium began to look like a properly organized educational institution. It was under I.Ya. Zolotarev that Novocherkassk Gymnasium made it a regular practice for teachers to fill out relevant documentation after each lesson (Artinskii, 1907: 88-89), set up the Teachers Council (Artinskii, 1907: 96), and began to develop curricula in liaison with the Kharkov Educational District (Artinskii, 1907: 108-110). In addition, I.Ya. Zolotarev, who as a university instructor actually gravitated more towards literature than science, managed to properly organize the “work of instructors at the gymnasium in the scholarly area”, which included the conduct of work related to translation and the composing of one’s own research papers (Artinskii, 1907: 101). Thus, while the influence of I.Ya. Zolotarev on the history of Don science and culture is not as substantial as that of V.D. Sukhorukov and his assistants, he can definitely be considered one of the most influential figures (along with A.G. Popov) to have contributed to the development of the Don region’s education sector in the 19th century.

Concluding the discussion about Kharkov Imperial University’s Don Cossack students, it is worth noting that Donians attended not only the actual university but the boarding school at it as well. While

only one such case is known, it involves General I.I. Krasnov, who was a hero of the Crimean War, a prominent public figure, and one of the Don region's first writers. As noted by his biographer V.N. Korolev, who worked with archival materials whose whereabouts are not known at this time, while at the boarding school the young Cossack "picked up a solid knowledge of some foreign languages, history, and literature"; afterwards, he kept in touch and corresponded with one of his teachers (Korolev, 1991: 211). It is to be noted, however, that prior to that I.I. Krasnov had received an excellent home-based education, which makes it somewhat difficult to tell how much his study specifically at Kharkov University influenced the shaping of his personality (Vospominaniya..., 1873: 365-366).

Lastly, one more area where Kharkov Imperial University and the Don administration cooperated was the publishing of the first specialized study on the history of Don Cossackdom. The author of the two-volume 'The Story of the Don Host' was the already-mentioned principal of Novocherkassk Gymnasium A.G. Popov. Dedicated to M.I. Platov, the book was published in 1814 and in 1816 by the Kharkov University's publishing house (Popov, 1814; Popov, 1816). Unfortunately, unlike V.D. Sukhorukov's 'A Historical Description of the Land of the Don Host', which chronologically followed them, the books by A.G. Popov sank into almost complete oblivion, with later Don scholars viewing them as a mere isolated case, one based on the use of highly archaic historical writing practices. Prominent contemporary historian N.A. Mininkov has the following to say on this: "Popov's composition was recognized as poor and subjected within later Don historiography to tough, yet fair, criticism, becoming for certain historians the object of irony and sarcasm. This, above all, is the case with Popov's express suggestion that most Don Cossacks descend from the Amazons, a claim the author did not even attempt to back up by evidence" (Mininkov, 2010: 266-285). This made this book, one by an alien author, even if it was published by Kharkov University, all the more unreadable to Kharkov historians.

On the other hand, 'The Story of the Don Host' does merit attention, at least because of its first volume 3,000 copies were published, which makes this book the university's most widely published publication in 1814 (Bagalei, 1898: 436). What is more, this was one of the largest print runs in the first decade of the university's existence – from 1805 to 1814. To compare, of the classic work 'Accounts of the Russians in Antiquity' by professor G.P. Uspensky, reprinted in the 21st century, just 605 copies were published (Bagalei, 1898: 434). Thus, this publication was clearly conceived as significant for the history of the university, and even an entire region that at the time was part of the Kharkov Educational District (i.e. contemporary Ukraine, Southern Russia, and the Caucasus). Indeed, the first book on the history of Cossackdom, which was released in 1814, i.e. the time when the Cossacks distinguished themselves by their military exploits during the Napoleonic Wars, could potentially have been of interest to many. Besides, an interest in the book was being displayed by M.I. Platov, who had long patronized the university. Soon after being published, a copy of the first volume was sent to the Don ataman (he was in Warsaw at the time). Platov replied with a letter discussing in detail the significance of the book. In his view, both young and old Donians were interested in "acquiring accurate information about their origins", while A.G. Popov deserved "enduring fame" and recognition from "all of our society" (Artinskii, 1907: 37). Finally, it was about the possibility of local residents willing to know more about their region's history. D.I. Bagaley provides numerous examples of Kharkov professors demonstrating an interest in regional topics, while A.V. Sklabovsky expressly states the following in The Ukrainian Journal: "However interesting Russian magazines might seem to residents of Ukraine, they most definitely would read Ukrainian ones with greater willingness and curiosity" (Kiselev, 2015: 70).

Thus, 'The Story of the Don Host' was a project of significance for both Kharkov Imperial University (based on the number of copies thereof published) and the Don Host (based on the interest displayed in it by the Don ataman personally). Had this project been a success, research on the Don region would have been organized in the 19th century differently and it is Kharkov Imperial University that would have played a significant role in that. However, this work remained a mere isolated historical case, while the first work to be recognized as a narrative on the history Cossackdom was 'A Historical Description of the Land of the Don Host', created exclusively by amateur Don historians – with no participation from professional scholars (yet with participation from the local and imperial authorities) and published only in the 1860s in Novocherkassk (Istoricheskoe opisaniye..., 1867). As a result, the Don region witnessed the development of strictly amateur historiography, with publications on local history published mainly in Novocherkassk by local organizations and enthusiasts and with such publications subjected to little to no scholarly examination.

Note that 'The Story of the Don Host' was admitted into print by G.P. Uspensky, not just a professional historian but one of the most prominent historians in early-19th-century Russia (Popov, 1814: *forzats*; Popov, 1816: *forzats*). According to D.I. Bagaley, the release of 'Accounts of the Russians in Antiquity' would enhance his standing among his contemporaries so much that that some of them would consider him the second-most influential researcher in the field of Russian antiquity behind N.M. Karamzin (Bagalei, 1898: 646). Personally, D.I. Bagaley's estimation of G.P. Uspensky was a little lower, but he, too, found 'Accounts of the Russians in Antiquity' satisfactory even from the standpoint of early-19th-century science, with the exception of the chapters on the origins of the Russian people and on the pagan religion (Bagalei, 1898: 646). The problem is that it is only the early history of Cossackdom (its history up until the 16th century) that the first volume of 'The Story of the Don Host' was devoted to, with A.G. Popov attempting to prove that the Cossacks originated from the Scythians and the Sarmatians (Popov, 1814: VII-IX). It is this area that the professional historian G.P. Uspensky appears to have been a poor consultant in, as he did not remove from A.G. Popov's book the manifestly fantastic hypotheses presented therein. Later Don authors viewed A.G. Popov's legacy mainly through the prism of these very hypotheses. "Popov had become absorbed with a distant historical period for which there is no information available in the local archives," wrote A.A. Kirillov (Kirillov, 1909: 6). The second volume of A.G. Popov's book, which is much larger than the first one and is devoted to events from the period between the 17th and early 18th centuries, appears to have been completely compromised, failing to attract the attention of later Don authors.

In any case, the fact that the first historical study on Don Cossacks was released by the university's publishing house, and with permission from a major historian like G.P. Uspensky, is another testimony to the influence that Kharkov Imperial University had on Don science and culture. Unfortunately, in this case this influence failed, as the book on Don Cossackdom published by the university would acquire a bad reputation in later historiography, with nothing known of any research on Don Cossackdom that Kharkov Imperial University took part in.

4. Conclusion

Cultural-educational ties between the Don Host and Kharkov began to form back in the 18th century. These ties were not inspired by the imperial government but emerged naturally, as a result of cooperation between local figures. Don atamans who were in need of educated individuals could look for them at Kharkov Collegium, while figures from this collegium who sought patronage could turn to Don atamans. Unfortunately, existing sources do not allow establishing how close those ties were. However, the earliest text, a work dedicated by Kharkov poets to a Don ataman, dates back to the mid-18th century, while, by the time Kharkov University opened up, a great deal of influence in the Don region was wielded by A.G. Oridovsky, a former teacher at the collegium, who was invited to Cherkassk specially for educational purposes.

The opening of the university and the incorporation of the Don Host into the Kharkov Educational District created the conditions for such unofficial ties to be formalized within a single scientific-educational space. It appears that the interest in this was again mutual – the university's administration exhibited as early as 1805 a willingness to provide assistance with the organization of the educational process in the Don region, and some time later Don ataman M.I. Platov personally stated in a letter that the academic successes of Cossack students were a matter of great joy to him. Of note, in this respect, is the fact the university's publishing house released in 1810 three books that touched upon the history of the Don region, all dedicated to M.I. Platov. However, the process of involvement of the Don Host in the scientific-educational space forming around the university was not effortless – many young Cossacks were often not prepared morally for school, with the teaching staff having to exert some effort in motivating them to learn science and observe discipline. In the end, despite these difficulties, the following three major areas for cooperation between the Don Host and Kharkov Imperial University emerged in the period 1800–1810:

- 1) Kharkov Imperial University provided substantial assistance to the activity of educational institutions in the Don region. Even the very opening of the first gymnasium in the Don Host was the result of assistance and support from professor I.F. Timkovsky, who had come to Cherkassk from another area. The university petitioned for an increase in funding for the gymnasium and used its own funds to purchase equipment for it. I.F. Timkovsky visited uyezd schools as well, with the entire system of education in the Don Host being, consequently, coordinated and guided by the university.

2) Kharkov Imperial University was the first educational center outside of the Don Host to be attended by Cossacks on a regular and systematic basis. In the period 1808–1818, Cossack students enrolled at the university almost each year (with the exception of 1814 only – perhaps, due to the war with Napoleon). According to a contemporary, as early as by 1820 several “university alumni” had gained prominence among members of the Host Staff. The period’s Kharkov Imperial University graduates included individuals who would play a significant role in the development of 19th-century Don culture, namely V.D. Sukhorukov, A.K. Kushnarev, M.G. Kucherov, and V.P. Posnov as the authors of ‘A Historical Description of the Land of the Don Host’, a work of major significance for future Don historiography that would have an effect with regard to the very identity of Cossackdom, I.Ya. Zolotarev, an outstanding Don educator who for many years was the principal of Novocherkassk Gymnasium and was the first Don Cossack to teach at the university, and I.I. Krasnov, a hero of the Crimean War who was one of the Don region’s first writers (he attended the university’s boarding school).

3) Kharkov Imperial University released the first specialized study on the history of Don Cossackdom, ‘The Story of the Don Host’ by A.G. Popov. Judging by the number of copies (3,000), which was large for that time period, the publication must have been regarded as fairly important for the university. It was admitted into print by professor G.P. Uspensky, a well-known historian. Unfortunately, the two-volume work by A.G. Popov was not a success; in fact, it would even go on to be viewed as highly archaic because of the attempts to prove the ancient origins of Cossackdom. Therefore, whereas the first two areas for cooperation between the Don Host and Kharkov Imperial University remained topical throughout the 19th century, the university no longer displayed interest in research on the history of Cossackdom, with this kind of research mainly conducted afterwards by amateur Don scholars with support from the authorities.

Thus, it was Kharkov, not Moscow or Saint Petersburg, that was the nation’s center for science and education in the period 1800–1810. Further research into the resulting single scientific-educational space can both provide a useful insight into the cultural history of Cossackdom and help gain a better understanding of the research optics employed in the study of education in Eastern Europe. The relationships between Kharkov Imperial University and Don Host are just one case illustrating this space, which existed in the 19th century but was torn and forgotten in the 20th century as a consequence of changes to the country’s borders and modifications to its geographic zoning standards.

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Social Criteria Describing Literacy and Education Levels in Ukrainian Governorates within the Russian Empire at the end of the 19th century

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Abstract

This paper draws upon data from the Russian Imperial Census of 1897 to explore the literacy and education levels of residents of Ukrainian governorates within the Russian Empire at the end of the 19th century.

An analysis of statistical data from a number of relevant sources revealed discrepancies both in the percentage of literate people overall and among males and females in the Russian Empire.

It is impossible at this time to obtain conclusive data about the number of literate people both in the Russian Empire as a whole and in Ukrainian governorates within it in particular, as this information was gathered by different agencies and was not of a centralized nature. The data from the Russian Imperial Census of 1897 appear to be the most reliable in terms of objectivity, which may be associated with the fact that, in systematizing these data, use was made of a variety of data collection techniques, including census schedule, pilot census, linguistic survey, and survey by questionnaire.

The work proposes a conceptualization of the literate as citizens with at least elementary reading and writing skills, the literacy level as the share of literate citizens in a region, and the literacy index as the ratio of literate citizens to a region's total population.

An analysis was conducted of the characteristics of the education policies pursued by the Russian government at the time, and its results were summarized. An insight was gained into the overall influence of those policies on the literacy and education levels of residents of Ukrainian governorates within the Empire.

Literacy and education levels in Ukrainian governorates within the Russian Empire were analyzed through the lens of a number of factors (criteria), including regional characteristics, gender, age, estate, ethnicity, and religious affiliation.

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Keywords: education, literacy, educational inequality, education access, education quality, education policy, education reform.

1. Introduction

History is an ideological science that often serves as an agent and weapon of propaganda. Without going into the specifics of how official historical narratives evolve and unfold over time, very often a particular historical theme or subject becomes a tool for manipulating collective and individual consciousness. This, in particular, is the case with the historical legacy of imperial Russia and the regions within it – Ukraine, for example. Manipulations of the historical past tend to be determined by an immediate political context.

When it, for instance, comes to recasting the Russian imperial legacy in the area of education to suit a Communist agenda, of particular interest is the cultivation of the “myth about illiterate tsarist Russia”, widely employed by the Bolsheviks and the subsequent Soviet government. It is worth quoting in this context the words of Vladimir Lenin, the leader of the Russian Bolsheviks, whose stance on that legacy was unambiguous. According to Lenin, no other nation in the world “has seen its populace experience so much deprivation in education, illumination, and knowledge.... The literate account for a mere 21 % of the Russian population and just 27 % exclusive of preschool age children, i.e. those aged below 9” (Lenin, 1973: 127). He based this estimate on official data from the Ministry of Public Education published in ‘The Russia Yearbook’.

At the same time, it should be noted that statistics on education were maintained in the Russian Empire by more than one agency. Apart from the actual Ministry of Public Education, such records were also monitored by the Ministry of Internal Affairs and the Military Ministry, all within the framework of their powers. This way of doing it somewhat complicated getting an accurate picture.

Specific figures from researchers will better illustrate this discrepancy about statistics on literacy in the Russian Empire at the end of the 19th century. For instance, M.N. Rutkevich puts it at 28.4 % (Rutkevich, 2007: 30), while E.V. Shcherbakova has it at 20.8 % (29 % among males and 12 % among females) (Shcherbakova, 2013: 276). B.N. Mironov speaks of 31 % literacy among males and 13 % literacy among females (Mironov, 2015), and these figures are actually lower than those provided in the researcher’s earlier work (Mironov, 1996).

This confirms the suggestion that these data discrepancies are a consequence of the use of a decentralized procedure for collecting statistical information in the Russian Empire. In this context, of particular interest are the results of the Russian Imperial Census of 1897, which was conducted using a set of special techniques, including census schedule, pilot census, linguistic survey, and survey by questionnaire. The availability of these data will be central to the ability to conduct a conclusive analysis of the literacy and education levels of residents of Ukrainian governorates within the Russian Empire, although there remains a probability of still getting *relative* results, given a variety of objective factors being at play.

Also of importance is to establish the meaning of certain terms used in the paper. More specifically, the term ‘literacy’ is construed herein as a command of reading and writing skills. The Census considered as literate individuals who had ‘literacy in Russian’, ‘literacy in other languages’, or ‘a level of education above primary school’ (Vseobshchaya perepis', 1904a-i). For the purposes of this paper, the literacy level is the share of literate citizens in a region, and the literacy index is the ratio of literate citizens to a region’s total population.

2. Materials and methods

To explore the literacy and education levels of residents of Ukrainian governorates within the Russian Empire, an analysis was conducted of relevant data (25 tables worth of information on demographics, religion, and economics) from the Russian Imperial Census of 1897.

In putting this paper together, use was made of a number of research methods, including concept analysis, content analysis, quantitative data analysis, and correlational analysis.

3. Discussion

The subject of public education and literacy in the Russian Empire has been researched quite extensively (e.g., Mironov, 1996; Petrov, 2002; Rutkevich, 2007; Saprykin, 2009; Shcherbakova, 2013). Some of the research indicates that there was “a chasm between the education levels of members of the upper strata of society and the low literacy levels of the bulk of the population –

above all, peasants (80% of the population)” (Rutkevich, 2007: 5). It should, however, be noted that this indicator varies depending on multiple factors.

Issues of literacy and education have more than once been explored in relation to various other subjects – for instance, in the context of the development of the system of public education in the Russian Empire as a whole and government policy in this area (e.g., Saprykin, 2009; Chekhov, 1912; Farmakovskij, 1903). Certain authors have appealed against the “simplistic ideological scheme” behind education policy in the Russian Empire as one that is about the “struggle of two tendencies” – “reactionary”, i.e. a focus on protecting the interests of elites via police-state tactics, and “progressive” liberal-bourgeois (Saprykin, 2009: 122). Arguably, this scheme does not reflect the objective processes associated with the development of the country’s education system, as it “overlooks the most essential factor – the government’s education policy” (Saprykin, 2009: 122-123).

It is between the 19th and early 20th centuries that the country’s “government and thinking intelligentsia actively undertook to improve the state of public education” in it (Shcherbakova, 2013: 274). Some researchers view the 19th century as “a critical period in the formation of the system of public education in the Russian Empire, when it underwent a transformation under the influence of various internal and external circumstances” (Vojtekhovskaya, 2013: 5).

Of significant interest are the research publications exploring public education in the Russian Empire via analysis of regional characteristics (e.g., Bohatchuk, 2017; Lebid et al., 2020; Polishchuk, 1996; Polishchuk, 1997; Prokopenko, 2016). In this respect, of particular mention is the fundamental study by S.O. Siropolko, which explores the education system in Ukraine in the period from 988 to the early 20th century. The work provides insight into a whole range of issues related to education in Ukraine during that period, including such issues inherent in the making and development of the region’s education system as staffing, funding, and organization (Siropolko, 2001).

The scholarly journals *Bylye Gody* and *The European Journal of Contemporary Education* regularly publish materials on various aspects of the development of the country’s public education system (e.g., Cherkasov et al., 2021a; Cherkasov et al., 2021b; Degtyarev et al., 2018; Magsumov et al., 2021; Natolochnaya et al., 2019). Research published by these journals typically involves a wide use of archival sources and documents and statistical and factual data, making it possible to explore issues of public education in the Russian Empire in a most systematic manner.

Issues of literacy and education in the Russian Empire have also been explored through the lens of social background (e.g., Lebid, 2022; Lihova, 2011; Prosvirnova, 2003), levels and stages of education (e.g., Ivanov, 1991; Lebid, Shevchenko, 2021; Novikov, Perfilova, 2012; Smirnov, 1954), and characteristics of female education (Lavrik-Slisenko, 2008; Lihacheva, 1901; Usacheva, Dneprov, 2010).

Worthy of separate mention are the statistical digests containing rich factual material on the history of the Russian Empire as a whole and issues of the development of its public education system in particular (e.g., Kol’b, 1862; Kulomzin, 1912; *Obozrenie, 1848-1850*; *Obozrenie, 1849-1850*; *Obozrenie, 1848-1851*; *Vseobshchaya perepis’, 1904a-i*). Relevant data from the Russian Imperial Census of 1897 and a set of scholarly insights into the various statutory, technical, and organizational aspects of its conduct (Brukhanova, Nezhentseva, 2018; Bryuhanova, 2019; Plandovskij, 1898; Polishchuk, 1996; Polishchuk, 1998) helped draw a series of conclusions regarding literacy and education levels in Ukrainian governorates within the Russian Empire at the end of the 19th century.

4. Results

The foundations of the education system in the Russian Empire were laid down by the reforms of Peter I, who was a proponent of implementing Western templates in education in parallel with popularizing sciences. It is at that time that the Russian education system began to undergo radical transformations. The reforms led to the establishment of a school of mathematics and navigation, an artillery school, an engineering school, and a medical school in Russia.

During the reign of Anna Ioannovna, the government initiated the establishment of mining schools tasked with training future specialists for the mining and metallurgy sector.

Under Empress Elizabeth Petrovna, the country’s a military training schools were reorganized and its network of primary schools was expanded. In 1755, Moscow became home to the Russian Empire’s first university.

In the 18th century, education in the Russian Empire was characterized by the following two key trends: 1) growth in the number of educational institutions across the country (e.g., Ernst Glück Gymnasium, Academic Gymnasium (Saint Petersburg), University (Academic) Gymnasium at Moscow University, Land Gentry Cadet Corps (Saint Petersburg), Medicine and Surgery Academy, Chernigov Collegium, Pereiaslav Collegium, and Kharkov Collegium); 2) preferential treatment of members of the country's privileged social estates, with members of the less privileged sectors of society facing increasingly more barriers in accessing education.

The education reform initiated by Catherine II resulted in the promulgation of the Statute on Public Schools in 1786, ordaining that four-grade "major public schools" be established in gubernia cities (Ustav, 1786: 3-13) and two-grade "minor public schools" be set up in uyezd cities across the country (Ustav, 1786: 14-15).

There were several critical changes in the education system resulting from the introduction of the above statute. Firstly, it was the introduction of so-called "subject-based schooling". For instance, first-graders at gubernia schools were to study subjects such as laws of Christianity, writing, and reading (Ustav, 1786: 3), while second-graders there were to take disciplines such as penmanship and arithmetic (Ustav, 1786: 6).

Secondly, it was the introduction of a lesson-based system and the use of fixed-length lessons and schedules (e.g., foreign language teachers regularly scheduled to work an 18-hour week) (Ustav, 1786: 13).

Thirdly, it was for the first time that dedicated attention was given to the development of curricula and teaching methodologies (Ustav, 1786: 10-11).

In the 19th century, with the advent of Alexander I in 1801, the country witnessed a number of reforms, including transformations in the area of education undertaken under the supervision of the Ministry of Public Education (established in 1802). The following four different types of educational institution were introduced: one-grade parish schools, three-grade uyezd schools, six-grade gubernia schools (gymnasiums), and universities (PSZRI, 1830a: 438).

In addition to the already operating universities in Moscow, Vilna, and Dorpat, the government was going to "set up universities in the Saint Petersburg District, Kazan, and Kharkov". "Kiev, Tobolsk, and some other cities [would] house a university" as per possibility and necessity (PSZRI, 1830a: 439).

The territory of the Russian Empire was split into six educational districts – Moscow University District, Vilna University District, Dorpat University District, "Saint Petersburg District", "District of the soon-to-be-established Kharkov University", and "District of the soon-to-be-established Kazan University". Each was to be headed by a trustee and each was to "incorporate specific governorates" (PSZRI, 1830a: 442).

The operation of the universities was regulated by the University Statute of 1804. On November 5, 1804, Emperor Alexander I signed into law "The Confirmatory Charter for Imperial Moscow University" (PSZRI, 1830b: 647-650), "The Confirmatory Charter for Imperial Kharkov University" (PSZRI, 1830b: 650-653), and "The Confirmatory Charter for Imperial Kazan University" (PSZRI, 1830b: 653-656), with each school also provided with a university charter granting them wide autonomy.

During this period, the country became home to a number of other educational institutions as well, including Practical Forest School in Saint Petersburg, Petersburg Institute of Pedagogy, Tsarskoye Selo Lyceum, Richelieu Lyceum, Volyn Lyceum, and Nezhin Lyceum.

The noteworthy results of Alexander I's education reforms include the emergence of continuity in education from the lower to the higher stage, expansion of the spectrum of curricula, democratization and humanization of education, improved education access for all strata of society, and improved accessibility of primary and secondary education to members of all social estates.

The education policy of the Nicholas I government, summed up in the "Orthodoxy, Autocracy, and Nationality" doctrine (originally proposed by the then-Minister of Education, S.S. Uvarov), was to deal a "deadly blow to the yet-to-be-uprooted liberal and mystical sentiments persisting from the Alexander I era" (Novikov, Perfilova, 2012: 11). The concept behind this program would go down in history as "protective education".

The University Statute of 1835 strengthened the administrative vertical by making the educational district trustee a central figure within the education system and the rector a central

figure at the university level. The statute expanded the trustee's duties, providing them with wider authority within the university hierarchy. The rector was now empowered to exert control over the educational process, including in terms of its implementation and quality.

Among other things, the statute boosted administrative-police oversight over student behavior. There also were changes to the structure of university education, which included the following: reducing the number of departments from four to three, extending the length of the program of study to four years, introducing new courses with a focus on classic education, enabling international mobility for young scholars (programs of up to two years), and extending the number of departments and increasing the teaching workforce ([Tablica ustavov, 1901](#)). Essentially, the Statute of 1835 boosted state control over higher education in the Russian Empire.

The education reform undertaken during the reign of Nicholas I was characterized by its dedicated focus on education access based on social class. The edict issued on August 19, 1827, established the procedure for "admission to higher educational institutions for attending lectures and to lower schools for schooling". The edict prescribed that, taking account of "the probable future occupation of students", access to gymnasiums and universities be restricted for members of the peasant estate, limiting their education to attending parish schools. Gymnasium and university education was to be available only to children of functionaries and nobles ([Zakonodatel'stvo ob obrazovanii, 2017: 214-215](#)).

The reforms undertaken by Emperor Alexander II, known as Alexander the Liberator for his input into the emancipation of Russia's serfs in 1861, included transformations to the country's education system as well. The University Statute of 1863 reinstated the autonomy in administrative, financial, and educational matters taken away from Russian institutions of higher learning via the Statute of 1835, which would have a positive effect on the development and operation of the country's higher education system ([Ustav, 1863](#)).

During that period, the government undertook "robust measures to develop the primary public education sector, promote inclusive public education, and encourage public initiative in the organization of public schools" ([Zakonodatel'stvo ob obrazovanii, 2017: 488](#)). Tangible changes were implemented to secondary education as well – it was now declared to be comprehensive, easily accessible, and open to all social estates, although it would still have to be paid for, which made secondary education less accessible for members of disadvantaged classes. Overall, the education policy pursued during the reign of Emperor Alexander II resulted in growth in literacy levels across the Russian Empire, a greater focus on the development and enhancement of educational programs, and an increased focus on female education (e.g., introduction in 1869 of the so-called "higher women's courses" (e.g., Alarchin Higher Women's Courses and Vladimir Higher Women's Courses in Saint Petersburg and Lubyanka Higher Women's Courses in Moscow)).

A few words need to be said now about the Russian Imperial Census of 1897, one of the world's largest-scale statistics campaigns conducted on the cusp of the 19th and 20th centuries, which is the main data source employed in this paper.

The Census sought to collect socio-demographic information about the population of the Russian Empire at the end of the 19th century. The actual idea of conducting this kind of census dates back to 1876, when this issue was first brought up for discussion, with the Russian government going on to sign the relevant regulation into law on June 5, 1895 ([Polozhenie, 1897](#)).

The Census contained standard information on "all residents in the Empire, of both sexes, of all ages, and of all social, ethnic, and religious backgrounds, Russian nationals and foreigners alike". The data set consisted of 14 items dealing with the socio-demographic, ethnic-cultural, and religious characteristics of the Empire's population.

To organize the Census, the government established a census commission in Saint Petersburg (the principal one) and census commissions in governorates, uyezds, and major cities across the country. Special census commissions were set up in Saint Petersburg, Moscow, Kronstadt, Warsaw, Sevastopol, Nikolayev, Odessa, and Kerch – these were to perform the functions of gubernia and uyezd commissions in areas under their purview. General charge of the Census was assumed by the Minister of Internal Affairs, who was empowered to engage other agencies in the process too. The procedure for the conduct of the Census was established via a special regulation.

In the Census, the data were arranged into 25 tables. Using this information, the present study analyzed literacy rates in each of the Ukrainian governorates across age, regional characteristics, ethnicity, social estate, and gender. The relevant data were derived from the

Census's Table 3b ('Distribution of the Population by Gender, Age (years), and Literacy Level'), Table 8 ('Distribution of the Population by Social Estate'), Table 9 ('Distribution of the Population by Literacy, Education, Social Estate, and Age'), and Table 15 ('Distribution of the Population by Mother Tongue, Literacy Level, and Age').

Table 3b contained information about the population's literacy levels through the lens of age (1–110 years and up), gender (males and females), and regional (governorates, cities, and uyezds) characteristics.

Table 8 and Table 9 provided information on the social estate composition of governorates, cities, and uyezds in linkage with literacy and education levels among their residents. The focus in the present study was limited to the following key social estate categories covered by the Census: 1) nobles (hereditary and personal nobles and their family members; non-noble functionaries and their family members); 2) clergy (persons of ecclesiastical status of all Christian denominations and their family members); 3) urban estate (petit bourgeois, merchants, and distinguished citizens); 4) peasants (peasants proper, Cossacks, and foreign settlers). Among other things, Table 9 contained data on the education level of members of each of the estates, listing the following types of educational institution: universities and other higher educational institutions, vocational and technical higher schools, vocational secondary educational institutions, and higher and secondary military educational institutions.

Let us now analyze this information in the context of literacy rates in Ukrainian governorates within the Russian Empire.

Table 1. Literacy Level of Residents of Ukrainian Governorates within the Russian Empire (Gender Criterion) (Vseobshchaya perepis', 1904a: 12-25; Vseobshchaya perepis', 1904b: 12-25; Vseobshchaya perepis', 1904c: 12-27; Vseobshchaya perepis', 1904d: 12-29; Vseobshchaya perepis', 1904e: 12-31; Vseobshchaya perepis', 1904f: 12-29; Vseobshchaya perepis', 1904g: 12-31; Vseobshchaya perepis', 1904h: 12-25; Vseobshchaya perepis', 1904i: 12-35)

Governorate	Total population		Literate residents, by gender				Overall percentage of literate residents
			males		females		%
	males	females	people	%	people	%	
Kiev	1,767,288	1,791,941	486,105	27.5	156,168	8.7	18.0
Yekaterinoslav	1,091,715	1,021,959	344,147	31.5	110,137	10.7	21.4
Podolia	1,505,940	1,512,359	358,998	23.8	109,771	7.2	15.5
Poltava	1,376,539	1,401,612	382,570	27.7	88,443	6.3	16.9
Taurida	762,804	684,986	281,576	36.9	122,266	17.8	27.8
Kharkov	1,253,759	1,238,557	325,460	25.9	94,404	7.6	16.8
Kherson	1,400,981	1,332,631	490,475	35.0	217,525	16.3	25.8
Chernigov	1,118,696	1,179,158	332,843	29.7	86,054	7.2	18.2
Volyn	1,502,803	1,486,679	366,599	24.3	146,313	9.8	17.1
Total for Ukrainian governorates	11,780,525	11,649,882	3,368,773	28.5	1,131,081	9.7	19.2

Table 2. Literacy Level of Residents of Ukrainian Governorates within the Russian Empire (Estate Criterion) (Vseobshchaya perepis', 1904a: 54-81; Vseobshchaya perepis', 1904b: 52-81; Vseobshchaya perepis', 1904c: 46-69; Vseobshchaya perepis', 1904d: 58-93; Vseobshchaya perepis', 1904e: 60-95; Vseobshchaya perepis', 1904f: 58-87; Vseobshchaya perepis', 1904g: 62-97; Vseobshchaya perepis', 1904h: 54-83; Vseobshchaya perepis', 1904i: 66-107)

Governorate	Nobles		Clergy		Urban estate		Peasants	
	total, people	literate, %	total, people	literate, %	total	literate, %	total, people	literate, %
Kiev	60,529	78.4	16,496	77.3	695,254	34.5	2,769,432	12.1

Yekaterinoslav	20,349	75.4	7,038	74.9	223,086	46.2	1,847,397	17.4
Podolia	40,513	66.7	14,018	74.4	506,282	30.9	2,440,631	10.9
Poltava	41,030	30.1	16,163	33.1	256,229	13.9	2,459,824	1.5
Taurida	22,761	38.6	4,729	35.6	256,441	15.8	1,124,200	6.0
Kharkov	32,090	41.1	10,918	37.0	172,566	18.1	2,265,576	2.0
Kherson	50,495	40.2	8,002	37.7	772,197	13.4	1,848,430	4.5
Chernigov	27,868	35.2	11,335	36.3	280,590	13.9	1,973,954	1.7
Volyn	47,024	63.5	14,955	70.6	649,832	29.0	2,242,707	12.1

Table 3. Number of Residents with a Diploma from a University or Another Institution of Higher Learning (Estate Criterion) (Vseobshchaya perepis', 1904a: 54-81; Vseobshchaya perepis', 1904b: 52-81; Vseobshchaya perepis', 1904c: 46-69; Vseobshchaya perepis', 1904d: 58-93; Vseobshchaya perepis', 1904e: 60-95; Vseobshchaya perepis', 1904f: 58-87; Vseobshchaya perepis', 1904g: 62-97; Vseobshchaya perepis', 1904h: 54-83; Vseobshchaya perepis', 1904i: 66-107)

Governorate	Nobles	Urban estate	Peasants
Kiev	4,140	1,456	120
Yekaterinoslav	937	244	18
Podolia	1,077	200	17
Poltava	1,042	144	7
Taurida	1,006	244	20
Kharkov	2,240	920	80
Kherson	2,663	906	30
Chernigov	971	157	45
Volyn	1,179	125	29

Overall, Ukrainian governorates within the Russian Empire posted relatively low literacy rates at the end of the 19th century. The rates varied across gender (Table 1), estate (Table 2; Table 3), and ethnicity. The literacy gaps between these governorates were mainly associated with socio-historical, religious, cultural, and regional factors.

Kiev Governorate. Overall, the literacy rate for this region reflects the same trends observed in the rest of the governorates – males posting higher literacy levels than females (Table 1), rural residents posting lower literacy levels than their urban counterparts, and a very low percentage of residents having a higher education (1.4% for males and 0.15% for females) (Vseobshchaya perepis', 1904b: IX).

Age-wise, the younger the age group in this region (except for 4-9-year-olds), the higher the percentage of literate residents, especially among males. In the region's rural areas, younger males, likewise, dominated females in literacy, with this gap being six-fold in the middle-aged group (30–49 years). The literacy gap between males and females was not as abysmal among urban residents in this region.

Yekaterinoslav Governorate. Literate residents in this region accounted for just a little over one-fifth of the region's population. It had three times as many literate males as females (31.5% and 10.7%, respectively) (Table 1). In the region's uyezds, the figure was one-third of the population, whereas it was significantly higher among the urban population (54.7 % in Yekaterinoslav, 48.6% in Mariupol, and 44.5% in Bakhmut) (Vseobshchaya perepis', 1904c: XII).

Education reforms had a substantial effect on the literacy levels of residents in this region, especially males. Specifically, between the 1860s and 1880s there was a significant increase in the share of literate residents in the region, especially among 20–29-year-olds, with the figure reaching 50 %.

The percentage of residents with a higher education in the region was 0.37%, vocational and technical – 0.14%, secondary – 2.5%, and secondary and higher military – 0.2%, with “just literate” residents, i.e. those with at least elementary reading and writing skills, accounting for 96.1% of the population (Vseobshchaya perepis', 1904c: XIII).

Ethnicity-wise, the ethnic groups with the highest literacy levels in the region were Jews and Germans, with members of these two groups accounting for the largest number of residents with a

level of education above primary school. A similar situation was observed in Taurida Governorate, where ethnic diversity, too, was a major factor shaping the region's literacy statistics.

Podolia Governorate. The region had an overall low level of literacy – a mere 15.5 %, the lowest among the governorates (Table 1). The percentage of urban literate residents in this region was 33.8 %.

The way in literacy level in the region was led by younger residents. However, the percentage of residents with a level of education above primary school was negligible there (around 0.5 %). Religion-wise, the way in literacy level was led by Protestants (73.1 % among males and 71.4 % among females), followed by Jews (41.3 % and 21.7 %, respectively), Catholics (24.3 % and 16.4%), Old Believers (22.4 % and 2.3 %), and Orthodox Christians (20.2% and 4%) (Vseobshchaya perepis', 1904d: IX).

While the commonest form of education in this region was general secondary education, the percentage of residents who had actually completed it was very low – just 0.5%. Matters were worse with higher education – a mere 0.06 % (Table 3).

As with the rest of the Ukrainian governorates, low literacy levels were posted in this region by females, especially in its rural areas (Table 1).

Poltava Governorate. The state of education in this region was characterized by a paradoxical situation – it had one school per 1,291 residents, or 329 persons of school age (6-15 years), which set it apart advantageously from other regions in the Empire. However, its low literacy figures (16.9 %) placed it among the three worst-performing regions in this respect, along with Podolia and Kharkov Governorates (Table 1).

Males in the governorate had higher literacy levels than females (27.7 % and 6.3 %, respectively), which was in harmony with tradition there. A similar picture was observed with the region's urban (39.8 %) and rural residents, with urban females, again in line with tradition, posting higher literacy levels (27.7 %) than their rural counterparts.

Low literacy levels (14.5 %) were posted by Ukrainians in the region, who made up the majority of its population (92.9 %).

Age-wise, the way in literacy level was led in this region by younger residents, especially urban residents and males, with three-fourths of the region's urban youth aged 10-19 being literate, compared with half among females. With the older age groups, the figure was smaller among both males (a little over half) and females (one-fifth). A similar trend was observed in the region's uyezds (Vseobshchaya perepis', 1904e: XXXI).

Taurida Governorate. The literate portion of this region's population was not very large (27.8 %). The region did not have a very large number of literate urban residents either (less than half). On a side note, literacy levels were typically higher in those uyezds of the Empire where the population was distributed more diversely and evenly between multiple ethnicities. For instance, uyezds dominated by a particular ethnographic group (mainly Slavs – ethnic Russians and Ukrainians) tended to have lower literacy levels than other uyezds. A good example is Dneprovsky Uyezd, where Slavs accounted for over 90 % of the population. This uyezd had the lowest literacy levels in the governorate, while the highest literacy levels in Taurida Governorate were registered in Perekopsky Uyezd, where the population was evenly comprised of a diversity of ethnicities (ethnic Russians, Ukrainians, Germans, and Tatars).

Males and females in the region, too, had relatively low literacy levels, with there being at the time twice as many literate males as females (36.9 % and 17.8 %, respectively) (Table 1). Across the region's uyezds, the gap was over double.

In terms of the ethnic criterion, the region, tellingly, had fewer literate residents among ethnic Russians and Ukrainians than among members of other ethnic groups. Specifically, the literacy figures in Taurida Governorate by ethnicity were as follows: Ukrainians – 30.9 % for males and 6.4 % for females (Table 3); ethnic Russians – 41.6 % and 20.2 %, respectively; Germans – 68.3 % and 67.0 %; Jews – 64.9 % and 43.6 % (Vseobshchaya perepis', 1904f: XIX).

Kharkov Governorate. This was one of the worst-performing regions in literacy, where, as in all of the remaining governorates, the situation with female literacy was pretty dismal (Table 1). The gap in literacy level between males and females was smaller in the region's cities than in uyezds there. In the cities, the proportion was 1/1.9, while in the uyezds it was 1/5. The most "educated" cities in this region were Kharkov (52.5 %), Chuguyev (41.8 %), and Sumy (40.5 %) (Vseobshchaya perepis', 1904g: XII).

As in Poltava Governorate, the state of education in this region was characterized by major gaps in literacy level through the lens of age and regional characteristics. Urban youth exhibited relatively high literacy levels. There was parity in literacy level between urban males and females. On the other hand, the gap was wider among older residents and outside the region's cities.

Kherson Governorate. Among the Ukrainian governorates, Kherson Governorate stood out as one of the most "educated" (25.8 %), second only to Taurida Governorate (Table 1). The gap in literacy level between males and females in this region was not as large as in other regions. The number of literate females in this governorate (16.3 %) was nearly twice the number of literate females in most of the remaining governorates, except for Taurida Governorate.

In this region, too, the state of education was characterized by gaps in literacy level between urban and rural residents, including through the lens of age (similar to the situation in Poltava and Kharkov Governorates).

In line with tradition and with the state of affairs in other Ukrainian governorates, the way in education level was led in this region by members of the clergy and nobility (Table 2). Among males, the way was led by members of the clergy and hereditary nobility, and among females – by both hereditary and personal nobles. Most of the region's educated residents were graduates of secondary educational institutions (especially, among females), while graduates of higher military educational institutions constituted the minority of its educated residents (Vseobshchaya perepis', 1904h: XIV). Of particular note is the fact that, relative to other regions of Ukraine, the region had a fairly large number of university graduates, especially among the nobility, as well as among members of the urban estate and peasantry (Table 3).

Chernigov Governorate. Similar to the rest of the Ukrainian governorates, the state of education in Chernigov Governorate was characterized by low literacy rates (Table 1). The way in this respect was led by younger citizens, males, and urban residents. In this region, females living in uyezds had somewhat higher literacy levels than those living in cities. Things were opposite with males, as was the case in each of the other Ukrainian governorates (Vseobshchaya perepis', 1904i: XXII). Particularly abysmal was the situation with education among the region's peasantry, with Chernigov Governorate joining Poltava Governorate in the worst performer category relative to Ukraine's other regions (1.7% and 1.5%, respectively) (Table 2).

Volyn Governorate. Overall, the state of education in this governorate was characterized by the same processes as in the rest of the Ukrainian governorates in terms of the gender, regional, and age aspects. A distinctive characteristic of education in Volyn Governorate is the Orthodox Christian population posting a low literacy level – 11.6 %, with females performing very poorly in this respect – 3.7 %. Members of other denominations in the region exhibited higher literacy levels, which is the case with females as well (Protestants – 38.1 % (females – 36.1 %); Jews – 32.8 % (females – 21.6 %)). Of particular note is that within the governorate's Muslim population females posted higher literacy levels than males (46.6 % versus 26.6 %). Absurd as it may seem to some, this is due to the fact that most of the region's Muslim females belonged to a russified Tatar colony, while its male Muslim population was dominated by men coming from Eastern governorates who were not permanent residents in the region, most of whom had low literacy levels" (Vseobshchaya perepis', 1904a: XIV).

Among the ethnic groups in Volyn Governorate, the way in education level was led by Czechs (59 %), followed by Germans (37.8 %), ethnic Russians (37 %), Jews, Poles, and Tatars, with Ukrainians, who accounted for 70 % of the governorate's population, bringing up the rear (9.2 %) (Vseobshchaya perepis', 1904a: XIV).

5. Conclusion

The literacy and education levels of residents of Ukrainian (and other) governorates within the Russian Empire can be explored based on various statutory documents (e.g., those containing criminal justice or conscription statistics) and statistical sources (e.g., censuses). The research reported in this paper was based on literacy data from the Russian Imperial Census of 1897.

Literacy and education levels in Ukrainian governorates within the Russian Empire were governed by a number of interconnected factors (criteria), including regional characteristics, gender, age, estate, ethnicity, and religious affiliation.

In terms of the gender criterion, the percentage of literate females in Ukrainian governorates was significantly lower than that of males. Overall, this gap was as large as threefold (and even sixfold). This picture was consistent across the governorates.

This state of affairs can be attributed to a traditionally male-dominated environment in those regions at the time. Female education remained a neglected topic up until the mid-19th century, when women's push for equal education opportunities with men gained momentum.

In terms of the age criterion, the way in literacy level was led by younger residents (especially in cities), who outperformed their middle-aged counterparts and were ahead of senior residents by a wide margin. The picture was even worse in rural areas.

Essentially, there were a few other factors behind the age and regional differences in literacy and education levels in these regions, like, for instance, the actual need for literacy and the intensity of socio-cultural life in a region. In a sense, the actual environment acted as a driver of the development of education and literacy, with some "illiterate" regions exhibiting increased growth in literacy levels as a result of literacy-boosting measures being implemented on a mass scale.

As far as the regional criterion, urban residents had much higher literacy and education levels than their rural counterparts. What is more, while differences in literacy and education levels between urban males and females and between younger and older residents were just obvious, such differences were abysmal in rural areas.

In the context of exploring literacy and education levels in the regions through the lens of religion, ethnicity, and social background, it should be noted that the bulk of the population in those areas was made up of Orthodox Christian peasants. Statistics indicate that this particular segment posted the lowest percentage of literate residents, with the Orthodox Christian population trailing behind all major religious communities within Ukrainian governorates – Old Believers, Catholics, and especially Jews and Protestants. Even among females, the gaps were very wide. For instance, in Podolia Governorate, 71.4 % literacy among Protestant females contrasted with 4 % literacy among Orthodox Christian females.

The bulk of the Ukrainian population being made up of peasants (e.g., 77.8 % in Kiev Governorate and 85.9 % in Chernigov Governorate) was one of the key factors that predetermined the areas' low literacy and education rates. Peasantry remained the least literate social group – especially, its female members. Very few peasants had a primary, not to mention secondary or higher, education.

The most literate and educated social group was made up of members of the clergy and nobles, most of whom had a gymnasium education, while significantly fewer had a university one. Very few female nobles had a university diploma.

In essence, the state of literacy and education in Ukrainian governorates within the Russian Empire was a direct consequence of the education policy pursued by the government through most of the period prior to the conduct of the Russian Imperial Census of 1897.

The two key reasons behind the governorates' overall low literacy and education rates are as follows: 1) the government having paid insufficient attention to public education for a long period of time (it was not before the reign of Emperor Alexander II that the Russian government undertook systematic transformations to democratize and humanize the country's education system); 2) schooling not being a highly valued tradition with the actual population, with most regarding the practice of education as redundant.

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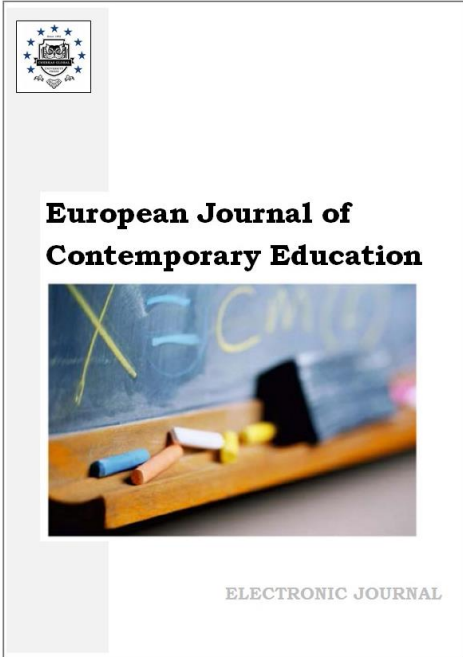
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The Development of the Regulatory Framework of the Caucasus Educational District in the Second Half of the 19th century

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Abstract

This paper explores the development of the regulatory framework of the Caucasus Educational District in the second half of the 19th century. Consideration is given to instruments on both general issues and specific issues dealing with secondary, lower, primary, and private education.

The study's source base relies on a whole raft of legislative materials, including regulations, instructions, statutes, circular proposals, and rules. These documents were published both as part of collections of documents on issues related to the system of public education in the Caucasus Educational District and separately. The study's methodology is grounded in the principle of systematicity and the chronological principle. The use of the former helped to systematize legislative and regulatory instruments into two major groups – those on general issues and those dealing with secondary, lower, primary, and private education specifically. The use of the latter helped to examine the development of the District's regulatory framework in its chronological sequence.

The author's conclusion is that in the second half of the 19th century the Caucasus Educational District witnessed the process of unification of the regulatory framework regulating the educational process in the region. In the period from the late 1860s to the early 1870s, the government implemented in the Caucasus a set of educational standards used in the European part of the Russian Empire. These standards, which covered secondary, lower, primary, and private

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education, played an overall large role in enhancing the quality of education offered by educational institutions in the region.

Keywords: development, statutory instruments, educational institutions, regulation, statute, Caucasus Educational District, Russian Empire, second half of the 19th century.

1. Introduction

The second half of the 19th century was a time of serious changes for the Caucasus Educational District, with the Caucasus War being over and the region beginning to witness brisk development in its public education sector. As early as 1870, the Caucasus switched to the educational standards of the European part of the Russian Empire, and it did not take too long for that to have a positive effect in terms of the quality and accessibility of education in the region. This paper explores the development of the regulatory framework of the Caucasus Educational District in the second half of the 19th century.

2. Materials and methods

The study's source base relies on a whole raft of legislative materials, including regulations, instructions, statutes, circular proposals, and rules. These documents were published both as part of collections of documents on issues related to the system of public education in the Caucasus Educational District and separately.

The study's methodology is grounded in the principle of systematicity and the chronological principle. The use of the former helped to systematize legislative and regulatory instruments into two major groups – those on general issues and those dealing with secondary, lower, primary, and private education specifically. The use of the latter helped to examine the development of the District's regulatory framework in its chronological sequence.

3. Discussion

The regulatory framework of the Caucasus Educational District is a fairly narrow subject in historical-legal research. It has been mostly investigated in the context of exploring the system of public education in the prerevolutionary Caucasus.

Specifically, N.A. Shevchenko identifies in 'The Making of the System of Public Education in the Caucasus (1802–1917): Distinctive Features' three different periods in the development of the education sector in the prerevolutionary Caucasus: 1) 1802–1834 (the period of its making); 2) 1835–1871 (the period when attempts were made to centralize the educational process); 3) 1872–1917 (the period when the educational process was adjusted to meet the standards of the Russian Empire) (Shevchenko et al., 2016: 364). An insight into the effectiveness of the system of public education in the Caucasus is offered in the research by O.V. Natolochnaya, which explores the development of the Caucasus Educational District in the period 1847–1917 and examines the key issues in that process (Natolochnaya et al., 2021; Natolochnaya et al., 2022).

Some attention to the subject is given in T.A. Magsumov's 'The Public Education System in the Caucasus in the 1850s: The Unification and Regulation of the Educational Process' (Magsumov et al., 2018).

Valuable insight into the system of public education in the prerevolutionary Caucasus has been provided by the following researchers: A.A. Cherkasov (Cherkasov et al., 2020; Cherkasov et al., 2020a), A.M. Mamadaliev (Mamadaliev et al., 2021; Mamadaliev et al., 2021a; Mamadaliev et al., 2021b), K.V. Taran (Taran et al., 2021), and V.S. Molchanova (Molchanova et al., 2019).

4. Results

The regulatory framework of the Caucasus Educational District was divided into instruments on general issues (i.e., legislative instruments regulating the entire educational process) and those on specific issues (i.e., legislative instruments covering a specific education level (secondary, lower, and primary). Each of these groups is examined below.

4.1. Instruments on general issues

At the cusp between the 1860s and 1870s, the government released 'The Rules for Special Examinations for Male and Female Teachers in Lower Schools'. This document covered the

following categories: teachers in uyezds and urban schools; home teachers; teachers in parish and primary public schools; teachers in private primary educational institutions ([Pamyatnaya knizhka, 1879: 42-61](#)).

On November 12, 1868, the Emperor passed into law ‘The Regulation on Caucasian Students in the Empire’s Higher and Vocational Educational Institutions’. This document was composed of three chapters. Chapter 1 included the following information: number of students; distribution of students across educational institutions; student oversight. Chapter 2 covered student admission. Chapter 3 covered the obligations and rights of Caucasian students and the benefits they were entitled to upon graduation. The document was comprised of 29 clauses ([Polozhenie o kavkazskikh..., 1869: 1-10](#)).

On March 7, 1869, the government released ‘The Circular Proposal of the Trustee of the Educational District to the Heads of Educational Institutions on the Fundamental Libraries in Them’, and on January 23, 1874, it released ‘The Circular Proposal of the Trustee of the Educational District to the Heads of Educational Institutions on the Inspection of State-Owned Assets in Them’. These prescribed the need to pay special attention to the condition of the libraries at educational institutions and directed that a report on their condition be submitted by February 1 of each year ([Pamyatnaya knizhka, 1879: 79-80](#)).

On November 22, 1873, the Emperor passed into law ‘The Rules for the Use of Uniform Instruments for Gymnasiums, Progymnasiums, and Real Schools and the Organization of the Educational Process in the Caucasus’. Pursuant to this document, the secondary education sector in the Caucasus was to operate now in accordance with the standards of the Ministry of Public Education – i.e., no longer based on regional regulations for this sector ([Pamyatnaya knizhka, 1879: 5-7](#)).

Around the same time, the government passed into law ‘The General Instruction for District Inspectors and Other Persons Dispatched to Inspect Educational Institutions’. This document regulated the entire cycle of educational-economic inspection of educational institutions in the Caucasus Educational District. Comprised of 35 clauses, it covered general and specific issues, including educational, moral, and economic ones ([Pamyatnaya knizhka, 1879: 8-19](#)).

On May 4, 1874, the Minister of Public Education passed into law ‘The Rules for Imposing Penalties on Students’. This document, comprised of 13 clauses, was divided into two sections – the general one and the one dealing with actual penalties ([Pamyatnaya knizhka, 1897: 20-27](#)).

Around the same time, the government passed into law ‘The Rules for Special Examinations for Teachers and Educators in Progymnasiums and Gymnasiums’. This document was drawn up following the State Council’s passing into law on April 22, 1868, of a regulation on the rules for special examinations for educators. This document, comprised of 36 clauses, even included exam report forms ([Pravila dlya spetsial'nykh..., 1868: 28-41](#)).

On February 6, 1878, the State Council released a document entitled ‘On the Procedure for Classifying Schools to Level 4 of the Educational Institutions Classification in Relation to Concessions Regarding Military Service’ ([Pamyatnaya knizhka, 1879: 77](#)).

Besides, there were issued a whole range of other types of regulatory documents, like, for instance, the circulaire of the Ministry of Internal Affairs ‘On the Publication of For-Sale Advertisements in Capital-Based Newspapers’ ([Pamyatnaya knizhka, 1879: 114](#)), the real estate-related document ‘The Draft Model Contract for the Hire of Premises to Be Used to House Government Institutions’ ([Pamyatnaya knizhka, 1879: 122-124](#)), the circular proposal ‘On Having no Saloons Near Educational Institutions’ ([Pamyatnaya knizhka, 1879: 125-127](#)), and the circular of the Trustee of the Caucasus Educational District ‘On Structuring Annual Reports on the Condition of Educational Institutions’ ([Pamyatnaya knizhka, 1879: 156-170](#)).

4.2. Instruments on specific issues

4.2.1. One of the documents dealing with secondary education in the region was ‘The Regulation on Female Gymnasiums and Progymnasiums under the Purview of the Ministry of Public Education’, passed into law by the Emperor on May 24, 1870. The document was comprised of general provisions, the educational part, the economic part (this included state aid), and the part on the benefits of attending female gymnasiums and progymnasiums. It consisted of 45 clauses ([Polozhenie o zhenskikh..., 1870: 1-12](#)).

On May 31, 1872, the Emperor passed into law 'The Regulation on Teacher's Institutes'. The document was comprised of six parts (general provisions; staff; student body; educational process; Pedagogical Council; benefits of attending teacher's institutes). It consisted of 58 clauses ([Pamyatnaya knizhka, 1879: 312-320](#)).

On July 30, 1871, the Emperor passed into law 'The Statute for Gymnasiums and Progymnasiums under the Purview of the Ministry of Public Education'. This document consisted of three chapters and 132 clauses. The first chapter ('General Provisions') covered the following: objectives; length of study; siting of educational institutions; educational process; Pedagogical Council. The second chapter was devoted to boarding schools at gymnasiums and progymnasiums. The third chapter covered the benefits of attending gymnasiums and progymnasiums ([Ustav gimnazii..., 1871: 1-24](#)). Later on, the government worked out, based on this statute, 'The Rules for Overseeing the Operation of Boarding Schools at Gymnasiums and Progymnasiums'. The purpose of boarding schools was to assist parents who were unable to educate their children at home. This document consisted of seven parts and 72 clauses and included official forms for various purposes ([Pravila po zavedyvaniyu..., 1876: 1-25](#)).

The following year, on May 15, 1872, the Emperor passed into law 'The Statute for Real Schools under the Purview of the Ministry of Public Education'. This document consisted of three chapters and 96 clauses. It had a similar structure to 'The Statute for Gymnasiums and Progymnasiums' ([Ustav real'nykh uchilishch..., 1872: 18-44](#)).

On December 8, 1872, the Minister of Public Education passed into law 'The Rules for Examinations for Students in Gymnasiums and Progymnasiums under the Purview of the Ministry of Public Education' ([Pamyatnaya knizhka, 1879: 205-238](#)). This document was comprised of four parts and 74 clauses.

On August 5, 1877, the Minister of Public Education passed into law 'The Instruction for Form Teachers'. This document consisted of three parts and 31 clauses ([Pamyatnaya knizhka, 1879: 243-251](#)).

4.2.2. One of the documents dealing with lower education in the region was 'The Regulation on Teacher's Seminaries', passed into law on May 24, 1871. The document consisted of five chapters (general provisions; staff; Pedagogical Council; student body; educational process) and 28 clauses ([Polozhenie..., 1871: 1-8](#)).

A few years later, on July 7, 1875, the Minister of Public Education passed into law 'The Instruction for Teacher's Seminaries', intended to regulate the operation of educational institutions of this kind. The document covered the following: obligations of the Principal; obligations of teachers; obligations of the Pedagogical Council; obligations of students; student oversight; educational process. It consisted of 132 clauses. A significant portion of the document was devoted to the curriculum ([Instruktsiya..., 1875: 2-54](#)).

Around the same time, on August 5, 1875, the Minister of Public Education passed into law 'The Rules for Temporary Pedagogical Courses for Male and Female Teachers in Primary Public Schools'. This document consisted of 33 clauses ([Pravila..., 1875: 3-11](#)).

A document that remained in use in the Caucasus is 'The Statute for Uyezd and Parish Schools', passed into law back on December 8, 1828 ([Pamyatnaya knizhka, 1879: 398-405](#)). Note that it had been officially replaced on May 31, 1872, by 'The Regulation on Urban Schools', which consisted of 52 clauses ([Pamyatnaya knizhka, 1879: 406-415](#)).

4.2.3. On issues of primary education

The main document regulating the activity of primary schools in the region was 'The Regulation on Primary Public Schools', passed into law by the Emperor on May 24, 1874. The document was comprised of two sections. The first section covered the objectives for the primary education sector, the various types of primary public schools, and the educational process in the sector. The second section covered the administration of primary public schools. The document was divided into articles and numbered 43 items ([Polozhenie o nachal'nykh..., 1874: 1-10](#)).

That same year, the government passed into law 'The Instruction for Two-Grade and One-Grade Rural Schools under the Purview of the Ministry of Public Education', which was comprised of 91 clauses ([Pamyatnaya knizhka, 1879: 432-448](#)). On a side note, two-grade and one-grade rural schools began to be opened by the Ministry in Russia starting on May 29, 1869. Schools of this kind aimed to provide children in rural areas with a complete elementary education.

This group included certain secondary documents as well (e.g., ‘The Rules for Overseeing the Operation of Parochial Armenian Gregorian Schools’, comprised of just three clauses ([Pamyatnaya knizhka, 1879: 452](#)), and ‘On Home Tutors, Male Teachers, and Female Teachers’, passed into law by the Emperor on May 23, 1868 ([Pamyatnaya knizhka, 1879: 463-466](#))).

4.2.4. On issues of private education

One of the backbone documents regulating the operation of private educational institutions in the region was ‘The Rules for Private Educational Institutions in the Caucasus Educational District’. This document was passed into law on April 13, 1879, by the Tsar's Viceroy in the Caucasus. It consisted of three parts (classification of private educational institutions; procedure for opening and closing private schools; organization of private schools). The document was comprised of 23 clauses ([Pravila..., 1879: 1-10](#)).

5. Conclusion

In the second half of the 19th century, the Caucasus Educational District witnessed the process of unification of the regulatory framework regulating the educational process in the region. In the period from the late 1860s to the early 1870s, the government implemented in the Caucasus a set of educational standards used in the European part of the Russian Empire. These standards, which covered secondary, lower, primary, and private education, played an overall large role in enhancing the quality of education offered by educational institutions in the region.

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The System of Public Education in Penza Governorate in the second half of the 19th and early 20th centuries. Part 2

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Abstract

This set of articles explores the development of the system of education in Penza Governorate, a region in the Russian Empire, in the second half of the 19th and early 20th centuries (through to 1917).

The present paper is the second part of the series. It examines the timeframe from 1855 to 1894, i.e. the periods of the reigns of Alexander II (“Alexander the Liberator”) and Alexander III (“Alexander the Peacemaker”). The paper relies on the relevant statistical data to analyze the effect of the reforms of Alexander II and the counter-reforms of Alexander III on the development of the system of education in Penza Governorate.

The primary source used in this study was the so-called “memorandum books”. Use was also made of certain relevant reference materials (e.g., the so-called “address calendars”) and regulatory documents.

In terms of methodology, use was made of a set of traditional (the historical-comparative, historical-typological, historical-systematic, and historical-genetic methods) and nontraditional historical research methods (the historical-statistical method) and a set of general research methods (analysis of the literature and sources, synthetic analysis, systems analysis, and mathematical methods).

A statistical analysis conducted as part of this study revealed that the period under examination witnessed a sharp increase in the numbers of secondary (nearly 300 % in the 1870s and around 170 % in the 1880s) and primary educational institutions (from 109 (in 1866) to 542

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(by 1894)) in the region. Arguably, the explosive growth in the numbers of educational institutions and students in the region was associated with the liberal education reforms of Alexander II. In the 1880s, i.e. the period of the so-called “counter-reforms”, the region witnessed an increase not in the number of humanities-focused secondary educational institutions (gymnasiums and progymnasiums) but in the number of technical educational institutions (real, industrial, and tradesman’s schools), which was in keeping with the nation’s industrial boom and nascent technological revolution.

Keywords: system of public education, Penza Governorate, education in Penza Governorate, public schools.

1. Introduction

Penza Governorate was a relatively small administrative territorial unit situated in the heart of the Russian Empire. Primarily focused on arable farming, it had a population of about 1.5 million as at 1897. As Penza Governorate the area existed between 1796 and 1797 and later between 1801 and 1928. Its capital was Penza.

The present paper, which is the second part of the work, analyzes the timeframe from 1855 to 1894. What is interesting about this period of history is that it witnessed the reign of two Russian emperors who pursued diametrically opposite policies on education, each of which had a distinctive effect on the development of the region’s education system.

2. Materials and methods

Primary reliance was on a set of relevant prerevolutionary materials. The key sources were the period’s memorandum books (e.g., [Pamyatnaya knizhka, 1854](#) and [Pamyatnaya knizhka, 1884](#)), address calendars (e.g., [Adres-kalendar', 1869](#)), reference books (e.g., [Spravochnaya kniga, 1893](#) and [Spravochnaya knizhka, 1858](#)), and collections of historical, geographical, and statistical materials on Penza Governorate (e.g., [Sbornik..., 1869](#)).

Use was also made of the following periodicals: the journals *Narodnoe Obrazovanie* ([NO, 1898](#); [NO, 1900](#)), *Narodnaya Shkola* ([HIII, 1869](#)), *Obrazovanie* ([Obrazovanie, 1892](#); [Obrazovanie, 1899](#); [Obrazovanie, 1908](#); [Obrazovanie, 1909](#)), *Pedagogichesky Sbornik* ([PS, 1872](#); [PS, 1890](#)), and *Pedagogichesky Listok* ([PL, 1873](#); [PL, 1897](#)) and the newspapers *Nizhny Novgorod Governorate Gazette* ([NGV, 1865](#)) and *Penza Governorate Gazette* ([PGV, 1869](#); [PGV, 1871](#)).

Valuable information for this study was obtained from the following sources of a regulatory nature: ‘The Regulation on Female Schools under the Purview of the Ministry of Public Education’ ([Polozhenie o zhenskikh uchilishchakh, 1861](#)), ‘A Digest of Ordinances of the Penza Governorate Zemstvo Assembly (1865–1911)’ ([Postanovleniya Penzenskogo..., 1911](#)), a set of collections of ordinances by the Ministry of Public Education (e.g., [Postanovleniya MNP, 1865](#); [Postanovleniya MNP, 1876](#); [Postanovleniya MNP, 1877](#)), ‘A Collection of Ordinances and Directives on Gymnasiums and Progymnasiums under the Purview of the Ministry of Public Education’ ([Postanovleniya po gimnaziyam, 1874](#)), and ‘The Complete Collection of Laws of the Russian Empire’ ([PSZRI, 1884](#); [PSZRI, 1914](#)).

In terms of methodology, use was made of both historical research methods (traditional and nontraditional) and general research methods.

The following traditional historical research methods were employed:

– historical-comparative (the statistical data on education in Penza Governorate were compared both chronologically (at different time points within the period under examination) and geographically (with data for other areas within the Russian Empire));

– historical-typological (the region’s educational institutions were classified by level);

– historical-systematic (the statistical data were analyzed through the prism of the period’s historical situation);

– historical-genetic (the effect of the government’s decisions on the development of the region’s education sector was investigated).

The only nontraditional historical research method employed in this part of the work was the historical-statistical method (a quantitative analysis of the region’s educational institutions and student body was conducted).

The general research methods employed here were analysis of the literature and sources, synthetic analysis, systems analysis, and mathematical methods.

The use of the above methods in an integrated manner helped conduct the research as objectively and comprehensively as possible.

3. Discussion

Overall, there is a lack of research on the education system in Penza Governorate.

A detailed historiographical survey of the literature was attempted in the first part of the work. The present paper will only focus on the works analyzing the system of education in Penza Governorate in the timeframe 1855–1894.

In the prerevolutionary period, the subject was explored by the following scholars: A.V. Dubrovsky, who analyzed statistical data on public education in European Russia (including Penza Governorate) in 1872–1874 ([Dubrovskii, 1879](#)); N. Ezersky, who analyzed the didactic and instructional content of education in zemstvo schools ([Ezerskii, 1910](#); [Ezerskii, 1912](#); [Ezerskii, 1913](#)); P.P. Zelenetsky, who wrote a historical essay on the operation of Penza's first gymnasium in the period 1804–1871, where he personally worked as an inspector ([Zelenetskii, 1889](#)); P. Kazantsev, who explored the issue of optimizing didactic content in the education sector in Penza Governorate ([Kazantsev, 1912](#)); K. Korol'kov, who investigated the role and place of parochial schools in the system of education in Penza Governorate ([Korol'kov, 1898](#)); I.F. Kuz'min, who provided a brief description of Penza Governorate, including its education sector ([Kuz'min, 1895](#)).

In the Soviet period, the topic was investigated by the following scholars: I.M. Bogdanov, who explored the development of literacy and education in prerevolutionary Russia ([Bogdanov, 1964](#)); E.D. Dneprov, who investigated the historiography of pedagogy in prerevolutionary Russia ([Dneprov, 1979](#)); A.G. Rashin, who explored issues of literacy and public education in prerevolutionary Russia ([Rashin, 1951](#)); V.Z. Smirnov, who investigated issues of discipline in prerevolutionary secondary educational institutions and explored progressive ideas in Russian pedagogy ([Smirnov, 1956](#); [Smirnov, 1963](#)). A lot of useful information on the subject is available in 'Essays on the History of the Penza Region (Spanning the Period from the Earliest Times to the Late 19th Century)' ([Ocherki..., 1973](#)), 'Essays on the History of the Education and Pedagogical Thought in the Nations of the USSR (Spanning the Second Half of the 19th Century)' ([Ocherki..., 1976](#)), and 'Essays on the History of the Education and Pedagogical Thought in the Nations of the USSR (Spanning the Period from the Late 19th to Early 20th Centuries)' ([Ocherki..., 1991](#)).

Among the contemporary researchers with a contribution to the study of this subject, of particular note are the following: L.D. Goshulyak, who analyzed the making and development of the zemstvo concept of public education in Penza Governorate and the development of the nation's gubernia educational complex through the example of Penza Governorate in the prerevolutionary period ([Goshulyak, 1995](#); [Goshulyak, 2002](#)); O.V. Dunayeva, who investigated the social composition of vocational educational institutions and the development of vocational education as a whole in Penza Governorate ([Dunaeva, 1999a](#); [Dunaeva, 1999b](#)); O.A. Kostyukova, who explored the development of gymnasium education in Penza Governorate ([Kostyukova, 2006](#)); O. Makarkina and N.I. Polosin, who investigated issues related to female education in Penza Governorate ([Makarkina, Polosin, 1998](#)); V.N. Parshina, who explored the development and key characteristics of female education in Penza Governorate ([Parshina, 2007](#); [Parshina, 2008](#); [Parshina, 2010](#)); N.N. Chetvertkova, who investigated the system of public education in Penza Governorate in the period 1900–1905 based on materials from the Penza Governorate Gazette newspaper ([Chetvertkova, 2007](#)). A general insight into the region's education system is provided in 'Essays on the History of Public Education in the Penza Region' ([Ocherki..., 1997](#)) and in 'The Penza Region in the History and Culture of Russia' ([Penzenskii krai, 2014](#)).

4. Results

The study's chronological range is 1855–1894, which includes the periods of the reigns of Alexander II ("Alexander the Liberator") and Alexander III ("Alexander the Peacemaker"). These two monarchs pursued two diametrically opposite policies on education. Of particular interest is to explore the effect the reforms of Alexander II and the counter-reforms of Alexander III had on the development of the system of education in Penza Governorate.

In terms of classifying the region's educational institutions, the work takes as a basis the four-level system employed in prerevolutionary Russia, which was comprised of the higher, secondary, lower, and primary education sectors.

The higher education sector included universities and institutes, the secondary one – gymnasiums and progymnasiums, real schools, higher and secondary technical schools, and teacher's institutes and seminaries, the lower one – uyezd, urban, and rural schools, industrial schools, tradesman's schools, and Mariinsky schools, and the primary one – primary schools, rural schools, and parochial schools.

As at 1854, Penza Governorate had 3 ecclesiastical and 25 secular educational institutions, with a combined enrollment of 2,713 ([Pamyatnaya knizhka, 1854](#)).

The 1858 Reference Book for Penza Governorate contains 69 pages (exclusive of the alphabetical index at the end of it). It devotes just a few pages to the region's education system, mentioning a noble institute, a gymnasium, an institute for noble maidens, a private boarding school, an ecclesiastical seminary, and three uyezd schools (the ones in Penza, Nizhny Lomov, and Krasnoslobodsk) ([Spravochnaya knizhka, 1858](#)).

The staff roster at Penza Noble Institute included the following positions: Honorary Trustee; Principal (holder of the rank of state councilor); Physician (collegiate assessor); Inspector (collegiate councilor); Teacher of Religion (protoiereus); Senior Teachers (collegiate, court, and titular councilors); Junior Teachers (titular councilors and unranked); Overseers (collegiate secretaries and titular councilors) ([Spravochnaya knizhka, 1858: 23-24](#)).

The staff roster at Penza Gymnasium included the following positions: Honorary Trustee (normally, a military retiree of noble descent; Poruchik N.P. Obukhov held this post at both the Institute and the Gymnasium); Principal (state councilor); Inspector (collegiate councilor); Teacher of Religion (priest); Senior Teachers (court and collegiate assessors); Junior Teachers (titular councilor, collegiate secretaries, and unranked) ([Spravochnaya knizhka, 1858: 24-25](#)).

At the Institute for Noble Maidens and the private Boarding School, instruction was conducted by pedagogues from the Noble Institute and the Gymnasium.

The administrative staff roster at Penza Ecclesiastical Seminary included the following positions: Rector (archimandrite); Inspector (archimandrite); Steward (protoiereus); Secretary (professor). Its teaching staff roster included the following positions: Professor of Civil History (master); Teacher of Philosophy (candidate); Rector's Assistant in Theology (professor, master); Teacher of Philology (candidate); Professor of Scripture Reading (master); Professor of Ecclesiastical and Biblical History (master); Professor of Mathematics (master); Teacher of Mathematics; Teacher of Natural History and Agriculture; Teacher of Medicine; Attending Physician ([Spravochnaya knizhka, 1858: 57](#)).

As at 1858, Penza Governorate had 3 uyezd schools: the one in Penza (staff: Rector; Inspector; teachers), the one in Nizhny Lomov (Supervisor; Inspector; Teachers), and the one in Krasnoslobodsk (Supervisor; Inspector; Teachers) ([Spravochnaya knizhka, 1858: 57](#)). Considering that instruction at these schools was conducted by students of the Institute and priests and that the school in Penza had openings for the positions of Rector and Inspector, one can venture the assertion that the region's education was understaffed at the time.

According to the 1864 Memorandum Book for Penza Governorate, the region had the following educational institutions at that time: a gymnasium offering surveying classes, a noble institute, 8 uyezd schools, 9 parish male schools, a seminary, and 3 uyezd ecclesiastical schools. Females had access to the following educational institutions in the region: a private boarding school, 2 first-rate female schools, 3 uyezd female schools, and a female ecclesiastical school. In addition, there were 60 rural schools for state peasants under the purview of the Department of State Assets, 72 rural schools for formerly private peasants, and 54 Muslim schools. The secular male schools had a combined student body of 2,003, the secular female ones – 443, the ecclesiastical male ones – 1,187, the ecclesiastical female ones – 15, the state peasant ones – 2,421, the formerly-private peasant ones – 504, and the Muslim ones – 2,926. As at 1862, Penza Governorate had a combined student body of 9,499 (9,041 males and 458 females). There was 1 male student per 68 male residents and 1 female student per 1,110 female residents in the region, which, overall, had 1 student per 138 residents. In terms of estate composition, the region had 1 male student per 1 person among nobles and functionaries, per 5 persons among the clergy, per 112 persons among state peasants, per 580 persons among formerly private peasants, and per 15 persons among Tatars ([Pamyatnaya knizhka, 1864: 33-34](#)).

According to the Memorandum Book for Penza Governorate for the period 1865–1867, as at 1866 the region had in operation the following educational institutions under the purview of the

Penza Directorate of the Ministry of Public Education:

1) In the city of Penza:

- Penza Governorate Classical Gymnasium, with a teaching staff of 20 and an enrollment of 311 (all males) ([Pamyatnaya knizhka, 1867: 200](#));
- Penza Uyezd School, with a teaching staff of 6 and an enrollment of 186 (males only) ([Pamyatnaya knizhka, 1867: 200](#));
- 2 parish schools, with a combined teaching staff of 12 and a combined enrollment of 238 (all males) ([Pamyatnaya knizhka, 1867: 200](#));
- 1 second-rate female school, with a teaching staff of 7 full- and 4 part-timers and an enrollment of 62 ([Pamyatnaya knizhka, 1867: 200](#));
- Madame Gofman's female boarding school, a private institution funded through tuition paid by students, with a teaching staff of 14 full- and 10 part-timers and an enrollment of 62 ([Pamyatnaya knizhka, 1867: 200](#));
- 3 private schools, funded through tuition paid by students, with a combined teaching staff of 6 and a combined enrollment of 17 (13 males and 4 females) ([Pamyatnaya knizhka, 1867: 200](#)).

2) In Penza Uyezd:

- 5 schools in state peasant villages, with a combined enrollment of 211 (204 males and 7 females) ([Pamyatnaya knizhka, 1867: 200](#));
- 8 schools in temporarily-obligated peasant villages, attended by boys only, of which 7 were publicly funded (221 students) and 1 was privately funded (60 students) ([Pamyatnaya knizhka, 1867: 201](#)).

3) In the city of Saransk:

- Saransk Uyezd School, with a teaching staff of 8 and an enrollment of 93 (all males) ([Pamyatnaya knizhka, 1867: 201](#));
- Saransk Parish Male School, with a teaching staff of 3 and an enrollment of 75 ([Pamyatnaya knizhka, 1867: 201](#));
- Saransk Parish Female School, with a teaching staff of 2 and an enrollment of 49 ([Pamyatnaya knizhka, 1867: 201](#));
- Rural Parish School, funded through dues collected from state peasants, with a teaching staff of 2 and an enrollment of 81 (all males) ([Pamyatnaya knizhka, 1867: 201](#)).

4) In Saransk Uyezd:

- 5 schools in state peasant villages, with a combined teaching staff of 5 and a combined enrollment of 211 (204 males and 7 females) ([Pamyatnaya knizhka, 1867: 201](#));
- 1 school in a temporarily-obligated peasant village, with a teaching staff of 1 and an enrollment of 10 ([Pamyatnaya knizhka, 1867: 201](#)).

5) In the city of Krasnoslobodsk:

- Krasnoslobodsk Uyezd School, with a teaching staff of 6 and an enrollment of 81 (all males) ([Pamyatnaya knizhka, 1867: 201](#));
- Krasnoslobodsk Parish Male School, with a teaching staff of 3 and an enrollment of 117 ([Pamyatnaya knizhka, 1867: 201](#));
- Krasnoslobodsk Parish Female School, with a teaching staff of 1 and an enrollment of 48 ([Pamyatnaya knizhka, 1867: 201](#));
- Krasnoslobodsk Rural School (under the purview of the Department of State Assets), funded through dues collected from state peasants, with a teaching staff of 2 and an enrollment of 35 (all males) ([Pamyatnaya knizhka, 1867: 201](#)).

6) In Krasnoslobodsk Uyezd:

- 8 male and 1 female schools, funded through dues collected from state peasants, with a combined teaching staff of 18 and a combined enrollment of 425 (414 males and 11 females) ([Pamyatnaya knizhka, 1867: 201](#));
- 3 schools in temporarily-obligated peasant villages, with a combined teaching staff of 3 and a combined enrollment of 110 ([Pamyatnaya knizhka, 1867: 202](#));
- 2 private schools, with a combined teaching staff of 2 and a combined enrollment of 47 (26 males and 21 females) ([Pamyatnaya knizhka, 1867: 202](#)).

7) In the city of Nizhny Lomov:

- Nizhny Lomov Uyezd School, with a teaching staff of 7 and an enrollment of 88 (all males) ([Pamyatnaya knizhka, 1867: 202](#));

– Nizhny Lomov Parish Male School, with a teaching staff of 3 and an enrollment of 61 ([Pamyatnaya knizhka, 1867: 202](#));

– Nizhny Lomov Parish Female School, with a teaching staff of 2 and an enrollment of 57 ([Pamyatnaya knizhka, 1867: 202](#)).

8) In Nizhny Lomov Uyezd:

– Golovinshchino Parish School, with a teaching staff of 3 and an enrollment of 85 (80 males and 5 females) ([Pamyatnaya knizhka, 1867: 202](#));

– 12 male and 1 female schools in state peasant villages, funded through dues collected from state peasants, with a combined teaching staff of 20 and a combined enrollment of 625 (590 males and 35 females) ([Pamyatnaya knizhka, 1867: 202](#));

– 2 schools in temporarily-obligated peasant villages, with a combined teaching staff of 3 and a combined enrollment of 67 ([Pamyatnaya knizhka, 1867: 202](#)).

9) In the city of Narovchat:

– Narovchat Uyezd School, with a teaching staff of 5 and an enrollment of 71 (all males) ([Pamyatnaya knizhka, 1867: 202](#));

– Narovchat Parish Male School, with a teaching staff of 3 and an enrollment of 50 ([Pamyatnaya knizhka, 1867: 202](#));

– Madame Sorokina's female boarding school, a private institution funded through tuition paid by students, with a teaching staff of 1 and an enrollment of 32 ([Pamyatnaya knizhka, 1867: 202](#)).

10) In Narovchat Uyezd:

– 12 male schools in state peasant villages, funded through dues collected from state peasants, with a combined teaching staff of 14 and a combined enrollment of 355 (337 males and 18 females) ([Pamyatnaya knizhka, 1867: 202](#)).

11) In the city of Insar:

– Insar Parish Male School, with a teaching staff of 3 and an enrollment of 62 ([Pamyatnaya knizhka, 1867: 203](#)).

12) In Insar Uyezd:

– 8 schools in state peasant villages, with a combined teaching staff of 12 and a combined enrollment of 324 (312 males and 12 females) ([Pamyatnaya knizhka, 1867: 203](#));

– 1 school in a temporarily-obligated peasant village, with a teaching staff of 2 and an enrollment of 79 (all males) ([Pamyatnaya knizhka, 1867: 203](#)).

13) In the city of Kerensk:

– Kerensk Zemstvo Parish Male School, with a teaching staff of 2 and an enrollment of 35 ([Pamyatnaya knizhka, 1867: 203](#));

– Kerensk Rural Male School (under the purview of the Department of State Assets), funded through dues collected from state peasants, with a teaching staff of 2 and an enrollment of 45 ([Pamyatnaya knizhka, 1867: 203](#)).

14) In Kerensk Uyezd:

– 5 schools in state peasant villages, with a combined teaching staff of 10 and a combined enrollment of 239 (237 males and 2 females) ([Pamyatnaya knizhka, 1867: 203](#));

– 1 school in a temporarily-obligated peasant village, with a teaching staff of 2 and an enrollment of 23 (all males) ([Pamyatnaya knizhka, 1867: 203](#)).

15) In the city of Chembar:

– Chembar Uyezd School, with a teaching staff of 6 and an enrollment of 70 (all males) ([Pamyatnaya knizhka, 1867: 203](#));

– Chembar Parish Male School, with a teaching staff of 3 and an enrollment of 63 ([Pamyatnaya knizhka, 1867: 203](#));

– Chembar Parish Female School, with a teaching staff of 2 and an enrollment of 30 ([Pamyatnaya knizhka, 1867: 203](#)).

16) Chembar Uyezd:

– 6 schools in state peasant villages, with a combined teaching staff of 8 and a combined enrollment of 282 (262 males and 20 females) ([Pamyatnaya knizhka, 1867: 204](#));

– 10 schools in temporarily-obligated peasant villages, with a combined teaching staff of 12 and a combined enrollment of 181 (all males) ([Pamyatnaya knizhka, 1867: 204](#));

– 3 private schools, with a combined teaching staff of 3 and a combined enrollment of 37 (30 males and 7 females) ([Pamyatnaya knizhka, 1867: 204](#)).

17) In the city of Mokshan:

– Mokshan Uyezd School, with a teaching staff of 6 and an enrollment of 37 (all males) ([Pamyatnaya knizhka, 1867: 204](#));

– Mokshan Parish Male School, with a teaching staff of 3 and an enrollment of 70 students ([Pamyatnaya knizhka, 1867: 204](#));

– Mokshan Rural Male School, funded through dues collected from state peasants, with a teaching staff of 1 and an enrollment of 28 ([Pamyatnaya knizhka, 1867: 204](#));

– Madame Bakulina’s school, a private institution funded through tuition paid by students, with a teaching staff of 1 and an enrollment of 9 (3 males and 6 females) ([Pamyatnaya knizhka, 1867: 204](#)).

18) In Mokshan Uyezd:

– 1 school in a temporarily-obligated peasant village, with a teaching staff of 1 and an enrollment of 25 ([Pamyatnaya knizhka, 1867: 204](#));

– 2 private schools, with a combined teaching staff of 2 and a combined enrollment of 20 (16 males and 4 females) ([Pamyatnaya knizhka, 1867: 204](#)).

19) In the city of Gorodishche:

– Gorodishche Uyezd School, with a teaching staff of 6 and an enrollment of 41 (all males) ([Pamyatnaya knizhka, 1867: 205](#));

– Gorodishche Parish Male School, with a teaching staff of 2 and an enrollment of 47 ([Pamyatnaya knizhka, 1867: 205](#)).

20) Gorodishche Uyezd:

– 12 male and 2 female schools in state peasant villages, with a combined teaching staff of 21 and a combined enrollment of 510 (436 males and 74 females) ([Pamyatnaya knizhka, 1867: 205](#)).

Overall, as at 1866 Penza Governorate had 145 educational institutions with a combined teaching staff of 301 and a combined enrollment of 6,464 (5,851 males and 613 females) ([Pamyatnaya knizhka, 1867: 205](#)).

The Memorandum Book for Penza Governorate for 1868 and 1869 has a separate section describing the rules for admission to Penza Classical Male Gymnasium. These rules reflect pretty well the changes that took place in Russia’s education system following the launch of the education reform. The document characterizes the Gymnasium as follows: “Pursuant to the imperial Statute of 1864, Penza Governorate Gymnasium is a classical educational institution with one ancient language, which is Latin. The Gymnasium has 7 grades and 3 parallel departments” ([Pamyatnaya knizhka, 1869: 59](#)).

It also states that “the Gymnasium is open to children of all social and religious backgrounds” ([Pamyatnaya knizhka, 1869: 59](#)), which was well in line with the spirit of the liberal reforms undertaken in the 1860s.

Education was not free, but there were exceptions. According to the 1869 Memorandum Book, “exemption from paying for education may be granted, at the discretion of the local Pedagogical Council, to children from disadvantaged families who deserve to be treated this way for their exemplary behavior and assiduity; it is, furthermore, to be noted that the total number of those exempt from paying for education cannot be more than 10 % of the entire student body” ([Pamyatnaya knizhka, 1869: 59-60](#)).

The rule whereby “students who have completed their designated program of study with honors such as a gold or silver medal will be eligible to work in civil service, regardless of their social background, and will be automatically promoted to Rank 14” ([Pamyatnaya knizhka, 1869: 60](#)) enabled even a person of humble birth to start building a successful career. Theoretically, a decision by the Pedagogical Council could make it possible for a son of a temporarily-obligated peasant to attend school free of charge and then gain entrance into the Table of Ranks with a gold or silver medal. However, no such cases are known to have taken place in the 1860s.

On September 22, 1869, Penza became home to the region’s first female gymnasium. The facility was open to “ladies of all social and religious backgrounds” ([Pamyatnaya knizhka, 1869: 67](#)).

By the end of 1869, Penza Governorate had 258 educational institutions with a combined teaching staff of 450 and a combined enrollment of 9,056 (8,241 boys and 815 girls) ([Pamyatnaya knizhka, 1869: 249](#)).

The Address Calendar and Memorandum Book for Penza Governorate for 1884, released during the reign of Alexander III, inform one of the following new educational institutions in Penza Governorate: a surveyor's school, male and female progymnasiums, a real school, a teacher's seminary, and a six-grade female diocesan school ([Pamyatnaya kniga, 1884: 30-38, 47](#)). As can be seen, the region witnessed a leap in its secondary education, with the number of institutions in this sector growing 3 times. A separate chapter in the Memorandum Book, 'Revisiting the Development of Literacy among Rural Residents in Penza Governorate', covers the development of education in the region's rural areas, 58 pages worth of detailed analysis of the development of the region's rural education sector from the early 1860s to the early 1880s. The chapter provides a significant amount of statistical information on various aspects of education in the region's rural areas, including sources of funding used and student body statistics. Such information is provided for individual uyezds and even specific schools in the region ([Pamyatnaya kniga, 1884: 217-274](#)). In addition, an insight is provided into how well each uyezd contributed to the development of the region's network of rural schools. The source notes the direct effect of the 1864 education reform on the development of the region's system of public education – "with the advent of zemstvo institutions, one has seen a vast improvement in literacy – that is an indisputable fact" ([Pamyatnaya kniga, 1884: 217](#)). Unfortunately, this source does not provide statistical information on lower and primary educational institutions in the region, unlike its previously published counterparts.

The 1889 Memorandum Book for Penza Governorate expands the roster of secondary educational institutions in the region, adding the following schools to it: F.E. Shvetsov's Tradesman's School, Technical Railway School, School of Horticulture, Zavivalovka Agricultural School, and Zemstvo Feldsher School ([Pamyatnaya knizhka, 1888: 7](#)).

As at the early 1890s, Penza Governorate had in operation the following secondary educational institutions ([Spravochnaya kniga, 1893: 71-74](#)):

- First Penza Male Classical Gymnasium;
- Second Penza Male Gymnasium;
- Penza Female Gymnasium;
- Saransk Female Progymnasium;
- Krasnoslobodsk Male Progymnasium;
- Penza Real School;
- Penza Teacher's Seminary;
- Penza Surveyor's School;
- Female Diocesan School;
- Penza F.E. Shvetsov's Tradesman's School;
- Penza Technical Railway School;
- School of Horticulture;
- Zavivalovka Agricultural School;
- Zemstvo Feldsher School;
- First Penza Ecclesiastical Male School;
- Second Penza Ecclesiastical Male School.

The network of urban schools within the region's lower-level sector of education included the following educational institutions ([Pamyatnaya knizhka, 1888: 149-151](#)):

- Krasnoslobodsk Urban Four-Grade School;
- Saransk Urban Four-Grade School;
- Nizhny Lomov Urban Four-Grade School;
- Insar Urban Four-Grade School;
- Kerensk Urban Three-Grade School;
- Chembar Urban Three-Grade School.

The region's lower education sector also included the following uyezd schools ([Pamyatnaya knizhka, 1888: 152](#)):

- Penza Uyezd School;
- Mokshan Uyezd School;
- Gorodishche Uyezd School;
- Narovchat Uyezd School.

As at January 1, 1893, there were 426 educational institutions in Penza Governorate ([Spravochnaya kniga, 1892: 5](#)). The statistical data are provided in [Table 1](#).

Table 1. Number of Educational Institutions in Penza Governorate by Type of School in the Period 1858–1893 ([Spravochnaya knizhka, 1854: 23-26, 57-58](#); [Pamyatnaya knizhka, 1864: 33-34](#); [Pamyatnaya knizhka, 1867: 200-205](#); [Pamyatnaya knizhka, 1869: 244-249](#); [Pamyatnaya kniga, 1884: 30-38, 47](#); [Pamyatnaya kniga, 1884: 145-152](#); [Spravochnaya kniga, 1893: 71-92](#)).

Year	Educational institutions				Number of students		
	Higher	Secondary	Lower	Primary	Boys	Girls	Total
1858	2	2	3 ¹	N/A	N/A	N/A	N/A
1862	1	2	26	186	9,041	458	9,499
1866	N/A	2	29	109	5,851	613	6,464
1869	N/A	3	29	226	8,241	815	9,056
1884	N/A	9	N/A	N/A	N/A	N/A	N/A
1889	N/A	15	10 ²	N/A	N/A	N/A	N/A
1893	N/A	16	10 ³	542	N/A	N/A	N/A

The following conclusions can be drawn based on the data in Table 1:

1) There was a sharp increase in the number of secondary educational institutions in the region between the 1870s and 1880s. In the 1870s, the growth was nearly 300 % (from 3 to 9), and in the 1880s the figure was around 170 % (from 9 to 15). Taking into consideration the counter-reforms undertaken in the 1880s, which by no means facilitated growth in the number of secondary and higher educational institutions in the region, one can venture the assertion that this brilliant result was wholly a consequence of the liberal reforms of Alexander II.

2) In the mid-1860s, the region witnessed an unaccountable drop in the number of primary educational institutions. The fact that the number of students dropped too (by 30%) leads one to consider the source data valid. The late 1860s witnessed an equally fast recovery in the number of schools in the region, with the figure growing subsequently at an exponential rate (from 109 in 1866 to 542 in 1894), which, too, can be regarded as a consequence of the education reform.

3) Overall, at the beginning of the period under examination, Penza Governorate had a fairly mediocre education system – even compared with the areas of the Kuban Cossack Host, Black Sea Governorate, and the then-newly incorporated areas of the Caucasus (e.g., [Cherkasov, 2011](#); [Magsumov et al., 2018](#); [Molchanova et al., 2020](#); [Natolochnaya et al., 2016](#)). However, following the launch of the education reform, the governorate experienced brisk development in its education sector, becoming at the end of the period under review a decent performer and pulling ahead of many of the southern areas in this respect.

5. Conclusion

The following conclusions were drawn from the insights gained from this study:

1) In the period between the 1870s and 1880s, Penza Governorate witnessed a sharp increase in the number of secondary educational institutions. It was nearly 300 % in the 1870s. In the 1880s, the growth decreased to 170 %. Most of this growth was accounted for by an increase in the number of technical educational institutions in the region.

2) The region witnessed a significant increase in the number of lower educational institutions as well (from 109 schools in 1866 to 542 schools by 1894). There appears to be a lack of valid data on the region's lower education sector in the sources employed in this study.

3) Arguably, the explosive growth in the numbers of educational institutions and students in the region was associated with the liberal education reforms of Alexander II.

¹ Data potentially incomplete

² Data potentially incomplete

³ Data potentially incomplete

4) In the 1880s, i.e. the period of the so-called “counter-reforms”, the region witnessed an increase not in the number of humanities-focused secondary educational institutions (gymnasiums and progymnasiums) but in the number of technical educational institutions (real, industrial, and tradesman’s schools). This must have been the result of both the Education Administration of the Penza Directorate of the Ministry of Public Education and Emperor Alexander III becoming perfectly aware of the critical role of technical education in the nation’s nascent technological revolution and industrial boom.

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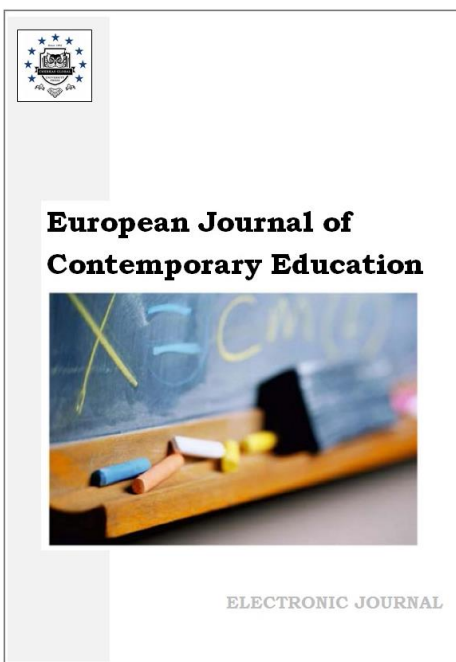
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Education in Turkestan and Western Siberia at the end of the XIX century to the 1920s: Formation of “New Method” Schools and Their Features

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Abstract

The opening of “new method” schools in Turkestan and Western Siberia at the end of the XIX – beginning of the XX centuries and their features are a topical issue not only for Central Asia, but also for the Eurasian space. It is important to assess how much education has changed over the period under consideration, the results of reforming this area and the possibilities of applying the “new method” schools in the modern field of education.

In the course of the research, the concepts of “new method” school and “confessional school-madrassa” are identified, and the manifestations of the concept of the content of education at the beginning of the XX century are described. The analysis of the work of the confessional school-madrassa of the beginning of the XX century on the basis of accurate data revealed that the methods of teaching here were too outdated. The main proof of this is the remoteness from the secular education system. In the world educational space at the beginning of the XX century, a secular education system was radically established. The demand of the time gave rise to the emergence of “new method” schools. According to the results of the study, it was proved that the schools of the “new method” are a synthesis of the Western model of teaching and Eastern features. After the October Revolution in Russia in 1917, education in Turkestan and Western Siberia completely switched to a secular form of education. That is why the “new method” schools, which began to appear in large numbers at the beginning of the XX century, successfully served as a transition.

Keywords: education, study, Turkestan, Western Siberia, madrassa, new method, secular, school, figure, book.

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1. Introduction

At the end of the XIX – beginning of the XX centuries, schools of the “new method” began to open in various regions of Turkestan and Western Siberia. The opening of these schools on the Kazakh land was considered one of the main innovations of the educational process of that era. After all, for many years, educational work on the territory of Turkestan and Western Siberia had been carried out by confessional educational institutions. Of course, it is impossible to exclude the work of confessional schools-madrasas. It is obvious that confessional schools-madrasas were located in all administrative territories of Turkestan and Western Siberia. Therefore, they contributed to the literacy of the population of Turkestan and Western Siberia as a whole. Confessional schools-madrasas began to work with the spread of Islam in the Kazakh land. Therefore, they had passed many years of experience and stages of formation. Students who studied in these educational institutions received a deep knowledge of Arabic graphics, got acquainted with the works of Eastern thinkers, and had the opportunity to continue their education in higher educational institutions of Russia and far abroad. Of course, confessional schools-madrasas provided opportunities to study only in Kazan, Orenburg, Ufa, Istanbul and other major Muslim educational institutions. Along with confessional educational institutions, there were also Russian-parochial schools opened by the tsarist government in Turkestan and Western Siberia. However, these schools were not always in demand by the local population. There are several reasons for this:

- The presence of a language barrier. Classes in Russian-parochial schools were not conducted in local languages. This caused inconvenience for many residents.

- Inconsistency of worldview. For centuries, the work of educational institutions of the local people has been organized within the framework of Sharia law and the Islamic religion. Russian-parochial schools mainly taught subjects that fit into the secular system of education. This factor caused distrust among the local Muslim population.

- Economic barriers. The vast majority of the population of Turkestan and Western Siberia was engaged in nomadic animal husbandry. For nomads who moved between territories specially designated for animal feed in four seasons of the year, it was difficult to get a permanent school education.

The purpose of the study is a comparative analysis of the educational process in the considered period of time with theoretical justification and the results of the reforms carried out on the basis of real data and basic research work. Based on the results of the analysis, it is planned to identify the “new method” schools discovered in Turkestan and Western Siberia, assess the possibilities of the “new method” schools in Turkestan and Western Siberia at the end of the XIX – beginning of the XX centuries, and clarify the advantages and features of the “new method” schools from existing educational institutions. Such data will allow us to consider for future research a comparative analysis of the features of the educational process over the past few years and the current situation after the reforms carried out.

2. Discussion

The problem of opening a “new method” school in Turkestan and Western Siberia and its features has become the basis study for a number of researchers. We first used works of high historical significance in solving the problem of “new method” schools and their specifics, which were discovered in Turkestan and Western Siberia at the end of the XIX – beginning of the XX centuries. Such works are based on the memoirs and reports of figures who lived in the historical period we are considering and worked in the field of education in Turkestan and Western Siberia. Among them there can be mentioned N. P. Ostroumov’s work “Fluctuations in views on the education of natives in the Turkestan region” (Ostroumov, 1910). The author provides new information on the field of education in Turkestan and Western Siberia and Central Asia. In particular, the author identifies the reasons for the widespread existence of Muslim schools, evaluating the activities of Von Kaufman as the Turkestan governor-general. Undoubtedly, these reasons, in turn, led to the emergence of “new method” schools (Ostroumov, 1910: 56-59). F. Kerensky was one of the leading figures in the field of education in Turkestan and Western Siberia and Central Asia. In his article “Madrasa of the Turkestan region” (Kerenskii, 1892), the author gives information about confessional schools-madrasas in Turkestan, their quantitative indicators and areas of circulation, and their features.

In turn, A.E. Alektorov, in his work “Index of books, magazine and newspaper articles and notes about Kyrgyzs”, was able to provide statistical data on confessional educational institutions in the Kazakh land (Alektorov, 1900). There is also information about the opening of “new method” schools in Turkestan and Western Siberia at the end of the XIX – beginning of the XX centuries. Of course, the opening of “new method” schools on the territory of Turkestan and Western Siberia and, first of all, confessional educational institutions in our country made a huge contribution. After all, many schools of the “new method” were opened on the basis of the same confessional schools. In this regard, we used the work of N. A. Bobrovnikov “Russian-native schools, schools and madrasas in Middle Asia” (Bobrovnikov, 1913). At the same time, the work of K.K. Palen “Educational work” (Palen, 1910) reveals the reasons that led to the opening of “new method” schools. In the course of the research, we noted that the “new method” discovered in Turkestan and Western Siberia was primarily influenced by figures from Muslim republics of Russia. In the work of A. E. Krymskii “School, education and literature in Russian Muslims (cultural and ethnographic essay)” (Krymskii, 1916), the problem that we have named is considered in detail. One of the historians who lived on the land of Turkestan and Western Siberia in these years was Kurbangali Khalid. In his work “Tauarikh Hamsa (Five stories)” (Halid, 1992), he reflected the peculiarities of the religious beliefs of Kazakhs of the late XIX – early XX centuries and gave information about the consequences of the observed negative changes.

The problem of “new method” schools and their specifics, discovered in Turkestan and Western Siberia in the late XIX and early XX centuries, has become the subject of research by scientists from near and far abroad. Among such works is the work of V.V. Barthold “History of cultural life of Turkestan” (Bartol'd, 1927). In the works of Barthold, you can find a lot of information about the peculiarities of the Turkestan region, religious movements and, most importantly, confessional and “new method” schools.

Of course, the work written under the communist ideology has its drawbacks. It is particularly distinguished by the proximity of confessional schools-madrasas to the secular education system and the description of the subjects taught only within the framework of Islam. This topic began to be actively studied, especially after the country gained sovereignty. At the same time, we can mention Z.T. Sadvokasova’s work “From the protectorate to the colony of the Russian Empire: a collection of documents and materials” (Sadvokasova, 2014). The researcher has other works on the colonial policy of tsarist Russia in Turkestan and Western Siberia. We were able to make a deep analysis and comparative analysis of data on changes, especially in the field of education. N.D. Nurtazina is one of the scientists who has conducted research on the Islamic religion and Kazakh culture in the country. In her work “People of Turkestan: problems of Islam, integration, modernization and decolonization (on the territory of the XIX-XX centuries)” (Nurtazina, 2008), the author’s opinion on the peculiarities of the emergence of “new method” schools that appeared in Turkestan is significant.

3. Materials and methods

Based on the research topic and the nature of the materials, sources can be divided into several groups:

- The main part of the materials related to the topic is of materials of the Central State Archive of Kazakhstan (Almaty, Kazakhstan) and the Central State Archive of Uzbekistan (Tashkent, Uzbekistan). The types of documents are mainly characterized as letters and orders of the Office of the Turkestan Governor-General, as well as other documents.

- Materials related to the research topic also involved documents and materials of the State Archive of South Kazakhstan region (Shymkent, Kazakhstan). The documents of this archive mainly contain information about the activities of the administration of the Syrdarya region in the field of education.

Through comparative analysis of a range of theoretical methods of research work, the concept of the school “new method” was determined and a clear definition was given. The research work carried out in the field of education in Turkestan and Western Siberia at the end of the XIX – beginning of the XX centuries as part of the study of the problem of the formation of schools and the features of the “new method” they employed was primarily based on reality and organized with the widespread use of various principles and methods known to historical science. Only by following the principles of historiography, party, objectivity, social and other methods known to

historical science, such as historical-genetic, historical-systematic and retrospective, could we achieve effective scientific work.

In the course of the research, we were guided by a number of innovative theories with a methodological basis, in particular, the theory of modernization. This theory is aimed at revealing the differences between the concepts of “traditional” and “modern”, identifying the problem of changing social institutions and cultural values, and positive changes in the potential of human opportunities. In turn, the theory of modernization suggests studying not only the features of the development of society, but also real events, guided by this theory. In the general scientific literature, the concept of modernization is used in a number of meanings. Among them, first of all, modernization means a transition from a traditional society to a modern path of development. In turn, as a result of a comparative analysis of the work of confessional educational institutions and schools of the “new method”, we saw that the traditional Central Asian society passed to a new qualitative level. It is obvious that the introduced “new method” of school education in the historical period under consideration brought this about. Here, guided by the theory of modernization, the precise definition and determination of qualitative indicators between the traditional society and the new system introduced allowed us to draw accurate scientific conclusions on this issue.

4. Results

Since the X–XI centuries, Muslim schools and madrasas have existed in Turkestan and Western Siberia, providing such important educational content as writing and arithmetic. In most cases, the working hours of these schools were organized on the basis of Sharia law. These educational institutions taught students to write on the basis of Arabic spelling. In addition, they adapted it to Persian and Turkish. School and madrasa work began to move to a different quality level, especially after Turkestan became part of tsarist Russia. Of course, the achievements of developed European countries in the field of education are widely taught in Russian schools. The vast majority of people, with the exception of some individual parts of the local population, gave preference to traditional educational institutions. Over time, in schools and madrasas, which were in particular demand among the local population and had gone through a century of development, there began the introduction of such necessary subjects as the Russian language, as well as other natural sciences. The same trend can be observed under Governor-general M.G. Chernyaev. The inspector of Muslim schools V.P. Nalivkin also tried to change Arabic grammar into Russian. He even planned to open a Russian language course at madrasas and schools (Bendrikov, 1960: 129). However, the tsarist officials did not abandon the idea of creating a traditional educational school, an alternative to madrasas, and educational institutions that are actively in demand by local residents. This idea, in turn, stimulated the opening of Russian-parochial schools. Chief Inspector of schools in the Turkestan region F. Kerensky noted that “The influence of Russians in the East is very important. It is necessary to free the local population from the clutches of Muslims and teach them to live humanly” (Kerensky, 1892). This indicates the distrust of the tsarist officials in the educational affairs of the school and madrasa and considered the Russian-parochial schools important.

Russian-parochial schools were opened en masse, and the work of the school-madrasa came under the close supervision of tsarist officials. In addition, the tsarist government banned the opening of new Muslim schools in Turkestan and Western Siberia. Among the local population, additional requirements began to be imposed on those who tried to teach their child in schools-madrasas. Now, in order to study at the madrasa school, permission from the heads of education in the regions was required. In order for the local population to receive a permit, they had to pay a fixed amount of money. Teaching in a madrasa school without permission was considered dangerous. After all, there was not only a large fine, but also prosecution. This was only one of the manifestations of the ban imposed by him. However, schools-madrasas were opened everywhere. The number of schools-madrasas in the Turkestan region increased every year. If in 1900 the number of schools in this region was 313, then in 1911 this figure was 328 schools. Most schools were opened illegally. There are reports that the number of schools in the Syrdarya region alone exceeded a thousand. For comparison, the number of Russian-Kazakh schools in the Steppe governor-generalate was 157, and the number of students in each of them did not exceed 50 (Central'naya Aziya..., 2008: 168).

The tsarist government created the conditions for the opening of “new method” schools in Turkestan and Western Siberia. It did not pay attention to the proposals of specialists and officials leading the field of education that European education among Kazakhs should be organized in the language of the local population. Ignoring the existence of the language barrier inevitably reduced the demand for Russian-parochial schools. Tsarist officials believed that only Russian-parochial schools providing European education in the Kazakh steppe would be in demand. However, the schools of the “new method”, caused by the great demand amongst Russian Muslims, were able to provide the basics of secular education in the language of the local population. The figure of public education N.A. Bobrovnikov wrote in his work that the schools of the “new method” arose from the fact that the tsarist Russian government did not take into account the desire of local Muslims to receive education. At the same time, it was said that the schools of the “new method” arose from the fact that they did not know what idea Muslim peoples had and the peculiarities of their existence, which the tsarists did not understand (Bobrovnikov, 1913). By the end of the XIX century, the emergence of “new method” schools on the territory of Turkestan and Western Siberia was influenced to some extent by the Russian-Kazakh schools opened by the tsarist government. At the same time, one of the most important influences was the Bashkir and Tatar mullahs from the Russian lands. Their arrival in Turkestan and Western Siberia was primarily a direct result of the tsarist government. Therefore, to a certain extent, the tsarist government did not oppose the development of Islam in Central Asia. In particular, the tsarist government wanted the Tatar and Bashkir mullahs subordinate to it to have a high influence in these regions.

Tatar and Bashkir mullahs not only continued the dual culture, but also contributed to the revival of schools-madrasas in Turkestan and Western Siberia. During these years, schools based on new teaching methods began to be actively opened in the Muslim-majority regions of Russia. They were characterized by a combination of Sharia law and secular education. The opening of such “new method” schools in the Turkestan, associated with the name of Ismail Gasprinsky, which became widely known to the Turkic people, undoubtedly made a huge contribution to the development of education in the region. I. Gasprinsky and his initiative on the “new method” schools were particularly supported by the local intelligentsia. Editor-in-chief of “Aikap” magazine M. Seralin called I. Gasprinsky “The teacher of the 20-million people of Russia”. I. Gasprinsky gives a high assessment of how we understand ourselves and understand what art and science exist in the world (Sadvokasova, 2014: 48). M. Seralin was one of the jadidists who made a great contribution to the work of opening and promoting the “new method” schools. The “Aikap” magazine, which he headed, was a collection of memorabilia of those years. Such national figures as M. Shokai and Zh. Seidalin are also among them (Tahanova, 2010: 105). I. Gasprinsky opened a school in Bakhchisaray in 1884 for the in-depth study of the Russian language by Tatar children, calling it a “new method” school. Although there was distrust and suspicion among Muslims in the early days of this new school, the number of people who wanted to study after the first exam increased from 9 to 30. This shows that the “new method” had a high responsibility for the school. Thanks to the guidance of the working regime of Russian schools, within six months, students were able to master the first laws of Sharia, as well as learn Turkish and Arabic (Mukhamedov, 2013: 51). Therefore, we can say that one of the features of the “new method” school was the rationality of time. I. Gasprinsky himself taught Russian. Undoubtedly, the leading scholars of that time felt the high potential of the Russian language. Gasprinsky wrote a letter to the inspector of education for the Turkestan region with proposals for a “new method” for the school, but it was not taken into account. Although Gasprinsky arrived in the Turkestan region, the issue was not fully resolved. The opening of the “new method” schools was slightly postponed.

In general, the word “new method” school comes from the concept of “usul-i-jadid” in Arabic. Therefore, the common name of jadidism is formed for the activities of national figures in this direction, that is, in the opening of schools of the “new method”. It is true that jadidism is associated not only with the concepts of learning and the field of education. Over time, this concept has also become a common name for the political movement of representatives of the local intelligentsia in Turkestan and Western Siberia and Central Asia. After all, the members of the movement raised such issues as the revision of administrative and territorial reforms to govern Turkestan, the termination of the policy of the resettlement of peasants from the central parts of Russia, the restriction of taxes, the withdrawal of Turkestan from tsarist Russia and the transformation of it into a country under the influence of Turkey. They also connected their socio-

political activities with this direction. Most importantly, representatives of the Jadid movement tried to solve such issues as changes in the order of education in religious schools, on the basis of which were opened the schools of the “new method”, and the promotion of European dress. Representatives of the Jadid movement raised issues that were important for the population of Turkestan and Western Siberia and Central Asia in those years.

The Jadid movement in Turkestan and Western Siberia passed a long path of development. It should be noted that those who were at the origins of the Jadid movement received a European education or were closely associated with representatives of the advanced intelligentsia of Russia. For example, Mahmud Khoja Behbudi, who was at the beginning of the movement, although he was educated in a madrasa, served at a court. He visited the major cultural centres of that time – Istanbul, Mecca, Cairo, Moscow, Kazan, St Petersburg and Orenburg – where he got acquainted with the reforms in the field of public education. As a result, exponents of the “new method” began to write textbooks for schools. Munavvar kari Abdurashidkhanov was able to establish contacts with the leading jadidists of Russia and become a prominent member of this movement. Through his acquaintance, he wrote textbooks for “new method” schools and published the periodical “Tarakiy” (Progress).

Schools of the “new method” in Turkestan and Western Siberia began to open after the Russian-parochial schools that we have already considered. Although I. Gasprinsky told the ruling officials of Turkestan about the idea of opening “new method” schools, he did not receive support. Now the “new method” schools had started to open with the support of private individuals, the exact time coinciding with the 1890s. The main similarity with Russian-parochial schools is that both types of school, along with secular education, organized the teaching of the Russian language. Of course, taking into account the fact that Tatar and Bashkir teachers from Russia lived in urban areas, schools of the “new method” also actively worked mainly in urban areas. A distinctive feature was that among the local population, schools of the “new method” were in higher demand than Russian-parochial schools. A similar trend can be observed in Central Asia. In 1910, there were 8 Russian-parochial schools in Tashkent, and the number of schools of the “new method” was 16. This is also evidenced by the statistical indicators of 1911 in Kokand, where there were 2 Russian-parochial schools, which taught 162 students, while the number of “new method” schools was 8. More than 530 students were registered in the “new method” schools in Kokand (GARF, F. 2306. Op. 1. D. 1920. L. 31). The high demand for “new method” schools in Turkestan and Western Siberia posed a threat to the tsarist government. After all, the popularization of the “new method” by schools of national values, and the study of Sharia law in combination with a secular education system, created a threat of the widespread instilling of pan-Islamic concepts in the country. At the same time, the idea of such well-known personalities as Ismail Gasprinkiy, who became famous in the Turkic world, could provoke the pan-Turk movement. Therefore, local officials of the tsarist government took under strict control the “new method” schools. To do this, Tatar-Bashkir teachers were banned from working in “new method” schools, and requirements were introduced for the approval of training programmes by local authorities and for the mandatory study of the Russian language (Bobrovnikov, 1913: 42). This would strengthen the position of Russian-tolerant schools, limiting the work of “new method” schools in Turkestan and Western Siberia. They even sent special representatives to get acquainted with the work of the “new method” schools and began to look for their advantages and disadvantages. In December 1908, inspector for academic affairs M. Saifi got acquainted with the schools of the “new method” and in a letter to the director of national schools in the Syrdarya region S.M. Gramenitsky noted the excellent material and technical condition of the schools of the “new method” (GARF, F. 2306. Op. 1. D. 1920. L. 4). The main thing is that the educational process also met modern requirements. In addition to Arabic, they also spoke other Eastern languages, used geographical maps in their lessons, and showed great differences in comparison with traditional schools and madrasas.

From the beginning of the XX century, the “new method” schools began to be opened intensively, and in 1911, according to the general inspector of schools in the Turkestan region, there were 63 schools of the “new method” in Turkestan. Sixteen of them were registered in the Syrdarya region, where 1650 students studied. There were 12 “new method” schools in Zhetysu, where 825 students studied (Mukhamedov, 2013). The researcher K. E. Bendrikov, noting that in 1909 there were 40 schools of the “new method” in the Syrdarya region, reports that in the Semirechye

region alone there were 18 schools of the “new method”. It is known that in the entire Turkestan region there were 92 “new method” schools (Bendrikov, 1960). Therefore, there is no unambiguous opinion on the number of “new method” schools in Zhetysu. One of the “new method” schools in Zhetysu was built at the personal expense of Maman Yessenkulov. In the first year, he received a two-year education, and then a four-year education. Teachers of the school mainly came from Orenburg, Ufa. In 1910, Abdulaziz Musa became a prominent representative of the Jadids in this school. According to him, residents of Kapal district paid for the expenses of this school from their own funds. 11,000 rubles were spent on the formation of such a “new method” school from the population. Even for poor children, a special scholarship was established (Demirogly, 2012: 26). This means that representatives of local authorities were not involved in organizing the work of this school. Before that, in 1905, imams H. Mukhamediev and Z. Taipov opened a “new method” school in Kapal, where teachers from Orenburg, Kazan and Ufa taught. After 7 years, these imams would open a “new method” school for girls in Kapal. For Girls, female teachers from the Vyatsk province were invited (Mukhamedieva, 1995: 87). We note that the “new method” schools had also begun to open in Almaty and Shymkent. In these places, the number of “new method” schools was about 30. It is noteworthy that the confessional schools, which had been operating until then, were being redesigned in accordance with the requirements of the “new method” schools. In 1903, the Tatar school in Kazaly, which appeared during the years of the tsarist government’s first administrative reforms on the management of the Turkestan region, was transformed into a “new method” school (Sabitov, 1950: 152). In general, the news about the “new method” schools, and their correct organization of the educational process, had become widely known throughout the Kazakh steppe. The reconstruction of confessional schools-madrasas that had served to that day in accordance with the requirements of the time was legal. A similar trend was observed also in Uralsk. At the beginning of the XX century, there were three main madrasas in Uralsk, which were in great demand among the population. These madrasas, called “Mutugiya”, “Gainiya” and “Rakybiya”, were also redesigned to meet the requirements of the “new method” school. At the same time, the influence of Mutygulla hazret Tukhvatullin, the head of the “Mutugiya” madrasa, was great. Having correctly assessed the inadequacy of confessional madrasas to the requirements of the time, he contributed to the creation of “new method” schools in the region. In general, Mutygulla Tukhvatullin was a literate man. After studying in Egypt, he taught his students the works of such scholars as Ibn Sina, Al-Farabi and Ibn Rushd, and introduced them to periodicals such as “Tarzhiman”. Therefore, we can see he paid great attention to the political literacy of his students (Abdrakhmanova, 2010: 32-33). In the same Tatar newspaper “Tarzhiman” there is information that at the end of the XIX century in the city of Sergiopol, Zhetysu region, an imam named Habibula Makhzum Kaziev opened a madrasa and accepted more than 70 children. The main thing is that the madrasa began to organize the educational process based on the teaching of the “new method” over time (Terdzhiman-perevodchik, 1891: 22). The transformation of confessional schools into educational institutions that taught on the basis of the “new method” had become normal at the beginning of the XX century. In 1900, out of 30 religious schools-madrasas operating in the Turkestan Region, 2 were converted into “new method” schools (Barthold, 1927: 137). In 1905, a similar “new method” school was opened in Kyzylorda. In these years, the mass transition of old-school schools to the “new method” is also observed in Karkaraly, Semipalatinsk and Akmola regions. In 1909, there were 39 “new method” schools in the Syrdarya region. In 1903, “new method” schools were also opened in Verny. The Tatar merchant Iskhak-bey Gabdul-Veliyev opened the iskakhiya madrasa and organized its work on the basis of the requirements of the “new method” schools (Sadvakasova, 2014: 116). The work of this school was active. Information about the special demand of the population is often found in the newspaper “Tarzhiman”. The school exam results and data on the educational process are undoubtedly proof that the educational institution met the requirements of the “new method” schools.

Graduates of the school opened by I. Gasprinsky in Bakhchisaray made a great contribution to the intensive work of the “new method” schools in the Kazakh steppe. Hammad Ismailov, who worked at the “new method” school in the village of Lepsy, Zhetysu region, was a graduate of the school opened by Gasprinsky (Terdzhiman-perevodchik, 1891: 141). As we have already noted, the beginning of the mass opening of “new method” schools was at the beginning of the XX century. However, there is also information about “new method” schools opened at the end of the XIX century. In the 1897 issues of the newspaper “Tarzhiman” there is information that a

merchant named Sadykh Musin opened a “new method” school in Semipalatinsk. This institution appointed Gimadeddinov as the head of the school. In addition, Giyaseddin Rakhimov is named among the citizens who contributed to the opening and active work of “new method” schools in Semipalatinsk ([Terdzhiman-perevodchik, 1891: 148](#)). However, the method of teaching the “new method” in schools was very different from the work of the established madrasas. On the pages of the newspaper “Tarzhiman” there are often articles that tell about the advantages and disadvantages of the work of dual educational institutions. Undoubtedly, almost everyone noted the advantages of the “new method” schools ([Narodnoe prosveenie KazSSR, 1957: 96](#)). The “new method” schools opened in Semipalatinsk were mostly organized by graduates of the school opened by Gasprinsky. Therefore, there are many similarities with the education system in Bakhchisaray and it turned out to be one-of-a-kind. In addition to Semipalatinsk, a “new method” school was opened in Kyzylorda, organized by Gani Huseynov. Having taught about 30 children, he began to organize his work on the basis of sound reading. We note that at the beginning of the XX century, the “new method” schools began to open in all regions of Turkestan and Western Siberia. With the support of Tatar merchants, such schools were also opened in Petropavlovsk. More than 70 girls were trained in 6 schools operating in this direction ([GARF. F. 2306. Op. 1. D. 1510. L. 88](#)). Previously, girls had not been educated in confessional schools-madrasas. One of the regions where Kazakh girls actively studied was Mangystau. In this region, there were 67 educational schools-madrasas, where there were about a thousand students ([Istoriya Kazahstana, 2002: 679](#)).

In comparison, the situation in “new method” schools was more uniform and more systematic. One of the main requirements for the “new method” schools was the teaching of subjects characteristic of the secular education system here. Along with the native language of the local population, such subjects as Russian, mathematics and history can be noted. Unlike confessional schools, there was a fixed schedule of classes. In order to pass from class to class, the task of passing a special exam was systematized. The material and technical base was also considered higher. There were also whiteboards, desks, writing devices and special chemistry and physics classrooms. The most important thing is that the “new method” established professional contacts between schools. That is, the “new method” schools worked in a network system with interconnections. Undoubtedly, such contacts contributed to the high-quality organization of the educational process and the fullness of the educational content. Schools of the “new method” in the Turkestan region established close ties with major madrasas in Troitsk, Ufa, Orenburg and other “new method” schools. This is evidenced by the established contacts with such madrasas as “Rasuliya”, “Usmaniya”, “Husainiya” and “Galiya” ([Abdramanova, 2010: 74](#)).

Now let us consider why these schools were called “new method” and what the essence was of the new methods in them. In traditional religious schools-madrasas, the method of joint learning was widely used. At first, the student managed to fully memorize the Arabic alphabet. Then he could go and do joint training. The inefficiency of this was that the children had no idea what they were learning. It took a long time. To read a particular word, students first practiced reading by adding several syllables to the initial letter of that word. For example, to read a word starting with the letter “d”, you must remember such syllables as “da”, “du”, “di”, “dir” and “dar”. Given that these syllables cannot be added randomly, the student had to know by heart which letters to connect to each letter and make one syllable. For this reason, it took many years for students to read and understand the text on their own. Undoubtedly, this led to the need to reform the traditional education system ([Kulturnoe stroitelstvo v Kazahstane, 1960: 39](#)).

I. Gasprinsky developed his method based on the method of teaching in developed Europe. While studying at the Sorbonne in Paris, he became acquainted with the method of sound training. He started writing works on the same method in Tatar and Russian. When we get acquainted with his works, we can see that Gasprinsky intended not only to reform the teaching methodology. We note that it also provided for the formation of a universal literary Turkic language, the formation of civic activity, the protection of the rights of Muslim women, the formation of civil society and the strengthening of ties between the Turkic peoples. This in itself became the main essence of jadidism. There were several advantages of sound learning in the “new method” schools over the method of joint learning in traditional educational institutions. The main feature of this method was that after students fully memorized the letters, they learned the rule of writing each letter at the beginning, middle and end of the word. Arabic letters used to be written differently at the beginning, middle and end of a word. Therefore, students learned to read quickly, not by

memorizing syllables, but only by memorizing letters. There was also a sequence for memorizing letters. In particular, the memorization of Arabic letters is carried out not sequentially, but by analogy. According to the similarity of the letter “b” with the letter “n” these were memorized firstly, and then the letters “i” and “t” were memorized later. These letters are distinguished only by the location of points and the number of points characteristic of the letter. Undoubtedly, it was unprofitable for students in a traditional school to memorize letters aloud at first. For a long time, the students did not know what letter they had memorized or how to write it. For this reason, the old method of teaching needed to be reformed. The method of Gasprinsky was admired by many. In turn, A. Baitursynov added and updated Kazakh letters instead of Arabic ones, which are not used in the Kazakh language. After analysing the research work on this issue, we were able to make a comparative table as follows:

Table 1. The structure of the activity of the “New Method” school

Signs	Confessional educational institutions	“New method” school
Duration of training	It was not stable, the study process lasted 4-5 months a year. Schooling was approved for 3-5 years, madrasa for 7-13 years	On a regular basis. The educational process was planned for 2 years
Age limit	There was no age limit. Pupils ranged in age from 7 to 17 years	Accepted from 7 years. Divided into classes according to age
Material and technical base	The financial situation of the madrasa schools was relatively poor. There were no ordinary desks, chairs, boards, writing devices	The “new method” school had a good material and technical coverage. There was everything necessary for the correct organization of the educational process. Even the visual aids of special disciplines were considered sufficient
Features of the educational process	The method of syllabic reading was used. This method created difficulties in learning Arabic, which was not familiar to students	The method of audio teaching was followed. Pupils mastered the spelling of new letters and began to read faster
Subjects taught	In addition to the basics of religion, such as the Koran, Sharia law and Muslim law, certain madrasas taught subjects such as arithmetic, which are the basics of secular education. Native language was not taught in confessional educational institutions	Along with Arabic, there were taught oriental languages and subjects related to the basics of secular education: geography, philosophy, chemistry, physics and many other subjects. In the “new method” schools, the native language was also taught

Indeed, the “new method” schools were a great discovery for traditional Central Asian society at the beginning of the XX century. Undoubtedly, the opening of the “new method” schools made a huge contribution to the formation of a new wave of intellectuals. After all, the vast majority of national figures in the first quarter of the XX century were graduates of this “new method” schooling. The “new method” schools, founded by I. Gasprinsky, continued their activities on the Turkestan land until the October Revolution. It was only after the Bolsheviks came to power that the work of such educational institutions was strictly controlled, and such educational institutions as the “new method” schools were perceived as relics of the past ([Report on the meetings..., 1911: 22-23](#)).

Analysing trends in the field of education in Turkestan and Western Siberia in the late XIX and early XX centuries, it is known that confessional schools and the “new method” schools were

particularly in demand among the population. For example, according to statistics for 1910, 2606 schools and 169 madrasas were registered in the Ferghana region of the Turkestan area, and 2846 schools and 93 madrasas were registered in the Samarkand region (GA YUKO. F. 242. Op. 1. D. 3. L. 26).

The “new method” schools, which were working for almost a quarter of a century, made a significant contribution to the education of the period under consideration. Given that at the beginning of the XX century, a number of Kazakh intellectuals were graduates of the “new method” schools, there is reason to believe that this model of school was able to perform its functions at a fairly high level.

6. Conclusion

Thus, summing up the results of the research, it should be noted that in the period from the end of the XIX century to the 20s of the XX century, the “new method” schools were actively functioning in Turkestan and Western Siberia. The opening of the “new method” schools was undoubtedly the main discovery for traditional Central Asian society. Schools-madrasas, which were previously engaged in the teaching of local children’s literacy, could not stand out for their modernity. After all, the European model of education was widely developed between tsarist Russia and the countries of its composition. Turkestan youth, who continued their education on the Russian land, deeply understood this difference. The sphere of education in traditional Kazakh society required radical reform. This was the main reason for the rapid demand for the new training system introduced by I. Gasprinsky. The main difference between the “new method” schools introduced by Gasprinsky was the teaching of subjects that corresponded to the secular system of education, guided by the laws of Sharia. As a result, students quickly learned Arabic graphics, and improved their knowledge of history, geography, arithmetic and chemistry. Undoubtedly, the “new method” schools were in demand for a few years. The main proof of this is a sharp increase in the number of educational institutions of the “new method” in Western Siberia and Turkestan. The effective work of the “new method” schools also depended directly on teachers. Kazakh, Uzbek and Kyrgyz children received opportunities for education from the Muslim intelligentsia of Russia. Even in the “new method” schools opened for girls, female teachers from Russia taught. The opinion in historiography that until now there were no schools for girls in Western Siberia and Turkestan does not correspond to reality.

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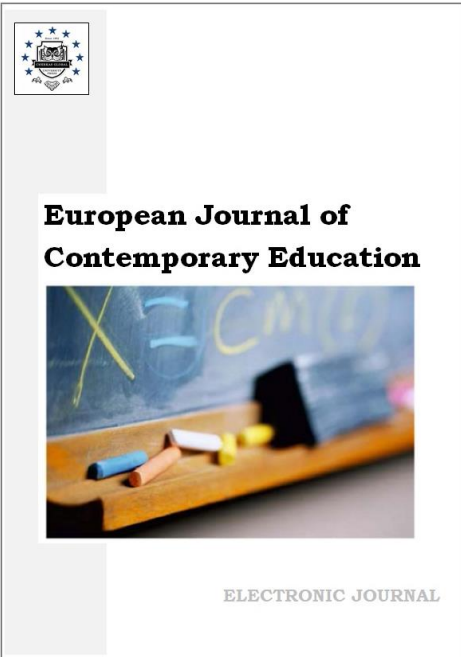
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The System of Public Education in Dagestan Oblast (1860–1917)

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Abstract

This work explores the system of public education in Dagestan Oblast in the period 1860–1917. The present part of the work examines the period up to 1884, i.e. from the year Dagestan Oblast was founded to the year the annual reports of the Trustee of the Caucasus Educational District began to be published.

The key sources used in putting this work together are the 1879 Memorandum Book for the Caucasus Educational District and the 1884 Report from the Trustee of the Caucasus Educational District. These sources offer valuable statistical insight into the state of education in Dagestan Oblast in the period up to 1884. Use was also made of certain relevant reference materials.

The process of building a network of educational institutions in Dagestan Oblast continued up until the mid-1880s. As at 1884, the region's total student body was 773 students.

Access to secondary education was available in the region's administrative center, Temir-Khan-Shura. Lower education was available only in Derbent. In addition, the region had in place an underdeveloped network of primary schools. As a consequence, there was an imbalance in the distribution of students across the education system, with half of the region's student body attending secondary educational institutions, and the other half going to lower and primary schools.

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The ethnic composition of the region's student body was as follows: ethnic Russians – 56.7 %, mountaineers – 15.3 %, Jews – 9.7 %, and Armenians – 9 %. The rest of the ethnicities represented an insignificant share of the student body.

Keywords: Dagestan Oblast, Caucasus Educational District, period 1860–1917, ethnic composition of the student body, history of pedagogy.

1. Introduction

Dagestan Oblast was established back during the Caucasus War – in 1860. It was situated in the northeastern part of the Caucasus isthmus, north of the Main Caucasian Range. Its administrative center was Temir-Khan-Shura. Based on data from the Russian Imperial Census, Dagestan Oblast had a population of 586,636 (300,155 males and 286,481 females) as at 1897. In terms of ethnic composition, the region's population was comprised of Avars, Dargins, Lezgins, Kumyks, Laks, Tatars, ethnic Russians, Jews, Armenians, Nogais, and a few other ethnic groups ([Bol'shaya entsiklopediya, 1902: 33](#)).

2. Materials and methods

The key sources used in putting this work together are the 1879 Memorandum Book for the Caucasus Educational District and the 1884 Report from the Trustee of the Caucasus Educational District. These sources offer valuable statistical insight into the state of education in Dagestan Oblast in the period up to 1884. Use was also made of certain relevant reference materials.

The research reported in this work was conducted with observation of the following major historical research principles: historicism, systematicity, and objectivity. The principle of historicism helped to explore the system of public education in Dagestan Oblast in its historical sequence and development. The principle of systematicity helped to examine the system of education in the region across the secondary, lower, and primary levels. The principle of objectivity was employed to ensure an unbiased approach in respect of the statistical sources employed and conclusions drawn in the work. Wide use was made of the statistical method to summarize the extensive statistical material on the system of public education in Dagestan Oblast in the period up to 1884. Data were obtained on the size and ethnic composition of the student body, the numbers of educational institutions, and the size of the library stock in the region.

3. Discussion

Given that the present study is focused on the state of public education in one of the areas within the Caucasus Educational District in the period up to 1884, the focus here will be on the historiography dealing with the period up to the 1880s.

This historiography can be divided into works devoted to regions within the Caucasus Educational District and those devoted to other regions of the Russian Empire in the period under review.

The first group, focused on various aspects of the development of the system of public education in the Caucasus in the period up to 1884, includes the following body of research: N.A. Shevchenko's 'The Making of the System of Public Education in the Caucasus (1802–1917): Distinctive Features' ([Shevchenko et al., 2016](#)), O.V. Natolochnaya's 'Revisiting the System of Public Education in the Caucasus Educational District in 1848–1917. Part 1' ([Natolochnaya et al., 2021](#)), T.A. Magsumov's study on the system of public education in Kars Oblast ([Magsumov et al., 2020](#)), A.M. Mamadaliev's study on the system of public education in Tiflis Governorate ([Mamadaliev et al., 2020](#)), O.V. Molchanova's study on the system of public education in Kuban Oblast ([Molchanova et al., 2019](#)), and A.A. Cherkasov's study on the system of public education in Terek Oblast ([Cherkasov et al., 2020](#)).

The second group, focused on various aspects of the development of the prerevolutionary system of public education in other regions of the Russian Empire in the period up to 1884, most notably includes the following body of research: S.I. Degtyarev's study on the system of public education in the Kharkov Educational District ([Degtyarev, Polyakova, 2020](#)), A.Y. Peretyatko's study on the system of public education in Don Oblast ([Peretyatko, Zulfugarzade, 2017](#)), and A.A. Cherkasov's study on the system of public education in Vologda Governorate ([Cherkasov et al., 2019](#)).

4. Results

For the most part, the system of public education in the Russian Empire was comprised of the following four major levels: higher, secondary, lower, and primary. However, there were no higher educational institutions in the Caucasus Educational District during the prerevolutionary period. Accordingly, the present work will only focus on the remaining three levels – secondary, lower, and primary. Some consideration will also be given to private education, which was comprised of the following three sublevels: 1) secondary educational institutions; 2) lower educational institutions; 3) primary educational institutions.

Secondary education

Due to its distinctive ethnic composition, the creation of a network of educational institutions was a very slow process in this region. The bulk of the student body at its secondary educational institutions was typically made up of children of military and those of civil Russian officials. This was associated with the need for administrative personnel stationed in the area to have the educational needs of their own children met.

The region's first secondary educational institution, a five-grade female progymnasium, was opened in Temir-Khan-Shura on September 15, 1875 ([Otchet, 1891: table 106](#)). As at 1879, this progymnasium had an enrollment of 95 female students ([Pamyatnaya knizhka, 1879: 57](#)).

Five years later, on September 1, 1880, the region became home to an educational institution for boys as well – the seven-grade real school in Temir-Khan-Shura ([Otchet, 1885: tables](#)). Thus, as at 1880 secondary education was accessible in Dagestan Oblast to both boys and girls. Note that the region had no male gymnasiums or progymnasiums at that time.

Let us examine the state of secondary education in Dagestan Oblast as at 1884.

As at 1884, the real school in Temir-Khan-Shura had an enrollment of 286 students. It had a library stock of 4,006 items in the fundamental section and 1,176 items in the discipular one ([Otchet, 1885: tables](#)). In terms of estate composition, half of the student body was made up of children of the nobility (148), followed by children of members of the lower ranks (63) and then children of urban dwellers (59). An insignificant share of the student body was represented by children of the clergy (6), children of rural dwellers (7), and children of foreigners (3) ([Otchet..., 1885: tables](#)).

In terms of religious affiliation, the overwhelming majority of students in this sector were Orthodox Christians (194), followed by Muslims (52), Armenian Gregorian Christians (20), Jews (14), Lutherans (4), and Catholics (2) ([Otchet..., 1885: tables](#)). Note that 46 of the 52 Muslims resided at the school as boarding students.

In terms of ethnic composition, there were 174 ethnic Russians, 17 Georgians, 20 Armenians, 4 Tatars, 48 mountaineers, 14 Jews, and 9 Europeans ([Otchet..., 1885: tables](#)). Three of the nine Europeans were Orthodox Christians.

The female progymnasium in Temir-Khan-Shura had a relatively small library stock – 115 and 251 items in the fundamental and discipular sections, respectively ([Otchet..., 1885: tables](#)). A portion of its library stock may have been transferred following the establishment of the real school in the city in 1880. It was not uncommon to do so in the Caucasus Educational District.

As at 1884, the female progymnasium had an enrollment of 99. As in the case of the real school, the majority of its students were children of the nobility (55), followed by children of urban dwellers and children of members of the lower ranks (20 each) and then children of rural dwellers and children of the clergy (2 each) ([Otchet..., 1885: tables](#)). Given Dagestan Oblast's distinctive regional characteristics, namely Muslim residents generally frowning on girls attending school, the overwhelming majority of the student body was Christian (Orthodox Christians – 83, Armenian Gregorian Christians – 3, Catholics – 3, and Lutherans – 3). There also were 2 Muslims (Tatars) and 5 Jews ([Otchet..., 1885: tables](#)). In terms of ethnic composition, there were 78 ethnic Russians, 5 Georgians, 3 Armenians, 2 Tatars, 5 Jews, and 6 Europeans ([Otchet..., 1885: tables](#)). Thus, as at 1884 all secondary educational institutions in Dagestan Oblast were in its capital. The combined student body was 385 (286 boys and 99 girls). In terms of ethnic composition, there were 252 ethnic Russians, 22 Georgians, 23 Armenians, 6 Tatars, 48 mountaineers (all boys), 19 Jews, and 15 Europeans. Ethnic Russians accounted for 66% of the student body. Christians accounted for over 82 % of it. The combined library stock in the region's secondary education sector was 5,548 items.

Lower education

Derbent Uyezd School, one of the oldest educational institutions in Dagestan Oblast, was opened in 1837. On July 1, 1877, the school was reorganized into a three-grade urban school ([Pamyatnaya knizhka, 1879: 72](#)). This three-grade school was the first three-grade educational institution created outside of the capital. As at 1879, the school had an enrollment of 125 ([Pamyatnaya knizhka, 1879: 72](#)).

As at 1884, Derbent Urban School had a library stock of 1,293 items (1,056 and 237 items in the fundamental and discipular sections, respectively) ([Otchet, 1885: tables](#)).

The school's student body numbered 92 individuals, with most of these being children of urban dwellers (58), followed by children of the nobility (23), children of the clergy (6), and children of rural dwellers (5) ([Otchet, 1885: tables](#)). In terms of religious affiliation, there were 49 Orthodox Christians, 31 Armenian Gregorian Christians, and 12 Muslims. The school did not have students of other religious backgrounds at the time. In terms of ethnic composition, there were 49 ethnic Russians, 31 Armenians, and 12 Tatars ([Otchet, 1885: tables](#)).

As at 1884, Dagestan Oblast had no uyezd schools, mountain schools, tradesman's schools, and nautical courses.

Primary education

As at 1884, Dagestan Oblast had just 7 primary schools under the purview of the Ministry of Public Education (3 rural state-run schools, 1 urban school, 2 rural schools run by the Ministry of Public Education, and 1 school run by a benevolent society) ([Otchet, 1885: tables](#)). Two of these schools were two-grade, and five of them were one-grade. Four of them were for boys only, and three of them were for both boys and girls.

Four of the region's primary schools were established before 1874. Two of them were opened in 1878, and the remaining one was set up in 1879 ([Otchet, 1885: tables](#)). In terms of the ratio of schools to population, Dagestan Oblast ranked last in the Caucasus Educational District – 62,000 people per school. Compare this with the result of the second worst performer – Kars Oblast, which had 40,000 people per school¹. By contrast, in the regions dominated by ethnic Russians (e.g., Kuban Oblast), the figure was 3,900 per school ([Otchet, 1885: tables](#)).

The region's primary education sector had a combined enrollment of 274 students (196 boys and 78 girls) ([Otchet, 1885: tables](#)). In terms of estate composition, the way was led by children of urban dwellers (110), followed by children of rural dwellers (81), children of members of the lower ranks (59), children of functionaries and nobles (21), and children of the clergy (3) ([Otchet, 1885: tables](#)).

In terms of religious affiliation, there were 136 Orthodox Christians (nearly 50% of the student body), 83 Muslims, 34 Jews, 16 Armenian Gregorian Christians, and 5 Catholics ([Otchet, 1885: tables](#)). In terms of ethnic composition, there were 136 ethnic Russians, 16 Armenians, 13 Tatars, 70 mountaineers, 34 Jews, and 5 Europeans ([Otchet, 1885: tables](#)).

Private education

The lack of educational institutions in the region at the time led to the opening of private schools. Specifically, in 1878, Petrovsk became home to Madame Serpinet's four-grade female progymnasium with a boarding school. The progymnasium had 24 girls enrolled in first grade as at 1879 ([Pamyatnaya knizhka, 1879: 347-348](#)). That same year, 1878, Petrovsk also became home to Madame Barbal's private primary school. This school had an enrollment of 24 students, too ([Pamyatnaya knizhka, 1879: 348](#)).

However, as generally across the Caucasus, the region's private education sector lacked stability. K.V. Taran notes in his work on private education in the prerevolutionary Caucasus that private education in the Caucasus was something of a canary in a coal mine – typically, a rise in demand led to the opening of private educational institutions, and a drop in demand led to the closing down of such schools there ([Taran et al., 2021: 812-821](#)). In any case, there were no private educational institutions in Petrovsk as at 1884 – not anymore.

As at 1884, Dagestan Oblast had just one private mixed (primary) educational institution, which made this region the worst performer in the private education sector in the Caucasus.

¹ Note that Kars Oblast was incorporated into the Russian Empire only in 1878 ([Magsumov et al., 2020: 221-234](#)).

The school had an enrollment of 22 students (18 boys and 4 girls), all of whom were Jews (Otchet..., 1885: tables).

As regards the ethnic composition of the region's student body, Table 1 provides a snapshot of the data as at 1884.

Table 1. Ethnic Composition of the Student Body in Dagestan Oblast as at 1884

Educational institution	Ethnic Russians	Georgians	Armenians	Tatars	Mountaineers	Jews	Europeans
Secondary education							
Real school	174	17	20	4	48	14	9
Female progymnasium	78	5	3	2	-	5	6
Total	252	22	23	6	48	19	15
Lower education							
Derbent Urban School	49	-	31	12	-	-	-
Total	49	-	31	12	-	-	-
Private education							
Primary school	-	-	-	-	-	22	-
Total	-	-	-	-	-	22	-
Primary education							
Primary schools	136	-	16	13	70	34	5
Total	136	-	16	13	70	34	5
Grand total	437	22	70	31	118	75	20
Total number of students	773						

As evidenced in Table 1, there was a clear imbalance in the distribution of students across the region's education system, with half of the region's student body (385 individuals) attending secondary educational institutions, and the other half going to lower and primary schools (388 individuals – inclusive of the region's private education sector). As at 1884, ethnic Russians accounted for 56.7 % of the student body, followed by mountaineers – 15.3 %, Jews – 9.7 %, and Armenians – around 9 %.

In addition, the region had a large number of ecclesiastical schools. There was a female Armenian Gregorian parish school in Derbent (Pamyatnaya knizhka, 1879: 136). There were many Tatar schools – 83 in Avar District, 92 in Gunib District, and 10 in Derbent (Pamyatnaya knizhka, 1879: 178-179). There were 7 Jewish schools in Derbent and 1 Jewish school in Temir-Khan-Shura (Pamyatnaya knizhka, 1879: 180-181). However, these schools were primarily focused on religious education, so they were not included in the system of public education in the region.

5. Conclusion

The process of building a network of educational institutions Dagestan Oblast continued up until the mid-1880s. As at 1884, the region's total student body was 773 students.

Access to secondary education was available in the region's administrative center, Temir-Khan-Shura. Lower education was available only in Derbent. In addition, the region had in place an underdeveloped network of primary school. As a consequence, there was an imbalance in the distribution of students across the education system, with half of the region's student body attending secondary educational institutions, and the other half going to lower and primary schools.

The ethnic composition of the region's student body was as follows: ethnic Russians – 56.7 %, mountaineers – 15.3 %, Jews – 9.7 %, and Armenians – 9 %. The rest of the ethnicities represented an insignificant share of the student body.

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The System of Public Education in Elisabethpol Governorate in the Period 1868–1917. Part 3

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Abstract

This work explores the system of public education in Elisabethpol Governorate in the period 1868–1917. The present part of the work examines the timeframe from 1900 to 1914.

A key source used in putting this work together is a set of reports from the Trustee of the Caucasus Educational District for the period 1884–1914. These reports provide a valuable statistical insight into the development of the system of public education in Elisabethpol Governorate in the prerevolutionary period. They contain data such as the number of educational institutions in the region, their library holdings, and the size and ethnic composition of the student body at them.

The authors' conclusion is that Elisabethpol Governorate witnessed significant development in its primary education sector in 1900–1914. In that period, the number of primary schools in the region rose from 91 to 325. This increase was accompanied by a threefold rise in the number of students at them. The growing number of schools intensified the need for teachers. To this end, in 1914 the region's capital became home to a teacher's seminary. Concurrently, transformations also took place in the region's system of lower education, which was reorganized from four- to six-grade. In addition, on the eve of World War I, two of the governorate's regions each became home to a higher primary school, which would contribute to better access to lower education in the region.

The number of secondary educational institutions in Elisabethpol Governorate did not increase in the period under examination. Nevertheless, the growing number of students in the

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region indicated the need for the government to open at least one more male gymnasium in Elisabethpol in the foreseeable future.

As for the ethnic composition of the region's student body, there were declines in each of the dominant groups (Armenians, Tatars, and ethnic Russians). In the period under examination, the number of Armenians at the region's educational institutions dropped from 66 % to 64 %, Tatars – from 19 % to 17 %, and ethnic Russians – from 7 % to 6 %. At the same time, there was a sharp increase in the number of students from other ethnic groups, including Jews and Europeans.

Keywords: Elisabethpol Governorate, Caucasus Educational District, 1868–1917 period, history of pedagogy.

1. Introduction

Elisabethpol Governorate was formed on February 19, 1868, from several uyezds in the Tiflis and Baku governorates. Its capital was Elisabethpol. The region's student body had a motley ethnic composition (Armenians, Tatars, Jews, ethnic Russians, Georgians, and Europeans). This part of the work is focused on the timeframe 1900–1914.

2. Materials and methods

A key source used in putting this work together is a set of reports from the Trustee of the Caucasus Educational District for the period 1884–1914. These reports provide a valuable statistical insight into the development of the system of public education in Elisabethpol Governorate in the prerevolutionary period. They contain data such as the number of educational institutions in the region, their library holdings, and the size and ethnic composition of the student body at them.

The use of analysis, summarization, the chronological method, and the statistical method helped gain a comprehensive insight into the development of public education in Elisabethpol Governorate in the period 1900–1914. More specifically, it helped summarize and systematize the available material on the region's educational institutions and student body. An insight was also gained into the region's academic library holdings.

3. Discussion

Of the greatest relevance to the present part of the work is the historiography related to the development of the system of public education in the Caucasus in the period 1900–1917. A valuable insight into the subject can be gained from existing research into public education in the following regions: Kars Oblast ([Magsumov et al., 2020](#)), Tiflis Governorate ([Mamadaliyev et al., 2020](#)), Kuban Oblast ([Molchanova et al., 2020](#)), Stavropol Governorate ([Natolochnaya et al., 2020](#)), Black Sea Governorate ([Cherkasov et al., 2020](#)), and Terek Oblast ([Cherkasov et al., 2021](#)).

Research has been conducted into issues of a more specific nature as well, including private education in the Caucasus ([Taran et al., 2021](#)), public education in the Caucasus in the entire prerevolutionary period from 1802 onwards ([Shevchenko et al., 2016](#)), and the operation of mountain schools in the Caucasus ([Natolochnaya et al., 2018](#)).

4. Results

As across the Russian Empire as a whole, the network of educational institutions in the Caucasus was divided into the systems of secondary, lower, and primary education.

Secondary education

As at 1900, the system of secondary education in Elisabethpol Governorate was represented by a male gymnasium and a female progymnasium in the capital, Elisabethpol, and a real school for boys in Shusha.

On June 28, 1902, Elisabethpol Female Progymnasium was reorganized into a female gymnasium ([Otchet, 1905: 163](#)). In 1908, the Russian government launched a reform introducing compulsory primary education. This raised the issue of preparing an additional teaching workforce. To this end, on June 1, 1914, the capital, Elisabethpol, became home to a teacher's seminary ([Otchet, 1915: table 108](#)).

Table 1 displays the numbers of secondary educational institutions and students at them in Elisabethpol Governorate in the period 1900–1914.

Table 1. Numbers of Secondary Educational Institutions and Students at Them in Elisabethpol Governorate in the Period 1900–1914 (Otchet, 1901: 6, 54, 109, 135, 166, 208; Otchet, 1905: 2, 50, 105, 131, 163, 205; Otchet, 1908: 2, 59, 75, 78, 121, 127; Otchet, 1909: 2, 4, 77, 125; Otchet, 1910: 2-3, 77, 125; Otchet, 1911: 2-3, 77, 189; Otchet, 1912: 2-3, 77, 159; Otchet, 1913: 3, 64-65, 148-149; Otchet, 1914: 3, 64-65, 174-175; Otchet, 1915: tables 1, 36, 108, 123)

Year	Gymnasiums		Progymnasiums		Real schools	Teacher's seminaries	Total	Number of students		
	Male	Female	Male	Female				Boys	Girls	Total
1904	1	1	-	-	1	-	3	983	344	1,327
1907	1	1	-	-	1	-	3	1018	360	1,378
1908	1	1	-	-	1	-	3	984	383	1,367
1909	1	1	-	-	1	-	3	970	385	1,355
1910	1	1	-	-	1	-	3	980	396	1,376
1911	1	1	-	-	1	-	3	970	417	1,383
1912	1	1	-	-	1	-	3	1,065	433	1,498
1913	1	1	-	-	1	-	3	1,128	439	1,567
1914	1	1	-	-	1	1	4	1,210	457	1,631

As evidenced in [Table 1](#), the early 20th century did not witness a serious increase in the number of secondary educational institutions in the region. Boys and girls could access secondary education only in the capital, and boys could access secondary education in Shusha as well. Nevertheless, the number of students in the region almost doubled over the 14-year period – from 926 to 1,631. Of particular note is that during that period the capital witnessed significant demand for male gymnasium education. As early as 1911, the number of students at the male gymnasium was 600. It was 684 in 1914. Consequently, the gymnasium was overfilled, which prompted the plans to open up a second male gymnasium in the capital in the observable future. Likewise, there was a twofold increase in the number of students at the female gymnasium, although the figure was still relatively low.

An important part of education in the region was self-education, to which end libraries were used. As at 1900, Elisabethpol Male Gymnasium had a library stock of 19,761, Shusha Real School – 6,651, and Elisabethpol Female Progymnasium – 628 items ([Otchet, 1901: 111, 171](#)). The combined library stock was 27,040 items.

As at 1914, Elisabethpol Male Gymnasium had now a library stock of 29,593 items (20,633 items in the fundamental library section and 8,960 items in the discipular one) ([Otchet..., 1915: table 17](#)). Shusha Real School had a library stock of 7,871 items (2,637 and 5,234 items, respectively) ([Otchet..., 1915: table 51](#)). Elisabethpol Teacher's Seminary, established in 1914, had no library holdings. Its students must have used the library holdings of the male gymnasium. Elisabethpol Female Gymnasium had a library stock of 4,132 items ([Otchet..., 1915: table 138](#)).

Thus, at the end of the period under examination, the region's secondary educational institutions now had a library stock of 41,596 items (a nearly twofold increase).

Lower education

The first lower educational institution in Elisabethpol Governorate, Shusha Urban School, was opened on June 1, 1875 ([Otchet..., 1895: № 287](#)). As at 1900, the region's network of lower educational institutions included three urban schools (the ones in Elisabethpol, Nukha, and Shusha), one tradesman's specialized school, and one Mariinsky female school.

This network remained unchanged up until 1914, when the region began to witness transformations in this sector.

Specifically, in 1914 all of the region's urban four-grade schools (the ones in Elisabethpol, Nukha, and Shusha) were reorganized into six-grade higher primary schools – the one in Nukha on January 1,

1914, and the ones in Elisabethpol and Shusha on September 1, 1914. In addition, the region became home to another two higher primary schools – Geryusin and Kazakh (Otchet..., 1915: table 183).

Table 2 displays the numbers of lower educational institutions and students at them in Elisabethpol Governorate in the period 1900–1914.

Table 2. Numbers of Lower Educational Institutions and Students at Them in Elisabethpol Governorate in the Period 1900–1914 (Otchet, 1901: 296, 350, 431, 456, 486; Otchet, 1905: 292, 346, 427, 440, 452, 482; Otchet, 1908: 228, 252, 324, 346, 394; Otchet, 1909: 264, 366, 406; Otchet, 1910: 264, 290, 404; Otchet, 1911: 264, 290, 404; Otchet, 1912: 264, 290, 390; Otchet, 1913: 232, 250-251, 346; Otchet, 1914: 286, 306-307, 438-439; Otchet, 1915: tables 158, 175, 183, 209)

Year	Higher primary schools	Urban schools	Tradesman's specialized schools	Mariinsky female schools	Total	Number of students		
						Boys	Girls	Total
1900	-	3	1	1	5	1,242	260	1,502
1904	-	3	1	1	5	1,227	309	1,536
1907	-	3	1	1	5	971	192	1,163
1908	-	3	1	1	5	1,149	211	1,360
1909	-	3	1	1	5	1,284	248	1,532
1910	-	3	1	1	5	1,310	243	1,553
1911	-	3	1	1	5	1,393	266	1,659
1912	-	3	1	1	5	1,374	277	1,651
1913	-	3	1	1	5	1,417	246	1,663
1914	5	-	1	1	7	973	264	1,237

As in the case of the region's secondary educational institutions, there was a minor increase in the number of its lower educational institutions – from five to seven. The growth took place in 1914. The size of the student body at lower educational institutions in the region was heavily influenced by social phenomena. Specifically, in the conditions of the First Russian Revolution, the number of students at Elisabethpol Urban School dropped from 541 (1904) to 391 (1907). There was a decline in the size of the student body at the Mariinsky female school as well – from 309 to 192. The next major decline occurred with the start of World War I, when the size of the student body at Elisabethpol Urban School decreased from 623 (in 1913) to 340 (in 1914).

A few words will now be said about the sector's library stock. As at 1900, the three urban schools had a combined library stock of 10,449 items. The Mariinsky female school in Shusha and the tradesman's specialized school in Elisabethpol had a library stock of 1,618 and 2,653 items, respectively (Otchet..., 1901: 301, 432, 459). Thus, the combined library stock in this sector as at 1900 was 14,720 items.

As at 1914, the Mariinsky female school had a library stock of 1,592 items (Otchet..., 1915: table 164). Geryusin and Kazakh Higher Primary Schools, opened in 1914, each had a small library stock – 27 and 22 items, respectively (Otchet..., 1915: table 184). Elisabethpol Higher Primary School had a library stock of 7,320 items, Nukha Higher Primary School – 5,649, and Shusha Higher Primary School – 4,689 items (Otchet..., 1915: table 184). The tradesman's specialized school in Elisabethpol had a library stock of 3,771 items (Otchet..., 1915: table 217). Thus, the combined library stock in this sector as at 1914 was 23,070 items (an increase of more than 50 %).

Primary education

As at 1885, Elisabethpol Governorate had in operation 33 primary schools under the purview of the Ministry of Public Education (Otchet..., 1886: applications). The figure was 91 as at 1900 (Otchet..., 1901: 536).

Table 3 displays the numbers of primary schools under the purview of the Ministry of Public Education and students at them in Elisabethpol Governorate in the period 1900–1914.

Table 3. Numbers of Primary Schools under the Purview of the Ministry of Public Education and Students at Them in Elisabethpol Governorate in the Period 1900–1914 (Otchet..., 1901: 536, 566; Otchet..., 1905: 532, 562; Otchet..., 1908: 350, 352; Otchet..., 1909: 392, 394; Otchet..., 1910: 390, 392; Otchet..., 1911: 390, 392; Otchet..., 1912: 448, 450; Otchet..., 1913: 334-336; Otchet..., 1914: 426-428; Otchet..., 1915: table 199, 202)

Year	Number of schools	Number of students		
		Boys	Girls	Total
1900	91	5,152	1,152	6,303
1904	156	8,326	1,541	9,867
1906	122	-	-	-
1907	119	6,471	1,334	7,805
1908	124	7,163	1,656	8,819
1909	135	7,658	1,840	9,498
1910	160	9,358	1,708	11,066
1911	180	9,633	1,967	11,600
1912	215	10,528	2,381	12,909
1913	313	14,131	3,641	17,772
1914	325	15,077	3,972	19,049

As evidenced in Table 3, in the period 1900–1914, the number of primary educational institutions in the region increased more than three times (from 91 to 325). In the same period, the number of students in this sector increased more than three times as well, with there being increases of 2.8 times among boys and 3.5 times among girls. There were changes in the number of students per school as well. Whereas in 1885 the figure was 35.2 students per school, it was 69.2 in 1900 and 58.6 in 1914. This was associated with the introduction of a per-school limit of 50 students in 1908.

Private educational institutions

Across the Caucasus Educational District and throughout Elisabethpol Governorate private education was characterized by instability and a tendency to respond to changes in demand. The figure fluctuated significantly – in a range between two and nine. The sector was comprised of secondary, lower, and primary educational institutions.

Table 4 displays the numbers of private educational institutions and students at them in Elisabethpol Governorate in the period 1900–1914.

Table 4. Numbers of Private Educational Institutions and Students at Them in Elisabethpol Governorate in the Period 1900–1914 (Otchet..., 1901: 518, 526; Otchet..., 1905: 514, 522; Otchet..., 1908: 454; Otchet..., 1909: 466; Otchet..., 1910: 464; Otchet..., 1911: 464; Otchet..., 1912: 466; Otchet..., 1913: 392-393; Otchet..., 1914: 486-487; Otchet..., 1915: table 234)

Year	Number of schools				Number of students		
	Secondary	Lower	Primary	Total	Boys	Girls	Total
1900	-	-	9	9	373	221	594
1904	-	-	5	5	190	25	215
1907	-	-	2	2	54	1	55
1908	-	-	3	3	67	6	73
1909	-	-	2	2	105	21	126
1910	-	-	2	2	114	20	134
1911	-	-	2	2	100	24	124
1912	-	-	3	3	124	48	172

1913	-	1	5	6	188	62	250
1914	1	1	3	5	83	28	111

As evidenced in [Table 4](#), in the period under examination the region did not witness much activity in its private education sector. From 1900 to 1912, it was represented by primary schools solely. It was not before 1913 that this sector saw the addition of a lower educational institution, with a secondary one also opening in 1914. Furthermore, the number of students in this sector continued to decline. This was associated with the dominance of primary schools in the region. Overall, the region's private education sector witnessed a fivefold decline in the size of its student body – from 591 (in 1900) to 111 (in 1914), with the number of girl students declining nearly 800 %.

In terms of ethnic composition, it is worth recalling that from 1868 to 1884 over 57 % of the student body was made up of Armenians, followed by Tatars – 23 %, Europeans – 13.8 %, and ethnic Russians – less than 5 % ([Magsumov et al., 2021: 1046](#)). In the period from 1885 to 1900, Armenians now accounted for 66 % of the student body, followed by Tatars – 19 % and then ethnic Russians – 7.2 % ([Magsumov et al., 2022: 305](#)).

[Table 5](#) displays the statistical data on the ethnic composition of the region's student body as at 1914.

Table 5. Ethnic Composition of the Student Body in Elisabethpol Governorate as at 1914 ([Otchet..., 1901; Otchet..., 1915](#))

Educational institution	Ethnic Russians	Georgians	Armenians	Tatars	Mountaineers	Other ethnicities, including Jews
Secondary education						
Male gymnasium	115	22	233	139	-	165
Real school	4	8	329	136	-	1
Female gymnasium	139	19	262	19	-	18
Teacher's seminary	8	7	8	9	-	6
Total	266	56	832	303	-	190
Lower education						
Elisabethpol Higher Primary School	50	40	100	150	-	-
Shusha Higher Primary School	6	-	110	41	-	1
Nukha Higher Primary School	16	1	81	147	-	-
Geryusin Higher Primary School	5	-	55	18	-	-
Kazakh Higher Primary School	5	-	28	31	-	-
Mariinsky female school	26	-	222	8	-	8
Tradesman's specialized school	14	-	31	62	-	5
Total	122	41	627	457	-	14

Private education						
Private schools	Data not available					
Primary education						
Primary schools	739	17	10,028	2,647	-	1,618
Total	739	17	10,028	2,647	-	1,618
Grand total as at 1900	667	91	6,163	1,772	59	614
Grand total as at 1914	1,127	114	11,487	3,407	-	1,822
Total number of students as at 1914	17,957					

As evidenced in [Table 5](#), relative to 1885 the number of Armenians at educational institutions in the region increased in 1900 from 57 % to 66 %, declining a little by 1914 – to 64 %. The number of Tatar students dropped to 17.2 %, and the number of ethnic Russian students declined a little as well – from 7.2 % (in 1900) to 6.2 % (in 1914). At the same time, there was a sharp increase in the number of students from other ethnic groups – from 673 (in 1900) to 1,822 (in 1914).

5. Conclusion

Elisabethpol Governorate witnessed significant development in its primary education sector in 1900–1914. In that period, the number of primary schools in the region rose from 91 to 325. This increase was accompanied by a threefold rise in the number of students at them. The growing number of schools intensified the need for teachers. To this end, in 1914 the region's capital became home to a teacher's seminary. Concurrently, transformations also took place in the region's system of lower education, which was reorganized from four- to six-grade. In addition, on the eve of World War I, two of the governorate's regions each became home to a higher primary school, which would contribute to better access to lower education in the region.

The number of secondary educational institutions in Elisabethpol Governorate did not increase in the period under examination. Nevertheless, the growing number of students in the region indicated the need for the government to open at least one more male gymnasium in Elisabethpol in the foreseeable future.

As for the ethnic composition of the region's student body, there were declines in each of the dominant groups (Armenians, Tatars, and ethnic Russians). In the period under examination, the number of Armenians at the region's educational institutions dropped from 66 % to 64 %, Tatars – from 19 % to 17 %, and ethnic Russians – from 7 % to 6 %. At the same time, there was a sharp increase in the number of students from other ethnic groups, including Jews and Europeans.

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