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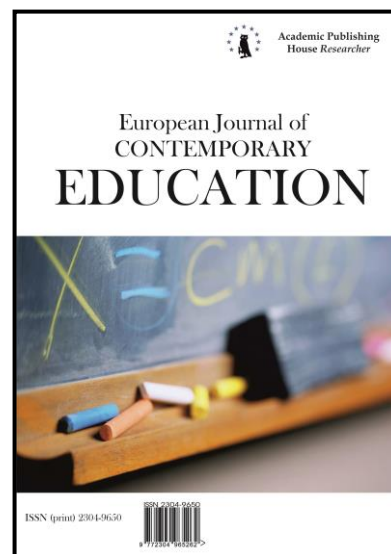
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The Problems of Contemporary Education

Comparison of Primary School Pupils' and Secondary School Students' Opinions on Physical Education Classes in Slovakia

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Abstract

This study analyses opinions of primary school pupils and secondary school students (boys and girls) on Physical education classes in Slovakia.

The survey was conducted in 21 Slovak towns with 6959 respondents – 3606 primary school pupils and 3353 secondary school students. Average age of boys from primary schools was 14.32 years \pm 0.35 years and girls was 14.28 years \pm 0.39 years. Average age of boys from secondary schools was 18.22 years \pm 0.25 years and girls was 18.56 \pm 0.38 years. It was carried out in school year 2018/2019. The survey was based on inquiry created and evaluated by Gamo Banska Bystrica's programme TAP3. The survey results were analysed in terms of sex and age differences (chi – square statistic). It was established that popularity of Physical education (PE) classes declines with age. Almost 50 % of boys and girls stated they are active during PE classes, however their activity declines with age, and therefore they become more passive. More than 50 % of pupils and students always or mostly feel good during PE, when the main activities of the classes are games and fun. The most popular activity in PE classes is playing sports games, with the survey response frequency of 58.91 %. The least popular are gymnastic exercises, with the survey response frequency of 44.49 %. The significant difference was noted among particular groups of respondents in terms of statistical significance ($p < 0.01$), especially from the point of view of the sex and age differences (primary school pupils vs. secondary school students).

Keywords: opinion, Physical education classes, sex differences, primary school pupils, secondary school students.

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1. Introduction

At the turn of the millennium, the topic of improvement of the education system in Slovakia was widely debated in various science forums and expert discussions. The state education programme was implemented in primary and secondary schools through the efforts of Slovak experts. The main idea was to change the focus of PE classes: a variety of content in classes, adapting the content to school conditions, students' and pupils' interests and a teachers' responsibility for creating the content for particular groups of students or pupils (Antala et al., 2012). Vilimová (2009) sees the principal specific roles of PE at these levels: learning, improvement of movement habits and skills, development of fitness and coordination physical abilities, knowledge acquirement and, last but not least, creation of a permanent positive attitude towards physical activity. Kraut et al. (2003) point to the fact that regular participation in physical activities organized by schools has an influence on children and will have positive effects also later on in the adulthood.

The implementation of tasks resulting from the aims of PE depends on the conditions – content, abilities of students, ability of a teacher, their experience, age, flexibility, knowledge, etc. Antala (2009) takes a view that children do not take PE classes as seriously as they should and they are losing popularity. Prachař (2016) has the same opinion. He claims that PE has the lowest popularity compared to other subjects. He also points to the fact that children are weaker and idler.

However, Biddle, Mutrie (2001), Pavelková (2002), Antala et al. (2012) say that the opposite is true. According to them, PE and sports is at the forefront of children's interests and they have a positive attitude towards the classes. For example, Görner, Starsi (2001) carried out a survey in particular schools in both rural and urban areas. Based on a sample consisting of more than 890 children, he found out that they (55.74 % of girls and 53.40 % of boys) had mostly a positive attitude towards PE. Bartik (2009) used a sample of 826 boys and 780 girls. He found out that more than 40 % of them had a positive attitude towards PE classes. Balga, Antala (2015) also examined children's attitudes towards PE. Based on a sample of 433 girls, they discovered that their attitudes were mostly positive, with the survey response frequency of 59.35 %. Adamcak, Bartik (2014) found out that 57.85 % out of 642 boys and 47.29 % out of 645 girls have a positive attitude towards PE classes. This positive attitude is very important, because as Simonek (2006) and Sigmund, Sigmundova (2011) mentioned, PE is the only class where most of the children participate in physical activities. It is important to realize that their interests regarding physical activities differ from the interests of adults. Loksova, Loksa (1999) state that if pupils and students have enough intrinsic motivation, they are more successful and active in all their classes, and therefore they are more likely to attend school, resulting in a lower absence rate.

We learn more about pupils' and students' absence in PE classes from works written by many experts in the field. Sallis et al. (1999) pointed out in their study of children and teenagers from age 10 to 18 that the number of pupils and students who do not exercise regularly in PE classes is increasing. Slezak (2005) surveyed various high school students and determined that 2737 out of 8640 boys and 3953 out of 7836 girls did not participate actively in PE classes. The main reasons why pupils and students did not exercise in PE classes were movement disorders, cardiovascular and spinal diseases, and 36.8 % of girls forgot to bring their PE kit, and therefore could not exercise. Balga, Kovalcikova (2018) point out, that the most common reason why children did not exercise during PE classes was either illness, forgotten PE kit or they were preparing for another class. What is more, a certain number of pupils and students did not want to exercise, because they do not find the content interesting. Simonek (2011) and Medekova (2012) confirm it in their studies as well. According to Kremnický (2019) the popularity of PE classes depends on the content, teaching styles and the classroom group. Sallisa et al. (2001) claim that children expect a feeling of satisfaction after a physical activity in a friendly atmosphere. Cheben (2006) correctly states that the appropriate form of motivation still remains the dominant factor in creating a positive attitude towards PE, sports and regular physical activities. Standage et al. (2003) consider intrinsic motivation as the key aspect. Mazala (2007) claims that a cheerful atmosphere is crucial for creativity and success in every class. Miko (2008) points out that a PE teacher should know everything about sports and human science. They should have wide knowledge, which requires theoretical and practical versatility. At the same time, Miko (2008) adds, that if a teacher wants to impress and influence children, they have to be role models and they have to work hard on themselves all of their lives. Cothran et al. (2000) mention that PE classes with the same content,

however taught by different teachers who have different teaching styles could be viewed differently by the children.

PE and sports is an undoubtedly important aspect of the education system. It is a broad field continuously studied from various points of view by PE teachers and education experts. The study focuses on pupils' and students' opinions that can help with finding solutions to make PE classes more attractive, popular and interesting for today's young people.

2. Materials and methods

The aim of the study was to find, analyse and compare opinions of primary school pupils and secondary school students on PE classes in Slovakia.

We used the random sampling method when selecting the research sample. We randomly selected 21 cities from different regions of Slovakia and within them we also randomly selected 50 primary and 50 secondary schools. In total, 6959 respondents from all over Slovakia were involved in the research. There were 3606 primary school pupils (1720 girls and 1886 boys) and 3353 secondary school students (1660 girls and 1693 boys). Pupils from the 8th and the 9th grades in primary schools (689 girls and 744 boys from the 8th grade, 1031 girls and 1142 boys from the 9th grade), as well as students from the 3rd and the 4th grades in secondary schools (524 girls and 652 boys from the 3rd grade, 1136 and 1041 boys from the 4th grade) were deliberately included in the survey.

Average age of boys from primary schools was 14.32 years \pm 0.35 years and girls was 14.28 years \pm 0.39 years. Average age of boys from secondary schools was 18.22 years \pm 0.25 years and girls was 18.56 \pm 0.38 years.

Figure 1 presents the primary characteristic of the respondents of the research.

The main research method was questionnaire survey created by authors of this article. The questionnaire consisted of 9 questions. The validity and reliability of the questionnaire was verified in the framework of the pre-research (Adamcak, Bartik, 2014; Adamcak et al., 2017).

The questionnaire in electronic form was distributed to 50 primary and 50 secondary schools, which were selected by random selection from 21 cities from different regions of Slovakia. Data collection was carried out electronically in cooperation with teachers at the monitored schools. The survey was conducted during the school year 2018–2019.

Data analysis – respondents' responses were evaluated from two aspects:

- 1 / – gender differences in opinions (female and male);
- 2 / – age differences in opinions (primary and secondary schools).

The results were expressed as a percentage number. The statistical analysis was performed using the TAP 3 software.

Using the Chi-square test we investigated the statistical significance of the differences in the answers to the individual questionnaire questions, which were used to determine the views on Physical education classes between primary and secondary school pupils and also between boys and girls. We found statistical significance at 1 % and 5 % statistical significance levels.

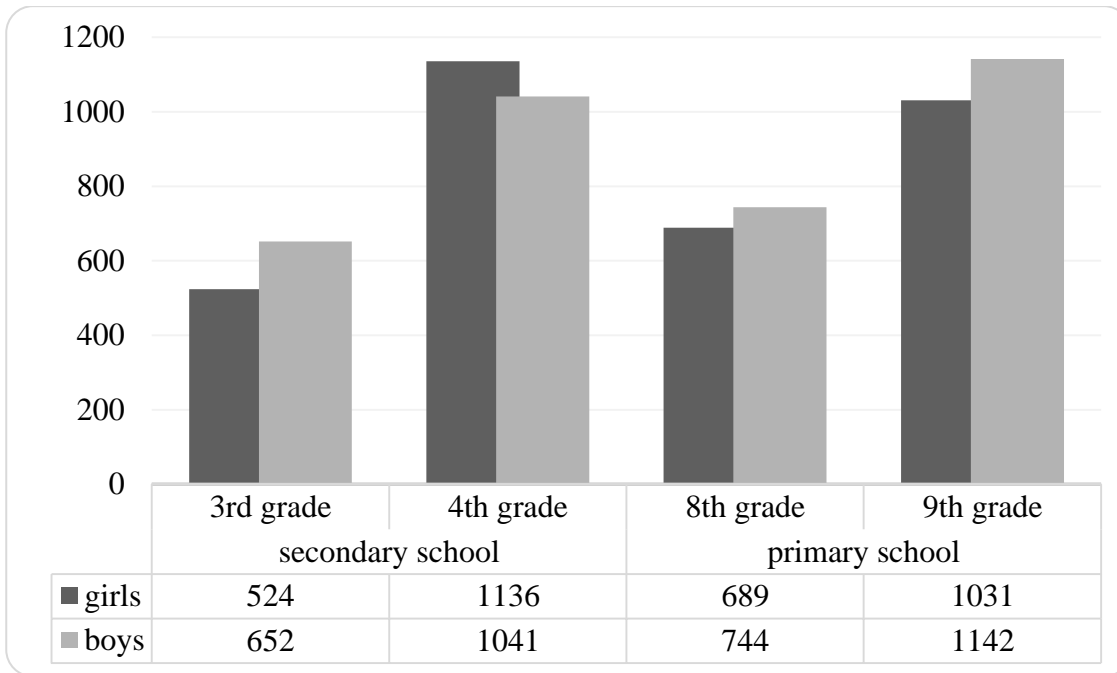


Fig. 1. Research sample (n = 6959)
Source: own

3. Results

It was found that the popularity of PE declines with age. The main question was how many pupils and students consider PE as their favourite class (Figure 2). In comparison with secondary school students the average score in elementary school was higher (37.38 % of girls and 62.09 % of boys). At the same time, it was found that there are 10.99 % of boys in high school who consider PE "the least favourite subject". Comparison of results in terms of sex and age differences points to the significant difference with p value $p < 0.01$ (Table 1).

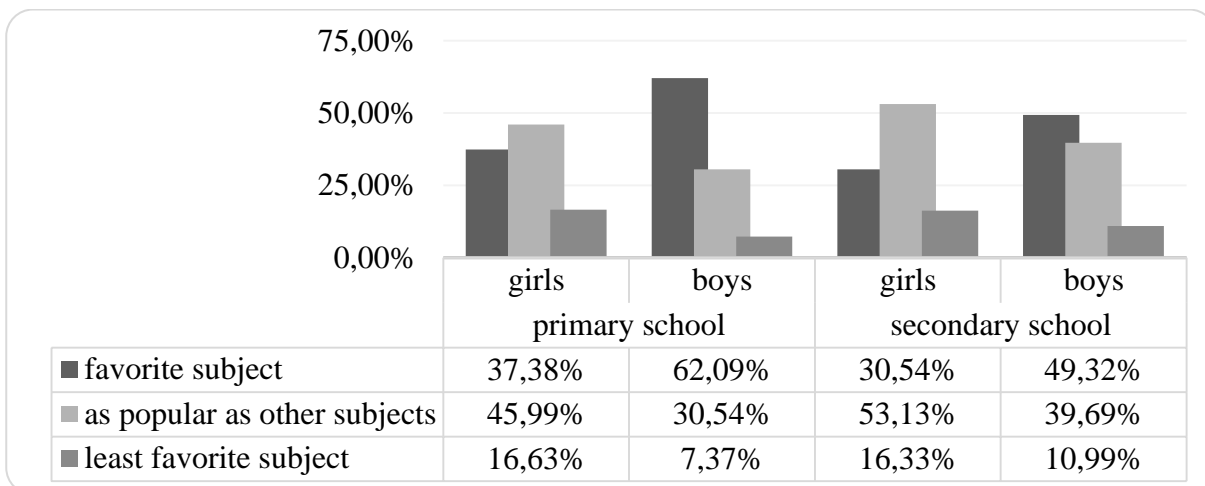


Fig. 2. Popularity of PE and sports
Source: own

The indicator of difficulty of PE implies that children think the difficulty of PE classes is increasing. Answers "difficult" or "very difficult" had a higher average score (Figure 3). On the other hand, girls and boys in primary schools frequently answered that the classes are "very easy". It was also unexpected to find out that 13.92 % of secondary school girls and 10.87 % of secondary

school boys answered "I do not know". Sex and age differences were again significant on p value $p < 0.01$ (Table 1).

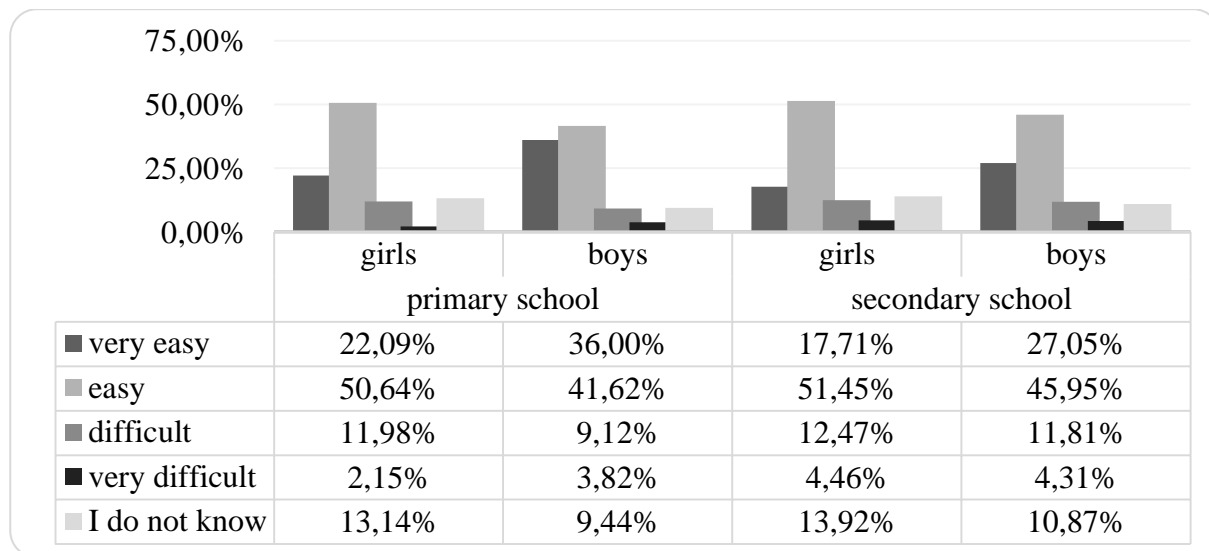


Fig. 3. Difficulty of PE and sports from the students' point of view
Source: own

The following facts were discovered from the self-evaluation activity during PE classes. A higher average score was noticed in answers "I do not even try during PE, I am passive" by secondary school girls (6.51 %) and boys (5.2 %). Students (boys and girls) had a higher average score in an answer "very active". The answer "active" was dominant in the group of girls (50.81 %) and in the group of boys (51.96 %) in primary schools (Figure 4). There were significant differences in terms of sex and age at $p < 0.01$ (Table 1).

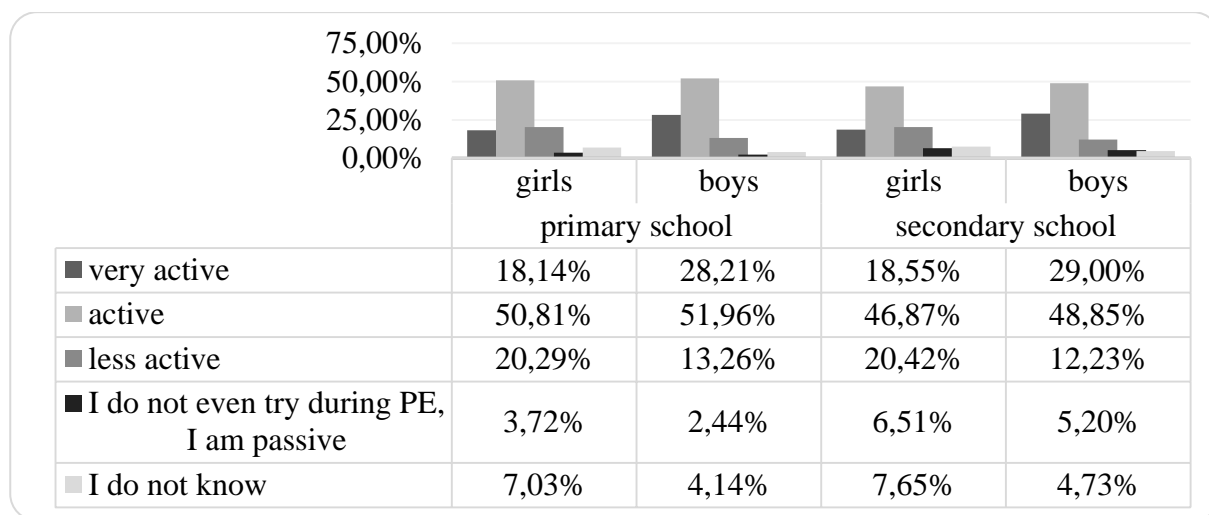


Fig. 4. Self-evaluation of activity in PE classes
Source: own

From the emotional point of view, a good feeling during PE classes dominates in both groups (boys and girls) and in both schools (primary and secondary). More than 50 % of respondents said that they always or mostly feel good during PE classes. The answer "always bad" had a higher average response score in the group of girls (4.52 %) and in the group of boys (4.37 %) in secondary schools. On the average 11.84 % of respondents could not definitely answer the question (Figure 5). There were significant differences in terms of sex and age on $p < 0.01$ (Table 1).

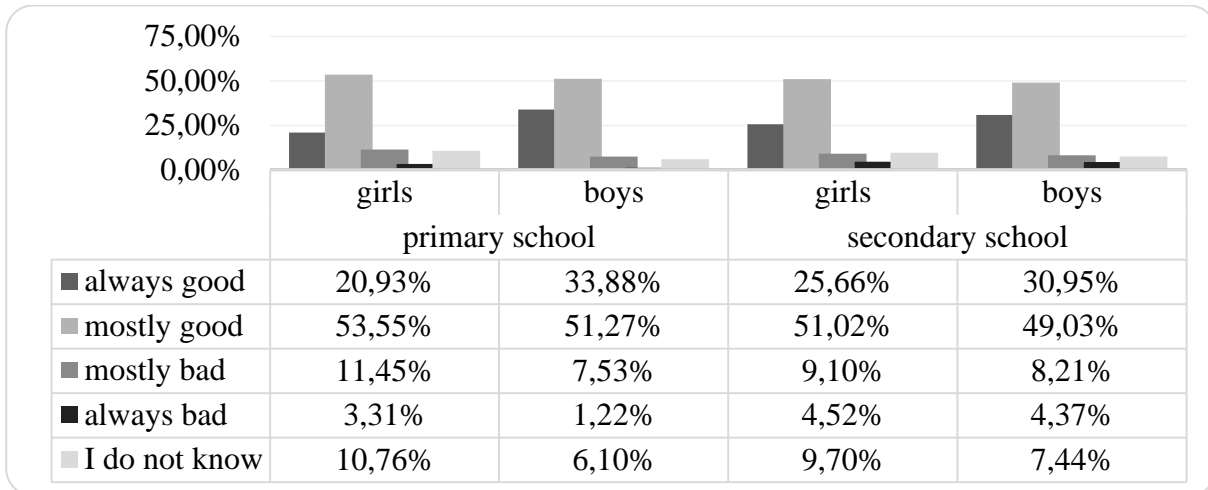


Fig. 5. Emotional aspect in PE classes from the student's point of view
Source: own

In the following question, we focused on the principal physical activity in PE classes. An opportunity to exercise while playing sport games and having fun had the highest response score (Figure 6). The survey response frequency was higher than 24 %. The second strongest motivation for exercising in PE classes for all respondents was to get a better body, with the survey response frequency of more than 20 %. The answer "health improvement" had the lowest average score – 9 %. Again, there were significant differences in terms of sex and age on p value $p < 0.01$ (Table 1).

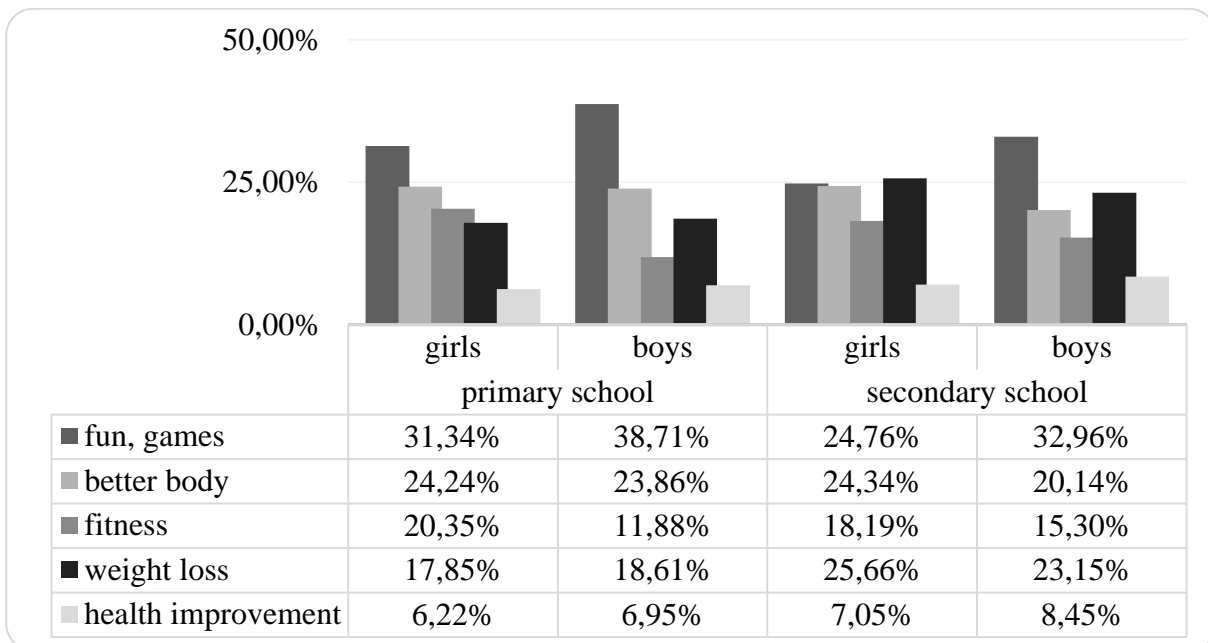


Fig. 6. The principal activity in PE classes
Source: own

Playing sports games during PE classes is the "most favourite" activity among all the children with the highest average score (Figure 7). There were significant differences in terms of sex and age differences (Table 1).

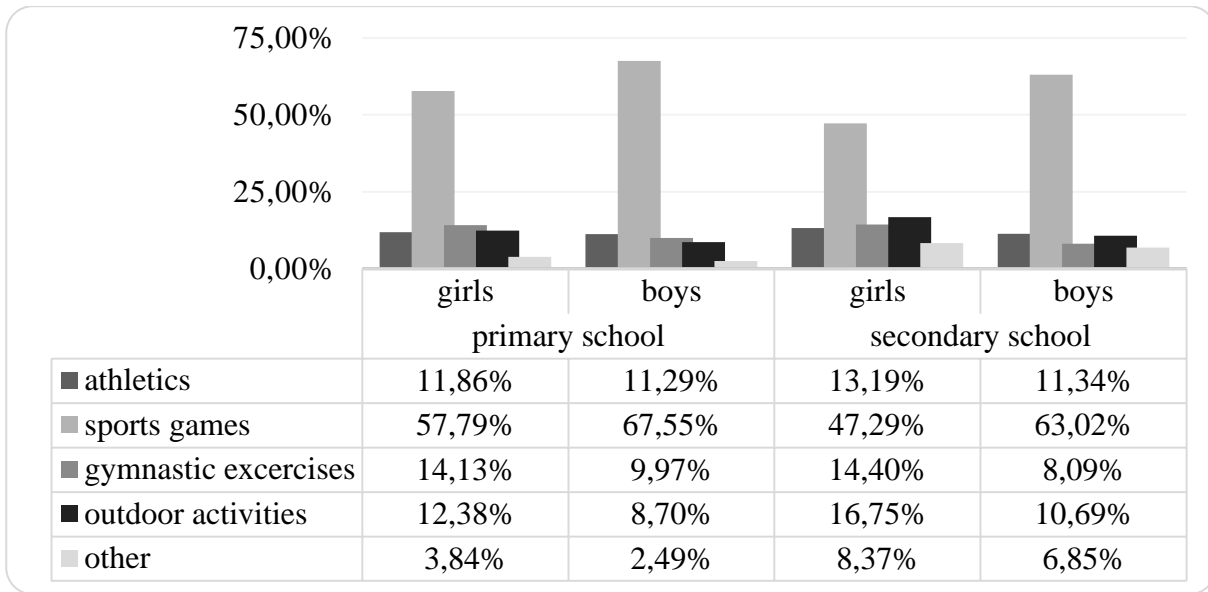


Fig. 7. The most favourite physical activity in PE classes
Source: own

"Gymnastic exercises" have the highest average score in terms of the least favourite physical activity in PE classes (Figure 8). The survey response frequency reached 42 % among all the children. The second least favourite physical activity was "athletics". There were significant differences in terms of sex and age differences (Table 1).

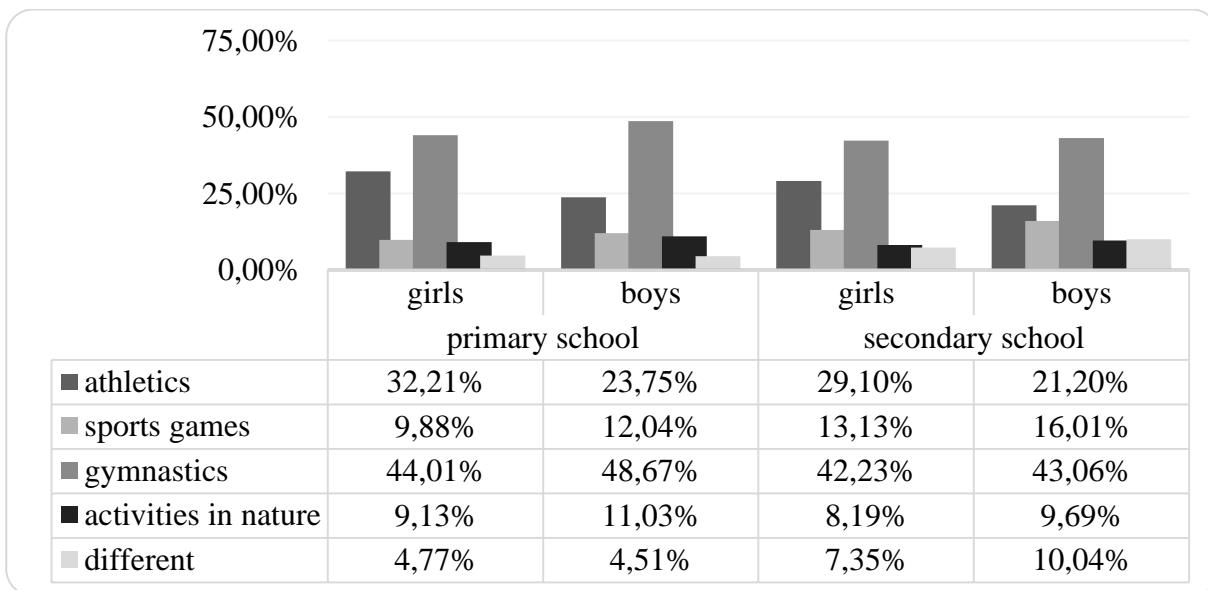


Fig. 8. The least popular activity during PE classes
Source: own

Inquiry includes a question about respondents' opinion on cancelling the PE class for various reasons. As Figure 9 shows, mostly girls in both primary and secondary schools answered that they are "glad" when PE classes are cancelled. On the other hand, 54.35 % boys asked in primary schools are "not glad". Out of all the asked pupils and students, 15.69 % said they are "indifferent". Reciprocal answer confrontation demonstrated differences in terms of sex and age at p value $p < 0.01$ (Table 1).

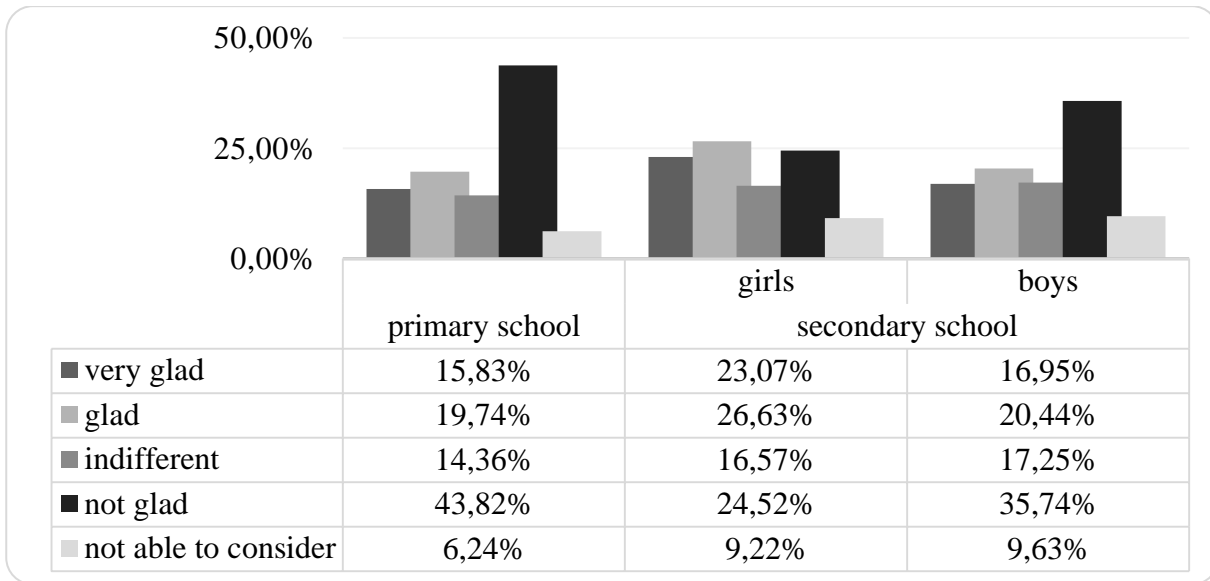


Fig. 9. Respondents' opinion on cancelled PE class
Source: own

The last survey question is related to the children's opinion on co-educational PE classes. The results show that 42.06 % boys attending secondary schools would like to have co-educated PE classes (Figure 10), in contrast, girls attending primary schools prefer classes without boys (56.92 %). There were significant differences in terms of sex and age on p value $p < 0.01$ (Table 1).

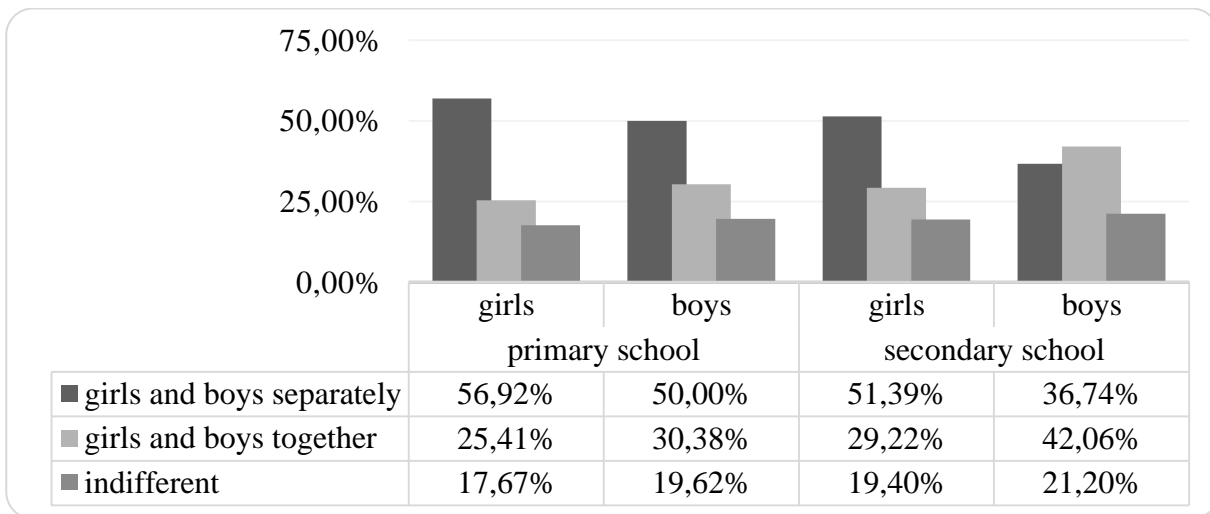


Fig. 10. Respondents' opinion on co-educational PE classes
Source: own

Table 1. Statistical evaluation of answers

Figure	PS/SS (Chi p value)		PS B/G (Chi p value)		SS B/G (Chi p value)	
2	xx	1.199E-76	xx	6.268E-51	xx	1.160E-27
3	xx	6.055E-29	xx	4.809E-21	xx	5.211E-09
4	xx	4.940E-36	xx	1.896E-17	xx	4.019E-18
5	xx	1.755E-20	xx	3.767E-23	xx	0.00529
6	xx	2.079E-52	xx	7.626E-42	xx	2.98E-13

7	xx	1.094E-15	xx	2.551E-11	xx	5.571E-07
8	xx	1.251E-27	xx	7.075E-09	xx	1.358E-19
9	xx	5.977E-13	xx	5.928E-07	xx	5.262E-07
10	xx	9.977E-19	xx	0.000133	xx	2.683E-18

Source: own

Explanatory notes: PS = primary school, SS = secondary school, B = boys, G = girls, xx = statistical significance – p value < 0.0; x = statistical significance – p value < 0.05; n = statistically non-significant

4. Discussion

Research proved the fact that PE is the most popular or one of the most popular subjects in schools. This popularity was confirmed by Kollarik et al. (1992), when they found PE as being the most popular subject within students starting secondary schools. Additionally, it was the only subject which was evaluated positively. The study results closely correlate with Biddle, Mutries' study (2001). They found that boys from the 5th to the 9th grade consider PE as their favourite subject. On the contrary, girls' interest in PE declines with age. Pavelkova (2002) conducted a survey on a sample of 428 students and 267 teachers, the results show that boys view PE classes more positively than girls. According to Antala et al. (2012) 46.5 % of boys in secondary schools consider PE to be their most favourite subject and 35.1 % classified it as favourite. As stated in Carlson's study (1995), repetition of the same sports activities is considered to be one of the key factors why students lose interest in PE classes. In the research conducted by Antala et al. (2012), 1/3 of surveyed pupils and students (girls and boys at primary schools, n = 817; girls and boys at secondary schools, n = 1130) consider PE classes as uninteresting, because they do not find the content engaging. Fotynyuk (2017) studied physical condition within first grade students (n = 86) aged 16-19 years. He states 41 % of these students have a poor physical condition, which is caused by lack of motivation to participate in PE classes. Students' motivation is closely related to the teacher's personality. Jansa et al. (2012) researched a sample of 1885 PE students in their final year of university. Almost 50 % of them want to work in a different field. It follows that there are just a few young teachers. Pacholik (2012) points out the positive correlation between the length of teaching experience and type of temperament. That is to say, the longer one's teaching experience is, the more phlegmatic they are.

Antala et al. (2012) also state that most of the pupils in primary schools, as well as secondary schools consider PE to be an undemanding subject. In general, girls find PE classes more difficult than boys and few students say it is very difficult. These facts are very similar to those seen in this research.

Simonek (2011) points out that teachers' influence is decreasing, and therefore they are not able to deal with children who refuse to participate in class. This research shows passivity of the students in PE classes increases with age. In secondary schools, it is getting close to 7 %. It follows that for this group of students PE classes are the only place where they do any physical activity. This problem is also discussed in studies of Gallahue, Donnelly (2003) or Graham et al. (2004). Slezak (2004) carried out research focused on the number of pupils that do not exercise during PE classes in primary schools in Slovakia. The research shows that 45.8 % of girls and 33.8 % of boys do not participate in physical activities during PE classes due to their health problems. According to Pavelkova (2002), children who tend to be bored are usually the ones whose knowledge and skills exceed the school's requirements. This means they are not engaged in the process as much as others. Their research also shows, that in comparison with Maths or Biology, students experience boredom during PE classes less often (the average score was 1.64 out of 5).

More than 70 % of asked pupils and students said they always or mostly feel "good" during the PE classes. The results correspond with findings of Antala et al. (2012). They show that 2/3 of asked pupils and students are feeling always or mostly "good" during the PE classes. Additionally, the difference in their feelings was statistically significant at p value < 0.001. The older pupils and students are, the more negative the feelings they have towards PE classes. In terms of the affective and cognitive component of children's attitude to PE, Subramaniam, Silverman (2007) came to the conclusion that the affective component decreases with age. This phenomenon is connected with

repetitiveness of PE classes. Every year, they have the same content, and therefore pupils lose interest in PE by the time they reach the 9th grade. This tendency was not detected in this research, although the response rate of the option "always unpleasant" increased in secondary school students' responses. Moreover, the study of Phillips, Silverman (2015) also shows decreasing motivation to participate in PE classes. Donnelly et al. (1997) claim motivation to be closely connected to feelings. Feelings are an engine for motivation. This double-sided relation was proved by research of Nakonecny (1996), Armstrong (2007), etc.

Antala et al. (2012) state that it is necessary to increase awareness about the effects of physical activity on health. There were 9 % of respondents who claimed that their main motive to actively participate in PE classes was to improve their health. The author adds that the activity is possible only with coordination of more subjects; such as educational institutions, communities, central government authorities or third-level institutions. According to Suggs, McIntyre (2011), the legal, political and economic environment plays an important role. It can promote and put preventive programmes for the support of healthy lifestyle into practise.

The study of Ilnitskay et al. (2014), conducted on a sample of 800 students from Ukraine, Russia and Belarus shows their main motive for exercising is the pursuit of a beautiful figure. The secondary motive is the motive of health and physical fitness. Stacke's research (2008) points out that the main motivation for exercising in fitness centres is weight loss. Similarly, the main motive for physical activity in the age group under 20 appears to be body shape. The fact was detected by authors Lenkova et al. (2009). Battistelli et al. (2016) created BREQ and MPAM-R questionnaires. The sample of 1995 students (997 boys and 998 girls; average age 15.6 years old) answered that their main motive for physical activity was fitness and sports activities rather than the physical appearance. Similar research was done by Vasickova (2016) in the Czech Republic, as 1316 students participated in the research (916 girls and 400 boys; age average 16.69 years old). They stated their main motive for physical activity was fitness and secondary sports. The overweight girls were mostly concerned with physical appearance. Zacharova (2012) states that adolescent girls have a need to look pretty. They view it as their mission that has to be accomplished in order to feel confident. They see their role models such as models, singers and actresses.

Tillinger's study (1994), which used the sample of 378 pupils in Czech Republic primary schools, proved a significant influence between the content of the PE classes and the pupils' relationship to the subject. Non-athletes prefer sports games (58 %), athletics (13 %) and gymnastics (12 %), whereas the athletes prefer athletics (56 %), sports games (26 %) and gymnastics (13 %). The least popular activities within non-athletes are gymnastics (34 %), hiking (19 %), combat sports (15 %) and athletics (15 %). On the other hand, activities that are least preferred by athletes are combat sports (42 %) and gymnastics (28 %).

The results of this research are supported by claims of these experts: Bebcakova (1998), Adamcak, Nemeč (2010), Nemeč, Nemečová (2012), Stranavska, Gorner (2018), Dlouhy et al. (2018), Kaminska et al. (2018). Their works mostly focus on the interest of pupils in terms of the popularity of physical activities on the PE classes. However, Novotná et al. (2009) conducted a survey on 354 of the 4th graders from primary schools in Banská Bystrica region. These pupils had a low interest in sports games. Antala et al., (2012) obtained similar results in their research. From the group of 417 boys from primary schools, 37.1 % consider sports games as their least favourite PE class activity, and 26.6 % out of 400 girls as their second least favourite PE class activity. The research also showed that for 32.9 % of girls the least popular activity in PE classes was gymnastics. This fact corresponds with our findings. However, the research did not deal with the question of the most favourite PE class activity. The increasing popularity of PE classes is related to their content, which is shown in the study of Sigmund et al. (2009). They used a sample of 2213 girls from the Czech Republic and Poland aged 13-17 years. The content of classes was changed from athletics and gymnastics to sports games, dancing and aerobic, which led to the popularity increase. Hastie et al. (2011) point out the positive influence of playing sports games, mainly on harmony between technical and tactical skills in games.

Antala et al. (2012) noted that 30.4 % of primary school pupils are glad when the PE class is cancelled, 26.4 % of them are indifferent and 43.1 % of them are unhappy. Secondary schools results are even more negative; 53.2 % of the students are glad when the PE class is cancelled, 29.3 % of them are indifferent and 17.5 % of them feel unhappy. According to Ryan (2004), there are negligible differences between the boys' and girls' results in co-education. The co-education

also does not have a bad influence on the educational process. Antala et al. (2012) noted that 77.2 % of primary school pupils and 61.6 % of secondary school students claimed that the PE classes should be taught separately. In contrast, our research showed a lower frequency of this opinion. There are 38.4 % of students in secondary schools that believe that co-education is a good idea. Puberty and attraction to the opposite sex play a big role in this case. These differences were statistically significant at $p < 0.001$.

5. Conclusion

Pupils' and students' opinions on PE classes are very important for identifying the physiological-psychological information (such as fitness, mental state, etc.). This information can help to solve the key problems in the school system, which can still be found even after the school reform. It is important to realise that regular involvement of pupils and students in PE classes is not assured only by the fact that PE is an obligatory subject. The number of pupils who do not exercise during classes is increasing. Pupils' attitude towards PE classes is often indifferent. In the longer term, it is important to provide students with interesting content in PE classes. A lot of pupils are not motivated unless new, less traditional games and sports activities are taught. Teachers need to not only find a way in which to deal with new trends and present them to pupils and students, but also figure out how to make PE popular now as well as in the future.

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Motivation, Anxiety and Students' Performance

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Abstract

The aim of this study was to examine foreign language classroom anxiety and motivation to speak in English as a foreign language with respect to gender and grade level as well as their effects on students' EFL performance. The research sample comprised 160 (middle and high school) students. Foreign Language Classroom Anxiety Scale (FLCAS) and the Speaking Motivation Scale were used to collect the data. The results showed that foreign language classroom anxiety and intrinsic motivation were negatively associated with each other, while extrinsic motivation and amotivation were significantly positively associated with foreign language classroom anxiety. Even though there was an insignificant difference between the males' and females' motivation to speak English as a foreign language, foreign language classroom anxiety was significantly affected by gender. The outcomes of a one-way MANOVA revealed that grade level had no effect on the combined dependent variables of foreign language classroom anxiety, while it had a significant effect on speaking motivation. Furthermore, the findings indicated that overall intrinsic motivation and intrinsic motivation to experience stimulation were significant predictors of the students' EFL achievement, whereas communication apprehension as a foreign language classroom anxiety factor was in a negative association with the students' EFL achievement. The study provides instructors with guidelines on how to make their classrooms an environment conducive to the development of higher levels of speaking motivation and lower levels of anxiety with the aim of improving their students' performance.

Keywords: motivation, foreign language, anxiety, grade level, gender, achievement.

1. Introduction

Among numerous variables exerting an impact on the process of foreign language development, two have often been pointed out as particularly significant, namely motivation and anxiety. However, while the ultimate attainment in the target language acquisition has been assigned to higher motivation (Dornyei, 2001; Hiromori, 2006; MacIntyre, Gardner, 1989) it has

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been frequently related to lower levels of language anxiety (Horwitz et al., 1986; MacIntyre, Garner, 1989; 1991).

The important place of motivation in the context of language learning was first emphasized in the late 1950s and since then numerous theories explaining its relationship to learners' success have been devised. One theory that appeared in the 1980s, but still counts as an immensely influential theory of motivation (Boo et al., 2015; Dornyei, Ushida, 2011), is the self-determination theory (Deci, Ryan, 1985, 2009) based on the way in which an individual interacts with the social environment to satisfy the basic needs of autonomy, competence and relatedness (Legault, 2017). It presupposes that people naturally strive towards growth and self-organization gaining new knowledge, satisfying needs and interests, cooperating with others, but that the extent to which the social environment responds to those needs allowing one to feel free and autonomous in taking decisions, to feel effective and connected with others, makes one either engaged and curious or unattached and disinterested (Legault, 2017: 1-2).

In general, the self-determination theory differentiates between amotivation, characterized by the absence of desire to engage in a certain activity, extrinsic motivation, the type of motivation behind the activities performed for getting some external reward or avoiding punishment, and intrinsic motivation underlying activity performance for its own sake, for getting pleasure and satisfaction in doing it (Deci, Ryan, 1985, 1991; Ryan, Deci, 2000). However, the model has been further developed, and the dichotomy between extrinsic and intrinsic motivation has been replaced by a continuum introducing different motivation subtypes. With respect to the former, focusing on the extent to which extrinsic goals tend to be internalized, the scholars (Deci, Ryan, 1985; Ryan, Connell, 1989) started differentiating between external regulation coming exclusively from the outside in the form of rewards and threats; introjected regulation involving students' acceptance of some imposed rules very often to avoid the feeling of guilt; identified regulation taking place when students themselves start realizing the value of some kind of behavior; and integrated regulation referring to a specific type of behavior being chosen because it is completely coherent with one's values and needs. In terms of the latter, Vallerand et al. (1993) identified three subtypes, namely, the motivation to know in order to explore, learn and try something new, the motivation towards accomplishment giving one pleasure while testing the limits and achieving something not previously achieved, and the motivation to experience stimulation referring to the participation in activities due to pleasant feelings evoked by taking part in the activity.

Among the subtypes, intrinsic motivation has shown superiority over the other types especially those at the far end of the continuum (Dornyei, 2001), making students lifelong learners (Kohn, 1993), leading to better results in language learning (Ryan, Deci, 2000; Vansteenkiste et al., 2006), closely relating to higher perceived competence, persistence and more positive stances towards the process of language acquisition (Noels et al., 2001), and in general to psychological welfare (Burton et al., 2006). Still, it becomes evident that even though intrinsic motivation is more desirable, both general types seem necessary throughout the process of language learning (Noels et al., 2000), at some point one type complementing the other, with different contextual factors determining the quality of language learning motivation. This seems comforting taking into account that in many foreign language contexts, where students are imposed to learn English as the current lingua franca, extrinsic motivation significantly supersedes intrinsic (Noels et al., 2001).

On the other hand, anxiety as another highly influential affective factor in language classrooms started attracting research interest in the early 1970s and so far, has been claimed as a variable most negatively associated with success (MacIntyre, Gardner, 1991). It refers to negative emotion, feelings of worry and nervousness over one's performance in a specific situation leading to a poor result and generally the absence of willingness to participate in learning activities (MacIntyre, Gardner, 1991; Philips, 1992). It is believed to be a dynamic variable, learners experiencing varied levels of anxiety depending on the context of language use (Oxford, 1999). However, among various classroom activities, speaking appears as one of the most anxiety producing activities (Pimsleur et al., 1964). Foreign language learners, while learning to speak the target language, often express feelings of stress, nervousness or anxiety and claim to have 'mental block' against learning, which in addition to specific characteristics of learning context, might also be assigned to general personality traits such as quietness, shyness, and reticence (Horwitz et al., 1986).

As a result of 'appearing awkward, foolish, incompetent in the eyes of learners' peers or others and the fear of making mistakes', students express that learning and speaking a foreign

language in a classroom is ‘always a problem’ (Jones, 2004: 33; Dervić, Bećirović, 2019). Those highly anxious students often believe that nothing should be said if there is any doubt about its correctness, which leads to the avoidance of trying to guess unknown linguistic forms and generally of participating in oral activities (Elkhafaifi, 2005; Horwitz et al., 1986; MacIntyre, Gardner 1992). Such feelings might result in difficulty while concentrating (Bećirović, Brdarević-Čeljo, 2018), forgetfulness, sweating, palpitations. Moreover, in terms of oral language production, anxiety leads to poor performance in spoken activities, staggered voice, less enthusiasm or willingness to speak, reading from the script while giving presentations, either too fast or too slow speed of speech (Hashemi, Abbasi, 2013). In addition, higher levels of anxiety are associated with lower levels of motivation (Garnder, MacIntyre, 1993). In fact, when the relationship between anxiety and different types of motivation was investigated it transpired that higher levels of anxiety tend to be related to extrinsic motivation (Ryan, Connell, 1989), and lower levels with intrinsic motivation (Noels et al., 2001).

Hence, these two factors, besides influencing language learning development, also appear to be mutually related. The current study aimed at investigating this in the Bosnian EFL context, firstly by analyzing the correlation between motivation to speak in English as a foreign language and classroom foreign language anxiety, and secondly by searching among motivation and anxiety subscales for significant predictors of the overall language achievement. Moreover, we attempted to examine the impact of two factors, namely gender and grade level, on both, motivation and anxiety. Bearing in mind that in this day and age speaking as a language skill seems to be gaining primacy over the others (Nunan, 1999; Gas, Varionis, 1994) we focused mainly on motivation to speak English, while in terms of anxiety we analyzed the learners’ classroom anxiety including communication apprehension, but also fear of negative evaluation and test anxiety, as the most pronounced types of classroom language learning anxiety (Horwitz et al., 1986).

2. Literature review

Regarding gender as one of the independent variables creating an impact on students’ motivation, the majority of previous studies (e.g. Bećirović, 2017; Dornyei, Csizer, 2005; Harthy, 2017) have revealed higher motivation on the side of female students when compared to male counterparts. Furthermore, it has been suggested (Carr, Pauwels, 2006) that girls tend to be more intrinsically motivated, and boys more extrinsically, expecting their effort to pay off, and more likely to become engaged once competition and fun activities are introduced.

With respect to age, it has been indicated that the older students get, the less motivated they tend to be (Bernaus et al., 2007; Gardner et al., 2004). When analyzing the differences in the quality of motivation, findings seem conflicting (Bećirović et al., 2019). While Berg and Corpus (2013) suggested that age is not a significant factor influencing either type of motivation, Catania and Randall (2013) although not finding any significant relationship between age and intrinsic motivation, reported a significant negative correlation between age and extrinsic motivation. Conversely, it has been suggested that intrinsic motivation for studying in general, and for studying English in particular, decreases with age (Lepper et al., 1997), which tends to be especially noticeable among weaker students (Falout et al., 2009). Furthermore, Lepper, Corpus and Iyengar’s (2005) results as well as those reported by Gillet, Vallerand and Lafreniere (2012) while revealing a decrease in intrinsic motivation over time showed an increase in extrinsic motivation as learners get older. Such findings might be assigned to the influence of various contextual factors such as learning materials, teachers’ competence and methods used, test scores, to name a few (Sakai, Kikuchi, 2009). It has been proposed that focusing on the needs of autonomy, competence and relatedness teachers can do much to help students maintain or increase their motivation (Hiromori, 2006).

Moreover, teachers should realize that language learning is a potentially stressful situation for some students, and that the ‘tension and discomfort related to language learning call for the attention of the language teaching profession’ (Horwitz, 2001: 122). Creating a supportive learning classroom community (Dornyei, 2001), the one that provides the environment for optimal motivation (Alderman, 2004), and a ‘collaborative atmosphere’ (Gregersen, 2003: 30) they can help reduce fear of errors, in that way contributing to lowering their students’ anxiety. The previous studies have also indicated a negative relationship between motivation and anxiety. For instance, Gardner and MacIntyre (1993) explained that when motivation reaches its higher

point it will decrease anxiety, otherwise, as a result of its high levels anxiety impedes motivation. Similarly, Brown et al. (1996) as well as Khodadady and Khajavy (2013) pointed out that students experiencing a lack of motivation are more likely to demonstrate anxious behavior.

When it comes to the relation between anxiety and the variables of age and gender, previous research investigations have indicated the variability of anxiety, with older learners demonstrating greater anxiety than younger ones (Horwitz 1986; Dewaele, 2007; MacIntyre, Gardner, 1994). In fact, it has been found that adult learners tend to take more time while accommodating to the rules of a foreign language (Dewaele, 2002), processing information (MacIntyre, Gardner, 1994) and put more importance on being accurate (Salthouse, Somberg, 1982).

Even though in academic settings females are more confident in their abilities to learn (Bećirović et al., 2018) a new language well (Dorneyi, 2001), a great number of research studies have shown that female students exhibit higher levels of anxiety than male counterparts (Abu-Rabia, 2004; Elkhafaifi, 2005), such results sometimes (Clark, Trafford, 1996) being attributed to the fact that female students are more likely to report their feelings of anxiety more openly than male students. In contrast to these, other enquiries found either no statistically significant gender-related differences in language anxiety (e.g. MacIntyre et al., 2002; Matsuda, Gobel, 2004) or a greater level of anxiety among male participants (Capan, Simsek, 2012; Na, 2007), which indicates that further investigations are needed to clarify the concept. In fact, it is one of the issues investigated in the current research. Based on the presented theoretical ground, the study tested the following hypotheses:

1. There is a statistically significant difference in the students' motivation to speak in English as a foreign language based on gender;
2. There is a statistically significant difference in the students' foreign language classroom anxiety based on gender;
3. There is a statistically significant difference in the students' motivation to speak in English as a foreign language based on grade level;
4. There is a statistically significant difference in the students' foreign language classroom anxiety based on grade level;
5. Motivation to speak in English as a foreign language significantly predicts the students' EFL achievement, and
6. Foreign language classroom anxiety significantly influences the students' EFL achievement.

3. Methodology

3.1. Participants

The research sample consisted of 160 students. A stratified random sampling method was employed and the participants were selected from two strata, namely grade level which included the fifth 16 (10 %), the sixth 16 (10 %), the seventh 29 (18.1 %), the eighth 27 (16.9 %), the ninth 30 (18.8 %), the first (high school) 21 (13.1 %) and the third (high school) 21 (13.1 %) grade and gender which comprised 90 (56.3 %) female and 70 (43.8 %) male students. The sample included 118 students studying in middle school and 42 students studying in high school. Taking into account that this research did not measure school level differences (middle and high school) but grade level and gender differences, the sample size met the assumption of minimum 10 participants per group (McMilan, 2012: 269). The selected participants study in three schools located in Central Bosnia and Herzegovina. The age of the participants ranged 10 to 17 ($M = 13.83$, $SD = 1.99$). Table 1 displays a description of the research sample.

Table 1. Descriptive analysis of the research sample

School	Elementary school	118	73.8
	High school	42	26.3
Gender	Female	90	56.3
	Male	70	43.8
Grade levels	Fifth	16	10.0
	Sixth	16	10.0
	Seventh	29	18.1
	Eighth	27	16.9
	Ninth	30	18.8
Total		160	100.0

3.2. Measures

The data were collected by the means of a survey which consisted of three parts. The first one included questions concerning demographic characteristics of the participants such as gender, age, GPA in English, and grade level. The second one was the speaking motivation scale developed and validated by Ryan and Connell (1989). The purpose of this instrument was to determine the participants' motivation to speak in English as a foreign language from the perspective of the Self Determination Theory (SDT). The instrument comprised 33 items divided into three basic scales (intrinsic, extrinsic, and amotivation) and seven subscales (amotivation e.g. I feel I am incapable of succeeding in these activities in English; external regulation e.g. Because I want to show others how good I am at these activities in English; introjected regulation e.g. Because I want the teacher to think I am a good student; identified regulation e.g. Because it is important to me to try to do well in classes; intrinsic motivation for knowledge e.g. Because I get satisfaction in finding out new things; intrinsic motivation for accomplishment e.g. Because I feel a lot of personal satisfaction when I master difficult in these activities; and intrinsic motivation for stimulation e.g. Because I think it is interesting; dimension). The instrument showed the overall consistency reliability $\alpha = .76$ as well as its scales, namely extrinsic motivation $\alpha = .57$, intrinsic motivation $\alpha = .72$ and amotivation $\alpha = .57$.

The last part of the survey was the Foreign Language Classroom Anxiety Scale (FLCAS) developed by Horwitz, Horwitz and Cope (1986). As theorized by Horwitz et al. (1986), the FLCAS is intended to measure three dimensions of foreign language classroom anxiety: fear of negative evaluation (e.g. I am afraid that language teacher is ready to correct every mistake I make), communication apprehension which indicated apprehension of speech communication (e.g. I never feel quite sure of myself when I am speaking in my English language classes) and test anxiety stemming from a fear of failure (e.g. I worry about the consequences of failing my foreign language class.). The instrument is composed of 33 statements based on a five-point Likert scale, with the answers ranging from strongly disagree to strongly agree. The Cronbach's alpha reliability analysis of the questionnaire showed an acceptable level of reliability $\alpha = .85$ for all 33 items, as well as for its subscales, namely communication apprehension $\alpha = .59$, test anxiety $\alpha = .64$ and fear of negative evaluation $\alpha = .71$.

3.3. Procedures

After obtaining informed consent from the schools' administration and participants themselves, clarifying anonymity, confidentiality, and the volunteer nature of participation, the researchers themselves administered the instruments to the students with an adequate explanation as to how to complete a Likert-type scale.

Data collection was conducted within school premises. One of the researchers herself in cooperation with the English language instructors collected the data during the regular school classes. The students were kindly asked to read each statement carefully and to choose the number (1-5) that indicates their opinion about the statements provided in the instrument. The participants received all necessary information from the researcher and were encouraged to pay full attention during filling the survey. The participants needed approximately 25 minutes to complete the survey.

3.4. Data Analysis

The data were examined through the Statistical Package for Social Sciences (SPSS) version 23.0. The means and the standard deviations were computed to determine the extent to which the students feel anxious in English language classrooms and how they are motivated to speak English. The Person correlation coefficients were calculated in order to determine the relationship between the constructs of motivation and anxiety. A one-way MANOVA was used to determine gender and grade level differences in motivation and anxiety to speak. Prior to employing a One-way MANOVA, the assumptions for a multivariate analysis such as multivariate normal distribution, homogeneity of covariance matrices, and linear relationship among dependent variables (Mertler, Reinhart, 2017: 130) were tested and ensured. A standard multiple regression analysis was conducted to examine the relationship between motivation and anxiety to speak and students' achievement in learning English as a second language.

4. Results

4.1. Descriptive data

The results presented in Table 2 reveal that the middle and high school students generally experienced a medium level of EFL classroom anxiety ($M = 2.97$ $SD = .58$). The findings related to the three dimensions of classroom anxiety indicated that the highest level of anxiety was communication apprehension ($M = 3.00$ $SD = .56$), followed by text anxiety ($M = 2.99$, $SD = .65$), whereas the lowest level of anxiety was fear of negative evaluation ($M = 2.89$, $SD = .80$). Moreover, the results suggested that the participants were quite motivated to speak in English as a foreign language, with a total speaking motivation level being moderately high ($M = 3.39$, $SD = .42$). When specific motivation subscales were taken into consideration, the highest mean was noticed for identified regulation ($M = 3.76$ $SD = .64$), followed by intrinsic motivation for accomplishment ($M = 3.72$, $SD = .77$), introjected regulation ($M = 3.67$, $SD = .66$), intrinsic motivation for knowledge ($M = 3.65$, $SD = .86$), external regulation ($M = 3.34$, $SD = .63$), and intrinsic motivation to experience stimulation ($M = 3.30$, $SD = .89$). The lowest mean was recorded for amotivation ($M = 2.80$, $SD = .67$). Interestingly, the level of overall extrinsic ($M = 3.59$, $SD = .54$) and the level of overall intrinsic motivation ($M = 3.56$, $SD = .67$) were comparatively high, even though the former was slightly higher.

In addition, correlational analyses showed that the FLCAS and its three subscales were all negatively correlated with intrinsic motivation to experience stimulation, with coefficients ranging from $-.01$ to $-.10$ ($p > .05$), though the relationship was not statistically significant. Similarly, the correlations coefficients between test anxiety and intrinsic motivation for knowledge ($r = -.05$, $p > .001$), intrinsic motivation for accomplishment ($r = -.02$, $p > .001$) and intrinsic motivation to experience stimulation ($r = -.10$, $p > .001$) were all small and negative but also statistically insignificant. Generally, classroom foreign language anxiety was negatively correlated to overall intrinsic motivation ($r = -.02$, $p > .001$), although the coefficient was small and insignificant. On the other hand, the results showed a positive relationship between anxiety, on the one hand, and extrinsic motivation and amotivation, on the other. Thus, the strongest positive and significant correlations were found between external regulation and communication apprehension ($r = .31$, $p < .001$), followed by amotivation and test anxiety ($r = .27$, $p < .001$) and amotivation and communication apprehension ($r = .26$, $p < .001$). Likewise, the correlation between communication apprehension and overall extrinsic motivation was small positive and significant ($r = .21$, $p < .001$). The next positive and significant at the level 0.05 was the relationship between amotivation and fear of negative evaluation ($r = .18$, $p < .005$), followed by the relationship between external regulation and test anxiety ($r = .17$, $p < .005$). In other words, the more anxious the students were, the more likely to be motivated by language requirements to learn English as a foreign language they were. Still, it should be pointed out that the relationship between foreign language classroom anxiety and overall extrinsic motivation was positive but statistically insignificant ($r = .14$, $p > .001$). The associations between other motivation and anxiety subscales were all small and positive but insignificant.

Table 2. Descriptive results and correlations

	N	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. External regulation	160	3.34	.63	1	.59**	.49**	.82**	.26**	.28**	.07	.26**	.73**	.39**	.31**	.17*	.13	.23**
2. Introjected	160	3.67	.66	.59**	1	.61**	.88**	.41**	.47**	.24**	.47**	.75**	.03	.11	.01	.05	.06
3. Identified regulation	160	3.76	.64	.49**	.61**	1	.83**	.44**	.62**	.35**	.59**	.76**	-.03	.11	.05	.05	.07
4. Extrinsic motivation	160	3.59	.54	.82**	.88**	.83**	1	.44**	.55**	.27**	.52**	.89**	.15**	.21**	.19	.09	.44
5. Intrinsic motivation	160	3.65	.86	.26**	.41**	.44**	.44**	1	.50**	.47**	.83**	.62**	-.104	.02	-.05	.02	-.01
6. Intrinsic	160	3.72	.77	.28**	.47**	.62**	.55**	.50**	1	.36**	.76**	.62**	-	.12	-.02	.04	.03
7. Intrinsic motivation	160	3.30	.89	.07	.24**	.35**	.27**	.47**	.36**	1	.79**	.50**	-.18**	-.05	-.10	-.01	-.07
8. Intrinsic motivation	160	3.56	.67	.26**	.47**	.59**	.52**	.83**	.76**	.79**	1	.73**	-.20*	.03	-.08	.02	-.02
9. Overall motivation	160	3.39	.42	.73**	.75**	.76**	.89**	.62**	.62**	.50**	.73	1	.31**	.23**	.10	.12	.16*
10. Amotivation	160	2.80	.67	.39**	.03	-.03	.15	-.10	-.21**	-.18**	-.20*	.31**	1	.26**	.27**	.18*	.27**
11. Communication	160	3.00	.56	.31**	.11	.11	.21**	.02	.12	-.05	.03	.23**	.26**	1	.71**	.58**	.85**
12. Test anxiety	160	2.99	.65	.17*	.01	.05	.10	-.05	-.02	-.10	-.08	.10	.27**	.71**	1	.72**	.94**
13. Fear of negative	160	2.89	.80	.13	.05	.05	.09	.02	.04	-.01	.03	.12	.18*	.58**	.72**	1	.84**
14. Foreign language	160	2.97	.58	.23**	.06	.08	.14	-.01	.03	-.07	-.02	.16*	.27**	.85**	.94**	.84**	1

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

4.2. Gender-based differences

A one-way MANOVA was conducted to determine the differences in the level of speaking motivation based on gender. The results indicated that there was no significant difference in the combined dependent variables of speaking motivation between the male and female students, Wilks' Lambda $\lambda = 0.985$, $F(7, 152) = .324$, $p = .942$, $\eta^2 = .015$. The analysis of variance on each of the speaking motivation subcategories showed that there were no significant gender-based differences in external regulation $F(1, 158) = 1.267$, $p = .262$, $\eta^2 = .008$, introjected regulation $F(1, 158) = 1.558$, $p = .214$, $\eta^2 = .010$, identified regulation $F(1, 158) = 1.137$, $p = .288$, $\eta^2 = .007$, intrinsic motivation for knowledge $F(1, 158) = .303$, $p = .583$, $\eta^2 = .002$, intrinsic motivation for accomplishment $F(1, 158) = .042$, $p = .837$, $\eta^2 = .000$, intrinsic motivation to experience stimulation $F(1, 158) = .083$, $p = .773$, $\eta^2 = .001$ and amotivation $F(1, 158) = .238$, $p = .626$, $\eta^2 = .002$. The effect of gender on the overall extrinsic $F(1, 158) = 1.860$, $p = .175$, $\eta^2 = .012$, and intrinsic motivation $F(1, 158) = .197$, $p = .658$, $\eta^2 = .001$ was also insignificant.

Table 3. Speaking motivation based on gender

Motivation to speak in English	Female		Male		p	η^2
	M	SD	M	SD		
External regulation	3.38	.65	3.27	.59	.262	.008
Introjected regulation	3.73	.63	3.60	.68	.214	.010
Identified regulation	3.80	.66	3.69	.61	.288	.007
Extrinsic motivation	3.64	.54	3.52	.54	.175	.012
Intrinsic motivation for knowledge	3.68	.90	3.60	.80	.583	.002
Intrinsic motivation for accomplishment	3.73	.81	3.71	.72	.837	.000

Intrinsic motivation to experience stimulation	3.31	.89	3.27	.87	.773	.001
Intrinsic motivation	3.58	.69	3.53	.64	.658	.001
Amotivation	2.83	.71	2.77	.69	.626	.002

As shown in Table 3, the female ($M = 3.80$, $SD = .66$) students experienced identified regulation as the highest level of speaking motivation, followed by intrinsic motivation for accomplishment ($M = 3.73$, $SD = .81$), introjected regulation ($M = 3.73$, $SD = .63$), intrinsic motivation for knowledge ($M = 3.68$, $SD = .90$), external regulation ($M = 3.38$, $SD = .65$), and intrinsic motivation to experience stimulation ($M = 3.31$, $SD = .89$), while the lowest mean was recorded for amotivation ($M = 2.83$, $SD = .71$). On the other hand, the male counterparts demonstrated the highest level of intrinsic motivation for accomplishment ($M = 3.71$, $SD = .72$), followed by identified regulation ($M = 3.69$, $SD = .61$), and introjected regulation ($M = 3.60$, $SD = .68$). Next were intrinsic motivation for knowledge ($M = 3.60$, $SD = .80$), external regulation ($M = 3.27$, $SD = .59$) and intrinsic motivation to experience stimulation ($M = 3.27$, $SD = .87$), while the lowest mean in terms of this instrument was again achieved on the subscale of amotivation ($M = 3.27$, $SD = .59$). In general, the females demonstrated insignificantly higher overall extrinsic ($M = 3.64$, $SD = .54$) as well as overall intrinsic motivation ($M = 3.58$, $SD = .69$) than the males (extrinsic: $M = 3.52$, $SD = .54$; intrinsic: $M = 3.53$, $SD = .64$).

A one-way MANOVA was also conducted to determine the differences in the level of foreign language classroom anxiety based on gender. The results revealed that there was a significant difference in the combined dependent variables of anxiety between the male and female students, Wilks' Lambda $\lambda = 0.924$, $F(3, 156) = 4.270$, $p = .006$, $\eta^2 = .076$. The analysis of variance on each of the three anxiety subscales indicated that gender was a relevant factor. Thus, there was a significant difference between the males and females on the communication apprehension subscale $F(1, 158) = 12.390$, $p = .001$, $\eta^2 = .073$, as well as on the text anxiety items $F(1, 158) = 8.947$, $p = .003$, $\eta^2 = .054$ and the items concerned with the fear of negative evaluation $F(1, 158) = 5.18$, $p = .024$, $\eta^2 = .032$.

Table 4. Foreign language classroom anxiety based on gender

FLCAS	Female		Male		P	η^2
	M	SD	M	SD		
Communication apprehension	3.13	.56	2.83	.51	.001	.073
Test anxiety	3.12	.60	2.81	.67	.003	.054
Fear of negative evaluation	3.01	.76	2.72	.82	.024	.032
FLCAS	3.10	.54	2.80	.58	.001	.065

As displayed in Table 4, both the female ($M = 3.13$, $SD = .56$) and male ($M = 2.83$, $SD = .51$) students exhibited the communication apprehension as the most anxiety-provoking, followed by text anxiety (female: $M = 3.12$, $SD = .60$; and male: $M = 2.81$, $SD = .67$), while the lowest level of anxiety demonstrated by both the female ($M = 3.01$, $SD = .76$) and male students ($M = 2.72$, $SD = .82$) was fear of negative evaluation.

4.3. Grade-level based differences

A one-way MANOVA was furthermore conducted to determine the differences in the level of speaking motivation based on grade level, the independent variable grade level comprising seven groups (5th, 6th, 7th, 8th, 9th middle school and 1st and 3rd grade high school) while the combined dependent variables of speaking motivation included all the aforementioned types of motivation. The outcomes of the one-way MANOVA revealed that grade level had a significant effect on the combined dependent variables of speaking motivation, Wilks' Lambda $\lambda = 0.623$, $F(42, 692) = 1.749$, $p = .003$, $\eta^2 = .076$. However, the analysis of variance on each dependent variable identified that grade level had no significant influence on the overall extrinsic motivation $F(6, 153) = 1.835$, $p = .096$, $\eta^2 = .067$, external regulation $F(6, 153) = 1.854$, $p = .092$, $\eta^2 = .068$, introjected regulation $F(6, 153) = 1.573$, $p = .159$, $\eta^2 = .058$, identified regulation $F(6, 153) = .849$, $p = .534$, $\eta^2 = .032$, intrinsic motivation for accomplishment $F(6, 153) = .795$, $p = .575$, $\eta^2 = .030$, and

amotivation $F(6, 153) = .883, p = .509, \eta^2 = .033$. Still, there was a significant effect of grade level on intrinsic motivation to experience stimulation $F(6, 153) = 4.708, p = .000, \eta^2 = .156$, intrinsic motivation for knowledge $F(6, 153) = 3.304, p = .004, \eta^2 = .115$, and overall intrinsic motivation to speak in English as a foreign language $F(6, 153) = 3.615, p = .002, \eta^2 = .124$.

Table 5. Means and standard deviation for speaking motivation based on grade level

	5 th grade		6 th grade		7 th grade		8 th grade		9 th grade		1 st H		3 rd H		<i>p</i>	η^2
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
External regulation	3.32	.43	3.56	.82	3.59	.68	3.25	.41	3.13	.53	3.31	.84	3.25	.50	.092	.068
Introjec. regulation	3.77	.48	3.89	.55	3.91	.67	3.59	.49	3.55	.59	3.56	.94	3.50	.69	.159	.058
Identified regulation	3.84	.53	3.97	.62	3.87	.75	3.64	.47	3.65	.58	3.78	.93	3.68	.53	.534	.032
Ext. motivation total	3.64	.39	3.80	.55	3.79	.63	3.49	.36	3.44	.48	3.55	.78	3.47	.42	.096	.067
Intr. for knowledge	3.77	.81	3.90	.65	3.82	.83	3.03	.81	3.61	.91	3.81	.88	3.84	.76	.004	.115
Intr. for accom.	3.69	1.04	3.89	.65	3.86	.78	3.47	.84	3.74	.53	3.68	.99	3.79	.54	.575	.030
Intr. to exp. stimul.	3.25	.86	3.33	.84	3.54	.85	2.79	.86	3.07	.81	3.95	.91	3.33	.67	.000	.156
Intr. motivation total	3.57	.71	3.70	.45	3.74	.67	3.10	.63	3.47	.55	3.81	.84	3.65	.53	.002	.124
Amotivation	2.69	.76	3.01	.52	2.88	.70	2.64	.51	2.72	.71	2.79	.93	2.93	.70	.509	.033

As illustrated in Table 5, the means for amotivation were the lowest among speaking motivation subscales, ranging from ($M = 2.64, SD = .51$) among the 8th graders to ($M = 3.01, SD = .52$) among the 6th graders. This shows that the levels of the participants' amotivation towards speaking were not high, indicating the existence of motivation. No significant differences were found among the extrinsic types of motivation based on grade level. In general, the highest extrinsic motivation scores were noticeable for identified regulation (ranging from $M = 3.97$ among the 6th graders to $M = 3.64$ among the 8th graders), followed by introjected regulation (being in the range from $M = 3.91$ among the 8th graders to $M = 3.55$ among the 1st high school students) and then external regulation (from $M = 3.59$ among the 7th graders to $M = 3.13$ among the 9th graders). In other words, the more internalized the motivation type was, the higher scores the students obtained. The results of the present study also indicated a slight but insignificant variation in the level of overall extrinsic motivation, with the means being generally lower among the high school students. On the other hand, the differences in the overall intrinsic motivation between the students attending different grades were significant, with the mean being ($M = 3.57$) among the 5th graders, then rising to ($M = 3.70$) and ($M = 3.74$) among the 6th and 7th graders, falling to ($M = 3.10$) among the 8th graders, but again rising to ($M = 3.47$) among the 9th grade students and ($M = 3.81$) and ($M = 3.65$) among the 1st and the 3rd high school students, respectively. In regards to intrinsic subtypes of motivation, grade level proved significant in terms of intrinsic motivation to experience stimulation, with the highest score obtained by the participants in the 1st grade ($M = 3.95, SD = .91$) and the lowest among the 8th graders ($M = 2.79$). Similar results were achieved for intrinsic motivation for knowledge, with the means being in the range from ($M = 3.90, SD = .65$) demonstrated by the students in the 6th grade to ($M = 3.03$) scored again by the 8th graders. Intrinsic motivation for accomplishment showed variance from ($M = 3.89$) to ($M = 3.47$) among the 6th and 8th graders, respectively. However, it was the only type of intrinsic motivation on which the impact of grade level was insignificant.

A one-way MANOVA was conducted to determine the differences in the level of foreign language classroom anxiety based on grade level as well. The independent variable grade level again comprised seven groups (5th, 6th, 7th, 8th, 9th middle school and 1st and 3rd grade high school) while the combined dependent variables of classroom anxiety included three subcategories, communication apprehension, test anxiety and fear of negative evaluation. The outcome of the one-way MANOVA revealed that grade level had no significant effect on the combined dependent variables of classroom anxiety Wilks' Lambda $\lambda = 0.8921 F(18, 427.578) = .988, p = .472, \eta^2 = .038$. The analysis of variance on each dependent variable showed that there were no significant grade level differences on any of the individual subcategories of foreign language classroom anxiety, namely communication apprehension $F(6, 153) = .923, p = .480, \eta^2 = .035$, test anxiety F

(6, 153) = 1.328, $p = .248$, $\eta^2 = .050$ and fear of negative evaluation $F(6, 153) = 1.380$, $p = .226$, $\eta^2 = .051$.

Table 6. Foreign language classroom anxiety based on grade level

FLCAS	5 th grade		6 th grade		7 th grade		8 th grade		9 th		1 st H		3 rd H		<i>p</i>	η^2
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Comm. appr.	2.77	.55	3.17	.55	3.06	.70	3.05	.51	3.04	.58	2.97	.60	2.91	.28	.480	.035
Test anxiety	2.60	.63	3.12	.66	3.08	.76	3.07	.44	3.03	.72	2.96	.72	2.90	.50	.248	.050
Fear of NE	2.47	.82	2.80	.67	3.09	.92	2.80	.55	3.00	.93	3.02	.80	2.79	.77	.226	.051
FLCAS	2.62	.59	3.07	.59	3.08	.69	3.01	.42	3.03	.64	2.98	.63	2.88	.41	.254	.149

As can be seen in Table 6, communication apprehension was the highest level of classroom anxiety among the students in the 6th grade ($M = 3.17$, $SD = .55$), the 9th grade ($M = 3.04$, $SD = .58$), the 3rd grade ($M = 2.91$, $SD = .28$), and the 5th grade ($M = 2.77$, $SD = .55$), while in the 8th grade ($M = 3.05$, $SD = .51$) and the 1st grade high school ($M = 2.97$, $SD = .60$) it was the second highest. However, the lowest level of communication apprehension was found to be in the 7th grade ($M = 3.06$, $SD = .70$). The second highest level of anxiety was test anxiety exhibited by the students in the 6th grade ($M = 3.12$, $SD = .66$), the 7th grade ($M = 3.08$, $SD = .76$), the 9th grade ($M = 3.03$, $SD = .72$), the 3rd grade ($M = 2.90$, $SD = .50$) and the 5th grade ($M = 2.60$, $SD = .63$). In the 8th grade test anxiety was the highest ($M = 3.07$, $SD = .44$), while in the 1st grade it was the lowest ($M = 2.96$, $SD = .72$). The lowest level of classroom anxiety was fear of negative evaluation shown by the students in the 9th grade ($M = 3.00$, $SD = .93$), the 6th grade ($M = 2.80$, $SD = .67$), the 8th grade ($M = 2.80$, $SD = .55$), the 3rd grade ($M = 2.79$, $SD = .77$), and the 5th grade ($M = 2.47$, $SD = .82$), while the students in the 7th ($M = 3.09$, $SD = .92$) and the 1st grade ($M = 3.02$, $SD = .80$) experienced this as the most anxiety-provoking.

4.4. Motivation and anxiety as language achievement predictors

Standard multiple regression was conducted to determine the accuracy of external regulation, introjected regulation, identified regulation, intrinsic motivation for knowledge, intrinsic motivation accomplishment, and intrinsic motivation to experience stimulation in predicting the students' achievement in learning English as a foreign language. The regression results indicated that the overall speaking motivation significantly predicted the achievement in learning English as a foreign language $R^2 = .121$, $R^2 adj. = .087$ $F(6,153) = 3.512$, $p = .003$. This model accounted for 8.7 % of the variance in the students' achievement. In fact, a summary of the regression coefficients presented in Table 7 furthermore indicates that only intrinsic motivation to experience stimulation significantly contributed to the students' achievement, whereas the other five variables (external, introjected, identified regulation, intrinsic motivation for knowledge and intrinsic motivation for accomplishment) did not significantly predict the students' achievement in learning English as a foreign language. Furthermore, there was a tendency for extrinsic motivation to be negatively and for intrinsic motivation to be positively associated with the students' achievement.

Table 7. Regression coefficients of motivation to speak in English as Foreign Language

	<i>B</i>	β	<i>T</i>	<i>P</i>	<i>Bivariate r</i>	<i>Partial r</i>
External regulation	-.324	-.187	-1.926	.056	-.087	-.154
Introjected regulation	.166	.101	.925	.357	.092	.075
Identified regulation	-.041	-.024	-.212	.832	.104	-.017
Extrinsic motivation	-.272	-.136	-1.520	.130	.045	-.120
Intrinsic motivation for knowledge	.021	.017	.172	.864	.167	.014
Intrinsic motivation for accomplishment	.138	.098	.947	.345	.180	.076
Intrinsic motivation to experience stimulation	.315	.256	2.893	.004	.302	.228
Intrinsic motivation	.564	.346	3.875	.000	.275	.295

Standard multiple regression was also performed to determine the accuracy of communication apprehension, test anxiety, and fear of negative evaluation in predicting the students' achievement. The regression results indicated that the overall foreign language classroom anxiety significantly predicted achievement in learning English as a foreign language $R^2 = .097$, $R^2 \text{ adj.} = .080$ $F(3,156) = 5.597$, $p = .001$. This model accounted for 8 % of the variance in the students' achievement. A summary of the regression coefficient displayed in Table 8 suggests that higher levels of communication apprehension anxiety were associated with lower levels of the students' EFL achievement, while test anxiety and fear of negative evaluation did not significantly predict the students' EFL performance.

Table 8. Regression coefficients of foreign language classroom anxiety

	<i>B</i>	β	<i>t</i>	<i>P</i>	<i>Bivariate r</i>	<i>Partial r</i>
Communication apprehension	-.449	-.232	-2.120	.036	-.286	-.167
Test anxiety	.112	.067	.518	.605	-.226	.041
Fear of negative evaluation	-.237	-.176	-1.573	.118	-.262	-.125

5. Discussion

5.1. Descriptive results

The study aimed at exploring foreign language speaking motivation and classroom anxiety among middle and high school students in Bosnia and Herzegovina. The findings suggested that the participants did not feel particularly worried in English classes since the majority of them were moderately anxious (see Table 2) about using it. On the contrary, the students showed a relatively high level of speaking motivation, these findings being in line with those reported in Bećirović (2017) who also found that students in Bosnia are highly motivated English language learners. Although the students tended to be more extrinsically than intrinsically motivated when learning English like other students in similar EFL contexts worldwide (Dwaik, Shehadeh, 2010; Noels et al., 2001; Saheb, 2014) the differences between these two motivation types were minor.

The correlation analyses were conducted to explore the relationship between classroom anxiety and speaking motivation. The results indicated that different components of speaking motivation were significantly correlated to foreign language anxiety subscales. Put in the other words, driven by divergent reasons for learning English students demonstrated a different level and type of anxiety. As can be seen in Table 2, amotivation had a positive and significant correlation with anxiety and its subscales. Thus, students with a lack of motivation were more likely to be anxious and did not feel comfortable in their English classes. These findings are aligned with those presented by Deci and Ryan (1985), Brown et al. (1996) as well as Khodadady and Khajavy (2013), who argued that amotivation and anxiety are linked in the language learning process. However, it can be posited that although in general, intrinsic motivation is significantly, moderately and negatively correlated with language learning anxiety (Noels et al., 2000), this was not the case in this study. Thus, while learning English students may find the challenges and risks exciting and arousing which may result in facilitating anxiety (Oxford, 1999). Moreover, students who enjoy learning English, even if they get confused and anxious at the level that they can handle, may find learning challenging and thus show higher levels of motivation. On the other hand, the current study findings, indicating positive significant correlation between some scores on extrinsic motivation measures and anxiety scores, confirmed the previously made suggestion that higher levels of anxiety tend to be associated with extrinsic motivation (Ryan, Connell, 1989). This was particularly true for communication apprehension, which significantly correlated with both external regulation and overall extrinsic speaking motivation. Therefore, the more externally motivated to speak English our participants tended to be, the more anxious they felt about it.

5.2. Gender-based differences

The hypothesis stating that there is a statistically significant difference in the student's motivation to speak in English as a foreign language based on gender was refuted. Overall, this study, although indicating slightly higher scores by the females, did not find that gender had a significant effect on the students' English-speaking motivation as has been suggested by various previous research (Dornyei, Csizer, 2005; Harthy, 2017; Xiong, 2010). The present study findings

echo those of Abu-Rabia's (1997), Bacon's (1992) and Akram and Ghani's studies (2013) in which no gender-based differences in the level of motivation were also found.

Even though the results revealed no significant variability between the males and females in their motivation to speak English as a foreign language, some variations were still notable (see Table 3). More specifically, the female students demonstrated insignificantly higher levels of motivation than the male counterparts in terms of all motivation components. This finding is consistent with the previously reported findings (Bećirović, 2017; Csizer, Dornyei, 2005; Ryan, 2009). However, in general, both the female and male present study participants were quite motivated to speak English, which may be assigned to the fact that they are aware that the knowledge of English, as a global lingua franca, would lead them to a brighter future and better living standard in Bosnia. Furthermore, being surrounded by English on a daily basis (Dubravac, 2016; Dubravac et al., 2018) they tend to develop an internal drive to acquire it so that they can follow its use in various domains of everyday life (Dubravac, Latić, 2019; Dubravac, Skopljak, 2019).

In addition to gender differences pertaining to motivation we investigated the gender differences in anxiety levels. Those results indicated a significant difference between the female and male students in terms of classroom anxiety, with the female students demonstrating a higher level of anxiety than the male peers. Thus, the second hypothesis was confirmed. Such results confirm those reported in a number of similar enquiries (e.g. Abu-Rabia, 2004, Cheng, 2002). These findings are also fully aligned with Huang's (2004) and Balemir's (2009) results which revealed that female students tend to be more anxious while speaking English. However, the study results contradict those obtained by MacIntyre et al. (2002), Matsuda and Gobel (2004), who did not find any statistically significant gender-based differences, and those in which it was discovered that males demonstrate a higher level of language anxiety than female counterparts (Capan, Simsek, 2012; Na, 2007). Such current study results might be at least partially assigned to the tendency of female students to report their feelings of anxiety openly (Clark, Trafford, 1996), but also to the indication that teachers have greater expectations of female students relying on their maturity, which puts female students under more considerable pressure (Piechurska-Kuciel, 2012). Another noteworthy point in this study is that communication apprehension was the greatest concern of both genders. This may be due to the fact that students are mostly afraid that they will make errors in pronunciation or say the wrong words and that they will be negatively evaluated or judged.

5.3. Grade-level based differences

The third hypothesis claiming that there is a statistically significant difference in the students' motivation to speak in English as a foreign language based on grade level was supported. Such a finding affirms that by Bećirović and Hurić-Bećirović (2017) who also in the similar learning context found that grade level had a significant influence on learning motivation. In particular, a significant influence of grade level was noticed on intrinsic but not on extrinsic speaking motivation, with the former being the highest among the 1st grade high school students, 7th and 6th grade middle school students, while the lowest level was shown among the 8th graders, who also reported the lowest level of extrinsic motivation. Moreover, the 1st grade high school students showed a greater level of all types of motivation than the 3rd graders. Thus, these findings, related only to high school students, are in line with Gottfried et al. (2001), Lepper et al. (2005) and Otis et al. (2005) who also discovered a decline in intrinsic motivation with age. This might be due to the fact that they had just chosen which high school to attend, and thus felt motivated to participate in speaking activities, which after two years changed slightly. In middle school generally the 6th and 7th graders appeared to be the most motivated and the 8th graders the least, which might be attributed to the content covered in these grades, but also to some other contextual factors such as the teacher, the textbook, the relation with the peers, etc. Generally, the scores for extrinsic motivation were higher than those for intrinsic among the middle school students, whereas the opposite was noticed among the high school students. Furthermore, while from the 6th grade extrinsic motivation to speak decreased over all the following grades, which is aligned with the findings presented by Corpus et al. (2009) and Otis et al. (2005) who also reported a small decrease in extrinsic motivation in students aged 13 to 15, a greater variation was noticed in terms of intrinsic motivation. Thus, the suggestion made by previous studies that the older students get the less motivated they tend to be (Bećirović, Hurić-Bećirović, 2017; Gardner et al., 2004) proves correct when considered for the high school students, while the trend among the others seems to be the following: motivation is relatively high among the 5th graders then it increases among the

6th and 7th graders, drastically decreases among the 8th graders and then increases again among the 9th graders.

On the other hand, the fourth hypothesis was rejected as the statistical analysis indicated that in the scope of foreign language classroom anxiety types no statistical differences based on grade level were found. Thus, both the younger and the older students appeared comparatively anxious, which is contrary to the results of a great number of previous studies (Horwitz 1986; Dewaele, 2007; MacIntyre, Gardner, 1994). The study further discovered that communication apprehension in the 6th grade ($M = 3.17$) was most prominent and that it decreased as the students got older. These findings confirm the previous research by Wang (2004) who studied 214 students from junior middle school, senior middle school, and college. The author discovered that the most obvious anxiety was communication apprehension and that middle school students were more anxious compared to college students. Further, despite the fact that text anxiety was the highest in the 6th grade, the students in the 5th grade showed that they were the least anxious, whereas in the other grades (7th, 8th, 9th, 1st, and 3rd) the level of anxiety continued to decline. When it comes to the fear of being negatively evaluated the most anxious were the students in the 7th grade, while the least are those in the 5th grade. Likewise, the results show that the fear of negative evaluation decreases over years. Overall, it is found that anxiety declined with age, which further means that the older students were, the lower their anxiety level was likely to be. The present results support the previous results obtained by Onwuegbuzie, Bailey and Daley (1999), and Horwitz (1995), showing that younger students face more anxiety when speaking in public. In terms of the current study such findings might be attributed to the fact that English in Bosnia is a mandatory subject in schools, and students start acquiring language at an early age, which makes them more proficient and less anxious in the letter age.

5.4. Motivation and anxiety as language achievement predictors

The hypothesis stating that motivation to speak in English as a foreign language significantly predicts the students' EFL achievement was supported. On the whole, the results of the study showed that motivation to speak in English as a foreign language had a significant effect on the students' EFL achievement. This implies that the students with higher language motivation were likely to succeed in language learning. These findings are in line with those reported by previous research (Dornyei, 2001; Guilloteaux, Dornyei, 2008; Hiromori, 2006; MacIntyre, Gardner, 1989) who argued that motivation is in a positive correlation with English learning achievement, whereas they are contrary to those by Binalet and Guerra (2014) who discovered that motivation may not be related to L2 achievement. However, when separate speaking motivation subscales were taken into account, overall intrinsic motivation and one its subscale intrinsic motivation to feel stimulation singled out as a significant predictor of students' achievement. This confirms previously made conclusion that students with high intrinsic motivation have a high academic self-concept (Cokley et al., 2001), high self-efficacy (Yi-Guang et al., 2003), and tend to put much effort into learning language showing great interest in English while facing challenging tasks.

Similarly, the hypothesis stating that there is a statistically significant influence of classroom foreign language anxiety on students' EFL achievement was supported. Considering all the components of FLCAS (communicative anxiety, fear of being negatively evaluated, and test anxiety) the current study showed that communication apprehension was significantly and negatively associated with the students' achievement, while fear of negative evaluation was also negatively but not significantly related to the students' achievement. The latter might be attributed to the facilitative effect of test anxiety on achievement, since the positive correlation between test anxiety and the students' achievement was found. Such findings are compatible with those suggested in a few other studies (Horwitz, 2001; Scovel, 1991) which supported the positive effect of test anxiety on learning. Thus, according to Scovel (1991) while performing a task students need to feel anxiety to the optimal level. An optimal amount of anxiety can increase learning motivation and help learners to perform better when doing new learning tasks and lead them to make an additional effort to overcome their feelings of anxiety (Simpson et al., 1995).

The findings of the present study indicated the existence of a negative and significant correlation between foreign language classroom anxiety and achievement, which has been also found in the other studies (e.g. Horwitz, 2001, MacIntyre, Gardner, 1991). In the same context, Phillips (1992) investigated the correlation between oral performance and foreign language anxiety of students. The results, in general, showed a significant, moderately negative relationship between

oral performance and foreign language anxiety. Thus, highly anxious students obtained low speaking scores, while students with a lower level of anxiety were likely to obtain high scores. As Na (Na, 2007: 30) states, 'usually, high anxiety can make learners get discouraged, lose faith in their abilities, escape from participating in classroom activities, and even give up the effort to learn a language well. Therefore, learners with high anxiety often get a low achievement and low achievement makes them more anxious about learning.' In other words, as students' anxiety increases, their scores in the examinations tend to decrease. However, these findings contradict those in the studies conducted by Liu (2006) and Oxford (1999) who identified a positive relationship between speaking anxiety and language achievement.

5.5. Limitations

Even though the number of the participants exceeded the rules of thumb for the specific hypotheses tests used, a greater number of the participants would have yielded more powerful insights into the issue. Moreover, taking into account that Bosnia and Herzegovina is a small country with 3.8 million inhabitants the selected sample size might be considered representative. Furthermore, more participants from high school might have made the comparison between middle and high school students possible. The current study investigated the effects of age and grade level on classroom anxiety and motivation to speak, while the inclusion of other independent variables related to the students' relevant previous experiences might have contributed to the development of more complete understanding of the investigated concepts. Likewise, qualitative methods in addition to the quantitative used in the present study could have provided additional insights. All this might be taken into account in future research to further clarify the matter.

6. Conclusion

The current study showed that strong motivation and low level of anxiety are two significant factors precipitating success in the target language attainment. In particular, intrinsic motivation to feel stimulation appeared as a significant predictor of students' achievement. Much attention should be, therefore, paid to the conditions conducive to intrinsic motivation development, the cohesiveness of the learning environment, authenticity of the learning materials, teacher's communicativeness and greater opportunities for decision making and cooperative learning being some of them. Furthermore, teachers might help students deploying relaxation techniques and being gentler, showing more sympathy, creating a supportive learning classroom community where cooperative learning is provided encouraging learners to express their opinions and perspectives on different issues, making them feel safe and protected from embarrassment and sarcasm, giving them choices while assigning a task, enhancing students' pleasure, helping them build their self-confidence, and set their goals.

Taking into account the fact that motivation is a dynamic construct, these actions might also lead to the internalization of extrinsic motivation which appears to be positively associated with learners' anxiety. Thus, they would also contribute to lowering their students' speaking anxiety, which significantly and negatively predicts success in language learning. Even though attention should be directed to both genders simultaneously, teachers should be particularly careful with female students, since the results showed that girls tend to be more anxious than boys. Thus, teachers should bear in mind that whenever females are asked to get involved in the activities that require speaking their level of anxiety escalates since they do not like appearing as less confident and less proficient.

The results gathered from the study also revealed that students in the 8th grade are the least motivated and rather uneasy in communication situations, which should definitely draw the attention of educators to this group of learners. The textbook used, the content covered, the methods employed should be carefully analyzed in order to avoid such a decline of motivation to speak English as a foreign language among the 8th graders. The results pertaining to this group of learners might be also linked to the fact that education programs have changed in the past few years. In this vein, students have to finish 9th grade to enroll in high school instead of finishing 8th grade as it was before. Also, great variance in both motivation and anxiety from grade to grade might be assigned to the fact that the instructors of the current study participants often changed. This further emphasizes the role of teachers in a classroom. They should be fully aware of the importance of both quality and quantity of motivation and anxiety demonstrated by their learners.

Adopting effective methods, they might do much in increasing motivation, maintaining it, lowering anxiety, in such a way assisting students in their successful language learning development.

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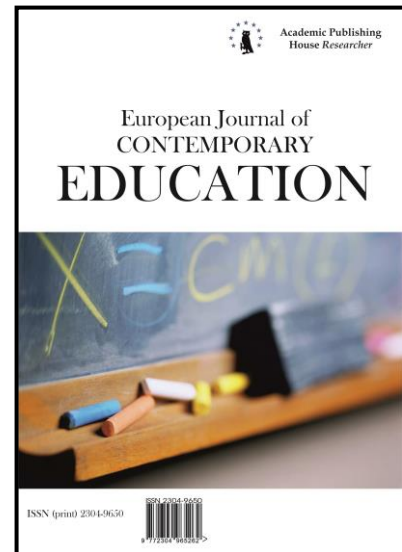
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Kindergarten Teachers' Views of Assistive Technology Use in the Education of Children with Disabilities in Qatar

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Abstract

This study aimed at revealing the opinions of kindergarten teachers in Qatar regarding the use of assistive technology (AT) in educating children with disabilities. In this study, the researchers used the descriptive method (survey) in order to collect, classify, analyze, and interpret the collected data. The sample of the study consisted of (83) female teachers from public kindergartens in Qatar. This sample was selected using the stratified random sampling method during the academic year of 2018/2019. The researchers developed a study instrument (questionnaire) to measure the opinions of kindergarten teachers in Qatar regarding using AT in teaching children with disabilities. The validity and reliability of the research instrument were checked. The study showed that the use of AT by public kindergarten teachers in teaching children with disabilities was high. In addition, the results revealed that there are no statistically significant differences attributed to the variables of experience and specialization. In light of the results of the study, researchers recommend that kindergarten teachers should sustain the use of AT in teaching children with disabilities. Furthermore, choosing a variety of AT tools that suit the varied needs of children with disabilities is recommended.

Keywords: assistive technology, use of assistive technology, kindergarten teachers, education of children with disabilities, Qatar.

1. Introduction

Individuals and communities around the world are increasingly getting interested in learning more about technology uses. Possessing technology related skills has a noticeable impact on individuals. Consequently, technology skills are considered among the main required skills in the

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21st century (Robinson-Zañartu et al., 2015). There is no doubt that the technology has great benefits in the different stages of education; starting from early childhood till graduate studies.

The diversity of technological tools at the present time and taking into account the needs and interests of individuals of all segments of society, drew attention to the role that technology can play to support special education in general and to serve students with disabilities in particular. For this, assistive technology has provided services attested in the special education sector at all levels of global, regional and local levels.

Children with disabilities need more effective teaching methods that enhance their learning. So, using technology can change the traditional pattern of teaching followed by many teachers who focus on memorization and indoctrination patterns. Continuing to follow the traditional patterns of education neglects many of the interests and needs of children, and confines their role as learners to receive information from the teacher. Due to the entry of technological changes and information revolution in the educational field in general and education for children with disabilities in particular, teachers started the integrating technology in their teaching practices. As a result, the latest methods, strategies and teaching aids were introduced to contribute in improving learning and teaching processes, achieving learning outcomes, and enabling children to learn in a stimulating learning environment supported by assistive technology tools.

IDEIA (2004) defines assistive technology as any device, equipment, software, or product system that is used to maintain or improve the functional capabilities of people with disabilities (Floyd et al., 2008). That is, assistive technology is not concerned only with the provision of a commercial, developed, or modified product or devices in order to increase or improve the functional capacities of individuals with disabilities, but it concerned also to enable them to choose and use assistive technology in their active learning.

Technology devices and tools in general, including assistive devices and tools in particular, can be low-tech or high-tech to address the functional capacities of children with disabilities (Parette et al., 2009). These devices include: 1) learning aids such as calculators, spellcheckers, and computer-based programs (Lyons, Tredwell, 2015) that help children with disabilities to accomplish learning tasks and activities; 2) hearing aids such as amplifiers and alarm systems for children with hearing impairment or deafness, and enhanced communication devices that enable children with hearing disabilities to communicate with others in terms of self-expression and understanding of others (Georgia Department of Education, 2019), and 3) computer peripherals such as input/output devices, alternative access devices, modified or alternative keyboards, special software, and other hardware and software solutions that enable children with disabilities to use computers in the classroom (Floyd et al., 2008; Lyons, Tredwell, 2015).

Several studies have highlighted the most important devices used by children with disabilities. For example, Beck (2002) found that children with multiple disabilities use dialing codes for images and adapted books. In addition, Hutinger et al. (2006) discussed how children with disabilities use software to complete learning activities. Further, Marsh (2004) found that television, film, computer games, and mobile are used as tools to improve learning of children with disabilities. Furthermore, digital technologies such as tablets are used by children with disabilities to enhance their learning (Papadakis et al., 2018; Schacter, Jo, 2017).

Despite of the diversity in assistive technology, teachers need to realize that children with disabilities are different individuals and each one has his/her own individual needs. Therefore, the main challenge for teachers is to harmonize the abilities of children with disabilities with appropriate assistive software, devices, and tools (Alharbi, Drew, 2014). Furthermore, it is a challenge for teachers to help children choose the appropriate technological tools and devices. In addition, teachers are required to provide many services for children with disabilities, including assessing their needs and helping them to accomplish the tasks required, as well as selecting and adapting devices to their needs, and helping them and their parents to deal with these devices and tools (Disability Rights Washington, 2018; Parette et al., 2009).

Regardless all of the mentioned challenges, the use of assistive technology helps the growth and development of children with disabilities in many aspects. Simon et al. (2013) have shown that teachers who use technology in children's classrooms have a clear positive impact on their motivation and enjoyment while learning. In addition, using technology could help children to achieve learning outcomes more effectively, to build new concepts, and to develop significant skills.

Teachers emphasize that integrating technology into learning process (McManis, Gunnewig, 2012) gives children the opportunity to master their writing and reading skills (Primavera et al., 2001; Nir-Gal, Klein, 2004), increase the mathematical concepts (Primavera et al., 2001), vocabulary acquisition, and phonological awareness while using tablets (Chiong, Shuler, 2010; Couse, Chen, 2010; Nam et al., 2013).

Assistive technology also helps children with disabilities to enhance the self-confidence and self-esteem, to develop language and communication skills, and to help them become active learners (Floyd et al., 2008). It also enables them to be more independent in accomplishing academic tasks, participating in classroom discussions and activities, and working with peers without hindrance (Burgstahler, 2003). Parette et al. (2009) found that assistive technology enhances the lives of children with disabilities and promotes social integration. On the other hand, this technology can be used as a way to overcome learning difficulty, reduce frustration, increase the sense of peer acceptance, and improve productivity at school and home (Adebisi et al., 2015). Okolo and Diedrich (2014) demonstrated that technologies have a positive impact on academic progress of children, emotional development and behavioral goals. Siyam (2018) asserted that technology could improve communication and sharing information with all those involved in the education of children with disabilities, including parents, to achieve students' learning outcomes.

To realize the benefits of using assistive technology in teaching children with disabilities, teachers are required to have knowledge about assistive technology devices and tools and how to use them in their learning environment. Teo (2011) and Siyam (2019) asserted that teachers are more involved than others in the application and implementation of effective integration of assistive technology in the learning and teaching processes. That is, teachers' ability, confidence, and understanding of the importance of assistive technologies are influential in encouraging the use of them in the students' learning environment (Hutinger et al., 2006).

1.2. Previous and Related Studies

Several studies have attempted to explore teacher practices regarding the use of assistive technology in the classroom environment. For example, Anagnostou (2015) revealed that primary school teachers use technology in the classroom to help children with reading and writing problems. Cardon et al. (2011) also illustrated how caregivers look at children with ASD during their daily routine activities and how assistive technology contributes to improving children's learning. In addition, they illustrated that less than half of those teachers were unable to master the use of assistive technology, and their actual use was low.

Myrttil et al. (2018) found that kindergarten teachers were able to integrate assistive technology, and there were no variables that prevented efficient use of technology. However, Hutinger et al. (2006) demonstrated that teachers need training and technical support to employ assistive technology in the learning environment. In addition, Al-Qahtani (2013) revealed in his study that teachers' knowledge and assistive technological skills were inadequate.

As a result, it is necessary to know the views of teachers and their awareness of the importance of integrating technology in special education and to support children with disabilities (Baglama et al., 2017). In addition, it is crucial to ensure that teachers are actively using assistive technology based on The Individuals with Disabilities Education (IDEIA, 2004a) that calls for technology to be taken into account in the education of all children who have an Individualized Education Program (IEP), and those who need technology in order to obtain free appropriate public education (FAPE). Therefore, the effective use of assistive technology is required in many countries (Ajuwon, Chitiyo, 2016), including Qatar. However, this study is considered as the first study that examined the extent to which kindergarten teachers in Qatar use assistive technology in the education of children with disabilities.

The State of Qatar was one of the first countries that ratified the Convention on the Rights of Persons with Disabilities in 2008, and then went a long way towards achieving and consolidating the principles and foundations of the Qatar National Vision 2030, including equality and justice for all sectors of society and persons with disabilities (United Nations, 2014). In addition, the State of Qatar has made efforts to promote persons with disabilities by discussing their rights and issues in detail in relevant legislation and laws, and by providing resources for implementation at the executive level in various areas (United Nations, 2014). In response to item 9 of the Convention on the Rights of Persons with Disabilities, which affirms that children should be enabled to live

independently and participate fully in all aspects of life, in June 2010 the Ministry of Transport and Communications established the "Mada Center" for Assistive Technology as a non-profit organization (Minister of Transport and Communications, 2019). Mada's strategic plan focuses on the use of technology to improve the quality of life of people with disabilities in Qatar. The plan included five objectives related to the following aspects: education, accessibility in work environments, promotion of independence, health and safety, and quality of life (Minister of Transport and Communications, 2019).

The effort and plans of the institutions in Qatar, that are working with people with disabilities, are based on periodically accurate survey data, such as the Disability Model Survey carried out by the Planning and Statistics Authority 2017 in collaboration with Mada and WHO. The State of Qatar is keen to continue to implement its commitment to the Convention on the Rights of Persons with Disabilities and their empowerment and integration at the national and international levels (Al Thani, 2019).

1.3. Study Problem and Questions

There are several research studies, such as Hutinger et al. (2006) and Alkahtani (2013), revealed that teachers need training and technical support to employ assistive technology in the learning environment. In addition, they revealed that teachers' knowledge and assistive technological skills were inadequate. However, The State of Qatar ratified the Convention on the Rights of Persons with Disabilities. It seeks to achieve the foundations of the Qatar National Vision 2030, including equality and justice for all persons with disabilities (United Nations, 2014). Based on the increasing attention paid by the State of Qatar to improve the services provided to children with disabilities, and to realize the extent to which the objectives of this convention and vision have been achieved in the teaching and learning of children with disabilities, this study came to explore the opinions of kindergarten teachers in Qatar regarding the use of assistive technology in educating children with disabilities. This research study attempted to answer the following questions:

1. What is the extent to which kindergarten teachers in Qatar use assistive technology in the education of children with disabilities?
2. Are there significant differences at the level of significance ($\alpha = 0.05$) in the degree to which kindergarten teachers in Qatar use assistive technology in the education of children with disabilities, due to experience and specialization variables?

1.4. Study Objectives

This study aims to: 1) identify the degree to which kindergarten teachers in Qatar use assistive technology in the education of children with disabilities, 2) identify the impact of expertise and specialization variables on the use of assistive technology in the education of children with disabilities as perceived by kindergarten teachers in Qatar.

1.5. Study Importance

This study sheds light on the role of kindergarten teachers in Qatar in the use of assistive technology in the education of children with disabilities. The kindergarten stage is considered as one of the most important stages of study, where teachers need to facilitate learning, improve performance, and achieve the desired learning objectives. In addition, this study provides a theoretical framework on the views of kindergarten teachers in Qatar regarding the use of assistive technology in the education of children with disabilities. Further, this study is one of the few recent studies that examine the opinions of kindergarten teachers in Qatar regarding the use of assistive technology in educating children with disabilities. Furthermore, it is expected that this study would allow researchers to conduct further studies on the extent to which kindergarten teachers use assistive technology, especially in the education of children with disabilities, in the State of Qatar.

1.6. Procedural definitions

Female kindergarten teachers: are the female teachers from all disciplines and nationalities who work in one of the kindergartens in the State of Qatar in the second semester of the academic year 2018/2019.

Children with disabilities: are the children with one or more disabilities, who are studying in one of the public kindergartens in the State of Qatar in the second semester of the academic year 2018/2019

Use of assistive technology: is the teaching method in which teachers plan, implement, and evaluate their teaching practices by using assistive technology devices and tools. The extent of using assistive technology is measured by the degree that the participants received after responding to the study instrument.

2. Materials and methods

The researchers employed the descriptive survey approach to collect, analyze, and interpret the data to answer the research questions. According to Al-Rushdi (2000) the descriptive research approach included a set of research procedures that integrate to describe the phenomenon or topic, depending on the data collection, classification, processing, and analysis to derive the results or generalizations on the phenomenon or subject under study.

2.1. Study population and sample

The study population consisted of all (108) female kindergarten teachers who teach children with disabilities in the State of Qatar, in the second semester of the academic year 2018/2019. The sample of the study consisted of (83) female teachers, selected by stratified random method, and they constituted, approximately, (77 %) of the study population.

2.2. Study Instrument

To achieve the objectives of the study, the researchers developed a study instrument (questionnaire) to collect data. The process of developing the questionnaire started by reviewing previous studies, and benefiting from the theoretical literature on the use of assistive technology in the education of children with disabilities (Alkahtani, 2013; Myrtil et al., 2018). The study instrument included two sections: 1) demographic information about study participants, 2) 35 items to measure the extent to which kindergarten teachers in Qatar use assistive technology in the education of children with disabilities. The responses of study sample on the questionnaire items were according to Likert scale (5 point scale: Every time = 5, Almost every time = 4, Sometimes = 3, Almost never = 2, and Never = 1).

2.3. Validity

The questionnaire was presented initially to (10) arbitrators from the faculty members of special education specialization, instructional technology specialization, and measurement and evaluation specialization, in order to identify their comments and recommendations regarding the content of questionnaire based on the soundness of the items' language, the comprehensiveness, and appropriateness of the items. The study instrument included in its preliminary form (37) items, and after considering the recommendations of the arbitrators, and by an agreement of 85 %, the study instrument was modified to be composed of 35 items.

2.4. Reliability

The researchers checked the reliability of the study instrument by applying it on 25 female kindergarten teachers from the study population and outside the study sample. After collecting the data, the Cronbach's alpha coefficient (internal consistency) was used to verify the reliability. The result indicated that Cronbach's alpha coefficient was (0.977). This high coefficient of reliability directed the researchers to pursue conducting this research study.

2.5. Study variables

This study has the following variables: First, independent variables that include experience (less than five years, five years to less than ten years, ten years and more), and specialization (special education, general education, non-educational specialization). Second, the dependent variable that is the extent to which kindergarten teachers in Qatar use assistive technology in the education of children with disabilities.

2.6. Statistical Analysis

The researchers used The Statistical Package for Social Sciences (SPSS) to accomplish the following statistical treatments:

1. Means and Standard Deviations to answer the first question and to find the differences of statistical significance for the experience and specialization variables.
2. Two-Way ANOVA test to answer the second question.
3. To determine the cut points for the mean values of the study sample responses, it was divided the range between the highest and lowest scales of the study tool, which is (5-1=4) by the

number of categories of the average distribution. These categories and values are considered as follows: low (1 to 2.33) degrees, moderate (2.34 to 3.67) degrees, and high (3.68 to 5) degrees.

3. Results and Discussion

3.1. First Question

Means and standard deviations were calculated to answer the first question: What is the extent to which kindergarten teachers in Qatar use assistive technology in the education of children with disabilities? [Table 1](#) shows these results.

Table 1. Means and standard deviations of responses of kindergarten teachers in Qatar regarding the use of assistive technology in the education of children with disabilities

Item order	Item No.	Item	M	SD	Degree of use
1	15	Assistive technology helps me to diversify the sources of knowledge for children with disabilities in interesting methods.	4.09	0.849	High
2	5	I use assistive technology in implementing learning activities to increase attention and concentration of children with disabilities.	4.06	0.801	High
3	4	I use assistive technology to increase opportunities for active interaction between children with disabilities and me as a teacher.	3.99	0.834	High
4	14	Assistive technology helps me to facilitate the education of children with disabilities in the regular classroom.	3.98	0.937	High
5	29	I use and employ assistive technology to manage the classroom environment for children with disabilities.	3.95	0.909	High
6	30	I use assistive technology as aid tools to achieve learning outcomes, and do not use them for themselves	3.95	0.882	High
7	6	I use various assistive technology tools that take into account individual differences among children with difficulties	3.93	0.908	High
8	7	I involve children with disabilities in learning games and activities that require the use of assistive technology tools.	3.93	0.866	High
9	35	Using assistive technology improves my teaching practices while teaching children with disabilities.	3.92	0.799	High
10	13	Assistive technology helps me to plan for individual and group educational programs.	3.90	0.892	High
11	24	I seek to make the physical classroom environment rich with assistive technology tools.	3.89	0.841	High
12	31	I chose assistive technology tools tailored to the needs of children with disabilities	3.88	0.903	High
13	32	I use assistive technology to achieve cognitive learning outcomes in the education of children with disabilities.	3.88	0.847	High
14	16	Assistive technology help me overcome the problems I face while teaching	3.87	0.852	High
15	10	The availability of assistive technology tools helps me design and implement computerized educational programs.	3.86	0.938	High
16	20	I encourage children with disabilities to use assistive technology tools to complete individual learning activities.	3.84	0.819	High
17	8	I use supportive technology for children with disabilities to help them invest their time in a constructive way.	3.83	0.809	High
18	12	The use of assistive technology helps me increase the academic achievement of a child with disabilities	3.82	0.899	High

19	17	I employ assistive technology tools to increase self-reliance of a child with disabilities	3.82	0.885	High
20	23	I chose assistive technology tools in accordance with the physical or financial potential of the kindergarten	3.82	0.913	High
21	21	I encourage children with disabilities to use assistive technology tools while working in groups to accomplish learning activities	3.81	0.833	High
22	28	I can easily use assistive technology devices, tools, and programs with children with disabilities.	3.80	0.852	High
23	11	I use assistive technology tools to improve the visual, auditory, and motor skills of children with disabilities	3.76	0.970	High
24	19	Assistive technology tools help me activate the feedback process for children with disabilities.	3.76	0.892	High
25	3	I employ computerized educational programs to develop the abilities and skills of children with difficulties.	3.75	0.935	High
26	27	I use assistive technology in reporting on the performance of children with disabilities.	3.75	1.05	High
27	33	I use assistive technological tools to achieve the kinesthetic learning outcomes in the education of children with disabilities.	3.75	0.895	High
28	34	I use assistive technology tools to achieve emotional learning outcomes in the education of children with disabilities.	3.75	0.948	High
29	9	I use assistive technology tools to increase opportunities for active interaction between children with disabilities.	3.73	0.871	High
30	18	I use assistive technology tools to activate the assessment and diagnosis of children with disabilities	3.72	0.831	High
31	1	I design appropriate computerized educational activities that children with disabilities can accomplish.	3.65	0.930	moderate
32	2	I design computerized educational programs for children with disabilities to enable them to truly interact with learning experiences that are difficult to interact with in the traditional classroom.	3.64	0.970	moderate
33	26	Assistive technology tools help me contact with parents of children with disabilities	3.20	1.13	moderate
34	22	I design computerized educational activities for children with disabilities to accomplish with their parents at home.	2.95	1.21	moderate
35	25	I engage children with disabilities in designing and producing computerized educational programs.	2.73	1.12	moderate
Average			3.77	0.683	High

Table 1 shows that the overall average of mean of the estimates of kindergarten teachers in Qatar on the scale of the use of assistive technology in the education of children with disabilities was (3.77), with a standard deviation (.683). The value of this mean indicates that kindergarten teachers in Qatar perceive the use of assistive technology in the education of children with disabilities to be high.

This result can be attributed to the competencies and skills associated with the teaching technology of these teachers, their preference for the use of modern technologies in their teaching practices, and their rejection of the old traditional patterns of teaching. Further, this result can be attributed to the availability of capabilities, infrastructure and basic equipment that encourage kindergarten teachers in Qatar to use assistive technology in the education of children with disabilities. Furthermore, The State of Qatar continuously strives to support rehabilitation programs by urging specialized governmental and non-governmental institutions to implement a range of continuous professional development and training programs for specialists and staff working in rehabilitation programs, and to promote and provide assistive technology for persons with disabilities (Al-Hajri, 2013).

The results of this study are consistent with Anagnostou (2015), which showed that teachers are using technology in the classroom to help children with reading and writing problems. The results of this study differ from that of Cardon, Wilcon and Cpbell (2011), which revealed that caregivers were unable to master the use of assistive technology and their actual use was low.

As shown in Table 2, the mean values of the scale items ranged from (4.09) at the highest and (2.73) at the lowest. All items of the scale were high, except items (1, 2, 22, 25, 26) which were moderate. The highest was item (15), which states: “Assistive technology helps me to diversify the sources of knowledge for children with disabilities in interesting methods” with mean (4.09) and a standard deviation (0.849). The following highest item was item (5) which states: “I use assistive technology in implementing learning activities to increase attention and concentration of children with disabilities”, with mean (4.06) and a standard deviation (0.801). The third highest response was item (4), which states: “I use assistive technology to increase opportunities for active interaction between children with disabilities and me as a teacher”, with mean (3.99) and a standard deviation (0.834).

These results may be attributed to the potential and specifications of assistive technology tools used by Qatari kindergarten teachers in their teaching practices. In addition, they are attributed to their ability to handle these tools and to employ them in a learning environment that enables children with disabilities to access a variety of knowledge sources, to interact in authentic environment, and to increase opportunities for active interaction between them and teachers.

Although, the majority of the questionnaires item were high, Table 2 shows that some items were moderate. For example, item (25), which states: "I engage children with disabilities in designing and producing computerized educational programs" was the lowest in rank with mean (2.73) and standard deviation (1.12). Further, item (22), which states: “I design computerized educational activities for children with disabilities to accomplish with their parents at home” was moderate with mean (2.95), and a standard deviation (1.21). Furthermore, item (26) which states: “Assistive technology tools help me contact with parents of children with disabilities” was moderate too with mean (3.20) and standard deviation (1.13). These results can be attributed to the fact that teachers are often self-reliant in designing learning for children with disabilities without interference from the children themselves or their parents. Further, these results can be attributed to teachers' preference for children with disabilities to practice their learning and learning activities under their supervision within the school environment without relying on parents. Also, this result could be related teachers' concern that parents do not have enough educational competencies to how to deal with children with disabilities.

3.2. Second Question

Means and standard deviations were calculated to answer the second question: "Are there significant differences at the level of significance ($\alpha = 0.05$) in the degree to which kindergarten teachers in Qatar use assistive technology in the education of children with disabilities, due to experience and specialization variables?". Table 2 shows these results.

Table 2. Means and standard deviations of responses of kindergarten teachers in Qatar regarding the use of assistive technology in the education of children with disabilities, due to experience and specialization variables

Variable	Variable level	M	SD	Degree of use
Experience	Special education	3.94	.626	High
	General education	3.70	.623	High
	Non-educational specialization	3.67	.744	High
Specialization	Less than five years	3.47	.863	High
	Five years to less than ten years	3.84	.628	High
	Ten years and more	3.89	.539	High

Table 2 showed that there are apparent differences between means according to experience and specialization variables. To determine the statistical significance of these differences, a Two-Way ANOVA test was calculated, as shown in Table 3.

Table 3. The results of Two-Way ANOVA test according to experience and specialization variables

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	6.862 ^a	8	.858	2.022	.055	.179
Intercept	978.195	1	978.1	2305.8	.000	.969
Specialization	2.396	2	1.198	2.824	.066	.071
Experience	2.520	2	1.260	2.971	.057	.074
Specialization*Experience	2.992	4	.748	1.763	.145	.087
Error	31.392	74	.424			
Total	1217.958	83				
Corrected Total	38.255	82				

Table 3 shows that there are no statistically significant differences in the estimates of kindergarten teachers in Qatar on the scale of the use of assistive technology in the education of children with disabilities, due to experience ($F = 2.824$) and specialization ($F = 2.971$) variables. The table also shows that there is no effect of interaction between study variables related to experience and specialization ($F = 1.763$).

These results can be attributed to the fact that kindergarten teachers, regardless of their experience and specialization, practice the use of assistive technology in their educational practices while teaching children with disabilities. In addition, these teachers all share similar educational experiences and have received appropriate in-service or pre-service training, which enable them to possess the necessary skills and experience to use assistive technology.

The results of this study are consistent with those of Myrttil et al. (2018) which revealed that preschool teachers are able to implement technology-mediated interventions, regardless of any difference between them. In addition, this finding is confirmed by the State of Qatar's initial report to the Convention on the Rights of Persons with Disabilities, which emphasized that these persons should be given all rights to ensure their access on an equal basis with others (United Nations, 2014).

3.3. Study Limitations

The results of this study and the possibility of generalization are limited to the following: 1) the population of this research was limited to female kindergarten teachers in Qatar who teach children with disabilities, there are no male teacher who teach in kindergarten stage. Further, this research was conducted in the second semester of the academic year 2018/2019. Furthermore, the results of this study are determined by the extent to which the study instrument's psychometric characteristics and the objectivity of the participants' responses to this instrument items.

4. Conclusion

This study aimed at investigating the opinions of kindergarten teachers in Qatar regarding the use of assistive technology in educating children with disabilities. The study results showed that the use of assistive technology in teaching children with disabilities by female kindergarten teachers in Qatar was high. In addition, they showed that there are no statistically significant differences attributed to experience and specialization variables. In light of these results, researchers recommend that kindergarten teachers should sustain the use of assistive technology in teaching children with disabilities. Further, enabling children with disabilities and their families to share teachers with the design and production of some of assistive technology tools and computerized educational programs tailored to their needs. Furthermore, enhancing the partnership between kindergarten teachers and parents by disseminating good practices related to the use assistive technology tools with children with disabilities. Researchers propose further research studies to reveal the extent to which teachers in public and private schools in Qatar use assistive technology in the education of students with disabilities. As a future implication, many international contexts can benefit from Qatari teachers' experiences in dealing with individuals with disabilities. Stakeholders can learn from the Qatari experience in enhancing kindergarten teachers' opportunities in the use of assistive technology to promote children's abilities and meet their individual needs.

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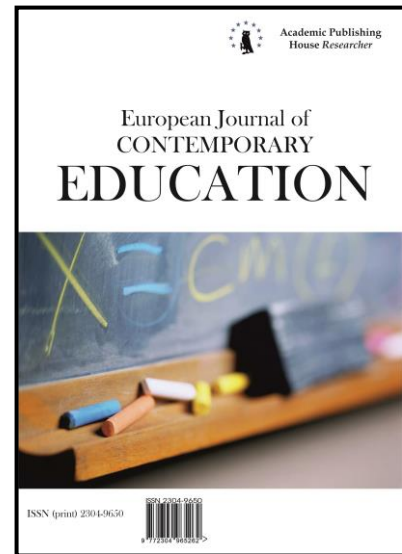
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The Model of Bilingual Education as a Platform for Harmonizing the Interests of the Multi Faith Environment in Business Schools and Universities

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Abstract

The paper focuses on revealing bilingual education features serving the purposes of harmonizing the multi-faith business schools and universities environment, using Russian and international experience. The empirical study was carried out using questionnaire method, polling, and method of involved observation. Russian business schools in 2017, 2018 and 2019, with a total number of 404 students, including 202 students in academic programs implementing bilingual education model in Russian and English, as well as the same number of students in classical monolingual programs in Russian (control banding), formed the empirical base of the study. It was revealed that bilingual education is a complex socio-pedagogical phenomenon and a promising educational model, which focuses not only on shaping and building a wide range of students' capabilities but also on the unique socio-cultural educational environment functioning aimed at the solution of such problems as: harmonization of students' interests to overcome intercultural differences; expanded socialization and facilitation of productive activities in terms of intercultural, interfaith education. It was also determined and confirmed empirically that the overall orientation of the bilingual educational model, which forms a productive cross-cultural communication environment, influences the potentially successful overcoming of interfaith differences and harmonization of interests of representatives of different confessions, as well as religious and atheistic practices. Thus, the use of a single neutral language code, free from religious-oriented vocabulary, reduces the tension in communication perception of educational activity subjects, reducing the risk of contradictions and conflicts of inter-confessional character, thus, harmonizing the interests of participants multi-religious educational environment. The results obtained confirm the hypothesis that the use of bilingual education in Russian and English in modern Russian conditions can be considered as a potentially highly effective platform for harmonizing the interests of a multi- faith environment in business schools and universities.

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Keywords: bilingualism, bilingual education, higher education, business schools, language code, multicultural educational environment, multi-faith educational environment.

1. Introduction

The paradigm of bilingual education is gaining ground in both domestic and Western educational practice, which, however, does not exclude large-scale debate on both bilingual education organization and anticipated efficiency. If the discussion is particularly acute for General secondary education (Abramova, Yessina, 2014), then in relation to higher education, business education, on the contrary, there is a certain research gap. Partly, it exists due to the fact that bilingualism has been actively used in higher and business education for a long time and with the utilitarian purpose of providing a significant coverage of the contingent foreign students and attracting foreign-language teaching staff representatives. Using, apart from the official state language of educational institution accreditation, a universal language code (usually English), it is possible to significantly expand higher and business education opportunities. This is achieved primarily by ensuring mutual understanding between students and faculty, between students, teachers and other subjects of the educational process. In short, bilingualism makes it possible to attract foreign-language subjects to the system of higher and business education, who would not be able to participate in the educational process if they were taught in the national language alone, or would do it very ineffectively. Bilingualism, among other issues, provides great opportunities for experience exchange, scientific knowledge sharing, and inter-University cooperation. Therefore, the applied value of bilingual education has long been appreciated in the system of higher and business education in many countries of the world (Chen, Yang, 2018).

It should be noted that the potential of bilingual education is certainly not limited to these purely practical purposes; it is much broader, and some aspects are beginning paid attention to only recently. Among them are the multiculturalism inherent in bilingualism (Guerrero, 2017), and one of its most important consequences is the wide potential of practice – oriented implementation in order to harmonize the interests of the multi-faith environment in business schools and universities. Since in Russian practice, according to our survey on bilingual training programs for higher and business education, more than 90 % of the total number of programs are taught in Russian and English, it is interesting to observe the possibility of using the latter in the framework of bilingual courses in order to harmonize the interests of the multi-faith environment in business schools and universities.

The purpose of this paper is to study the possibilities and potential of applying the model of bilingual education as a platform for harmonizing the interests of the multi-faith environment in business schools and universities of the Russian Federation.

Accordingly, the following tasks were assigned to the authors: 1) to consider the concept, essence and paradigm of bilingualism in higher and business education; 2) to study theoretical and methodological aspects of bilingual education potential in order to harmonize the interests of the multi-faith environment of higher and business education; 3) to review and systematize the practice of bilingual education model application in universities and business schools of the Russian Federation and individual foreign countries; 4) conduct an empirical study of bilingual education impact on ensuring the priority interests of the multi-faith environment in business schools and universities; 5) present actionable conclusions on the bilingual education potential in Russian and English in modern Russian conditions as a platform for harmonizing the interests of the multi-faith environment in business schools and universities of the Russian Federation and other EEU States.

2. Materials and methods

The current research is carried out on the basis of an inclusive-structural approach to the social phenomena study, at the intersection of the humanitarian and phenomenological educational paradigm, the concepts of inclusiveness and continuity of learning, and taking into account the current state of the theory and practice of bilingual education.

The empirical study was carried out using questionnaire method, polling, and method of involved observation. The materials were processed using the methods of correlation and regression analysis using programs and packages for automated statistical data processing.

Russian business schools in 2017, 2018 and 2019, with a total number of 404 students, including 202 students in academic programs implementing bilingual education model in Russian and English, as well as the same number of students in classical monolingual programs in Russian (control banding), formed the empirical base of the study. Statistical data processing was performed using a table processor based on relevant methods for checking the statistical significance of the results obtained: calculating the value of the Z criterion between two proportions in independent samples and statistically evaluating the significance of differences in average values according to the student's t-criterion.

3. Discussion

Bilingualism and as one of its implementations – bilingual education, are considered in modern conditions as a positive effect of globalization and humanization of communications (Wang, 2019). Rapid improvement of information and communication technologies, including simplification of access and expansion of the user audience, contributes to the active spread of bilingualism in modern communication practices (Vishnevskaya, 2018). The latter is connected with the Internet development, including its mobile and social networks segment in which, in addition to the users' mother tongues, communication is actively practiced in universal languages of global importance, primarily in English. Alongside the cross-border contacts activation and simplification, the vast majority of which have a cross-cultural and cross-linguistic character, the demand for specialists with advanced competence in foreign languages of global business communication, General and scientific communications is significantly growing. This determines the active use of modern practices in foreign languages teaching, among which an important place is occupied by training in a bilingual environment. However, the paradigm of bilingualism and bilingual education arose long before the information revolution of the turn of the 20–21st centuries. Actually, there is no established paradigm of bilingualism, there is a significant number of interpretations and classifications of the phenomenon (Shmatkov, 2011; Filimonova, Krylov, 2010; Kulikov, 2004). One of the natural causes of this situation is the development of colonial practices, as well as close cross – border cooperation between neighboring states, which gave rise to the phenomenon of bilinguals, i.e. people who simultaneously communicate in two languages. There is also the phenomenon of polyglots-people who speak several foreign languages at a fairly high level and actively use them in everyday communication.

According to a relatively commonplace truth, bilingualism should be called active everyday knowledge of two unrelated languages, with the ability to quickly switch between languages in accordance with current tasks and communication needs, ideally, the ability to build thinking in any of the selected languages (Bhatia, 2018). This definition is considered by us as a broad context of bilingualism.

For this reason in foreign research literature, it is customary to distinguish a second language (not native in terms of the territory of birth/primary education/socialization) and a foreign language (Napoli, Ravetto, 2018). For example, for a resident of the Russian-speaking (by the predominant ethnic composition of the population) city of Narva, Estonia, the second language will be Estonian or Russian, depending on the ethnicity of the parents and the conditions of the upbringing environment, or both languages will be the first. English or any other language, even if learned from early childhood, is foreign to them. This approach is not universal; for example, in South-East Asian countries teaching practice, a second language is usually understood as any language that is not native to the educating family, which is taught to the child from early childhood – as a rule, this is the English language, taking into account its universality and global demand. Foreign language is considered, in fact, a second foreign language, the study of which is carried out at an older age, even within the framework of General secondary education (Tuc, 2014). Many boundaries of bilingualism perception are blurred due to the widespread use of foreign language learning from early preschool age, however, there is no consensus among researchers on this approach efficiency and expediency (Valian, 2016; Mishra, 2018). For this reason, the conceptual framework of bilingualism is undoubtedly extremely broad. In this paper, for research purposes, we will use the concepts of "bilingualism" and "bilingualism", meaning any communicative or other activity (for example, teaching and educational) process taking course in two languages, one of which is not initially native to the subject of the corresponding activity.

Bilingualism types differ depending on the country (area), socio-cultural conditions, including objectively determined by historical processes. In psycholinguistics, there are three basic types of bilingualism – coordinative (the most acceptable, ideal option when there is a free switch between two languages); subordinative (there is a unique dominance of the native language, which is used for thoughts shaping, then transformed into a foreign language, often by loan translation, simple sentence) and mixed (Mahootian, 2019). Bilingualism can be artificial (by learning a foreign language), or natural (by bringing up two or more languages in a bilingual family or other similar conditions). Based on the classification suggested, it is fair to claim that in our country there is a bilingualism, mainly of an artificially subordinated type.

Modern science investigates the bilingualism phenomena in terms of a comprehensive, interdisciplinary approach that takes into account the psycholinguistic, sociolinguistic and socio-pedagogical aspects of the phenomenon, including the integral utility of constant practical communications in two or more languages for advanced socialization of the individual, the expansion of his cognitive abilities, and early socio-cultural adaptation in any, including new and even rejecting (hostile) socio-cultural environment (Berent, 2004). To the greatest extent, these characteristics are given to bilinguals of the coordinate type. At the same time, regardless of the preferred theory of formation and development of cognitive abilities, the dominant position among researchers and practitioners is that productive bilingualism of the coordinate type can definitely be artificial, that is, acquired in the course of training.

As for bilingual education, it can be considered in a narrow (teaching a second foreign language) and broad (teaching all or selected subjects of the course in the native and selected foreign languages) context (Abramova, Esina, 2014). The contiguous form may encounter when multiple (more than one, except the actual foreign language and literature) course subjects are taught in a foreign language – but in the wider context, such education cannot be called bilingual, it is focused primarily on foreign language learning facilitation a foreign language as such, but not on the learners' broad universal key skill set development focusing on the bilingual education. In this respect, we recommend to distinguish between the categories "bilingual instruction" and "bilingual education". In the first case we are talking about episodic and/or selective use of foreign languages in the teaching of individual disciplines, courses, educational programs; in the second case – the system shaping the socio-cultural bilingual educational environment (synonym – "language training").

The current paper focuses on bilingual education as a complex socio-pedagogical phenomenon and a promising educational model, application of which is aimed not only at the universal formation and development of a wide range of key competencies of students, but also at the functioning of a unique socio-cultural educational environment aimed at solving such problems as overcoming intercultural differences, ensuring extended socialization and facilitation of productive activities of students in the conditions of intercultural and interfaith education.

Elements of the general model of bilingual education in modern higher education may be the following: 1) proportional distribution of teaching academic subjects in two languages, including one discipline acquisition; 2) bilingual equally distributed project work and other contact and independent activity of students (trainees); 3) the possibility of free (part of a common proportion set) selection language of instruction (including the predominant language of instruction mixed type) in most academic disciplines, i.e. the courses should be suggested, as a rule, in two languages with the corresponding possibility of taking them; 4) active involvement of bilingual teachers, as well as foreign language native speakers into the educational process; 5) educational process methodological support development in two languages; 6) informal communication fostering in two languages; 7) students' groups formation taking into account the level of proficiency in two languages, active involvement of foreign, foreign-language students who speak a foreign language – the second language of the educational program, including as native, and those who speak a third language; 8) directly for business schools and other business education subjects: boosting bilingual business communications between course participants.

Teaching in two languages for native speakers of the basic language in the specific university or business school socio-cultural environment (hereinafter referred to as the UBS), among other things, is a very specific challenge, a practice-oriented task of a new type. The problem is a foreign language proficiency level, in particular, used in a bilingual pair (hereinafter referred to as FL – foreign language used in tandem, NL – native (in particular, Russian language) the language for the educational activities of UBS. As our surveys of students in bilingual courses show, programs,

one of the important reasons for choosing a course (training program) is to improve personal language skills (Table 1, Figure 1).

Table 1. Reasons for choosing a bilingual education course for Moscow business schools students in 2017–2019, based on the survey results (first main choice, n = 202 people)

The first (main) motive	Russian-speaking students	Foreign language students	Z (p < 0,01)
Improving personal language skills	49 %	16 %	2,663
Improving personal communication skills	1 %	33 %	-1,690
Better academic course mastering	2 %	33 %	-2,667
Full understanding of experts	6 %	9 %	-0,795
Ability to communicate with native speakers	16 %	1 %	1,087
Perception potential of foreign-language business practices	24 %	1 %	1,149
Other	3 %	6 %	-1,012
Total	135	67	-

It is remarkable that, as can be seen from Figure 1, this goals are increasingly being followed by Russian-speaking students, in contrast to students for whom Russian is a foreign language, the difference is statistically significant at $p < 0.01$. In addition, it is statistically significant to conclude that foreign students, in contrast to Russian speakers, prefer to choose a bilingual education for the purpose of better course mastering.

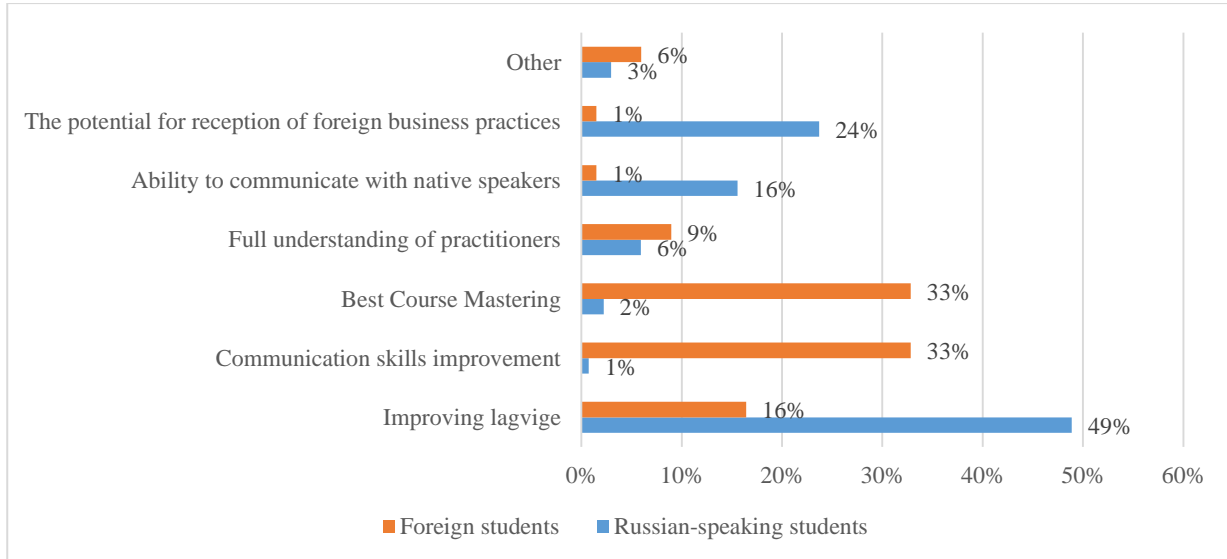


Fig. 1. Distribution of reasons for choosing a bilingual education course Moscow business schools students in 2017–2019, based on the survey results (first main choice, n = 202 people)

The situation is problematic from two aspects at the same time:

- on the one hand, bilingual education itself is not aimed at filling in gaps in foreign language proficiency and assumes a sufficiently high level of proficiency in it for the successful mastering of the training program. The best choice for such students is a variety of language courses; when trying to align and a foreign language knowledge, the true opportunities and advantages of bilingualism are lost. For this reason, native Russian speakers are not recommended to take bilingual courses, at least not for the sole purpose of improving their poor knowledge of a foreign

language. If they have sufficient competence in the field of a foreign language, students are able to successfully complete the course (program) of training, and in this case, the task of getting a language practice will not contradict the main educational goals, in our opinion;

- on the other hand, for foreign students whose native is a third language or a foreign language used in the process of bilingual education, bilingualism is a relatively effective means for cross-cultural communication establishing socio-cultural environment integration to the venue of UBS, effective interaction with other students (trainees) of the training programs of UBS, the native Russian language and its study, which invariably gets borne out by events in scientific research (Kyuchukov, 2016). At the same time, the corresponding potential is not used with full efficiency, especially if students from the third countries do not have sufficiently developed competencies in terms of foreign language proficiency. The solution to this problem is mainly in the plane of optimizing the selection of course participants and the selection of courses in accordance with the formed level of competence in a particular language.

One of the most important tasks of applying bilingual education, as has been repeatedly emphasized above, to ensure interests harmonization of the multi-faith environment in business schools and universities.

The approach used in international practice to achieve the stated goal is based on the paradigm of language perception as a universal communicative code (Skiba, 1997), through which not only information itself is encoded and transmitted, but also experience and traditions, socio-cultural values and practices as well.

There is no doubt that the Russian language is the cultural code of the title ethnic group, the nation, which in many cases is associated with the religious code. The use of the Russian language in religious and ceremonial practices is sometimes so fundamental that large-scale social conflicts, including inter-confessional and intra-confessional ones, occur over it. It can be argued that in a significant number of cases, languages contribute to the tension in inter-religious relations, especially in a multi-religious society. For example, a typical native speaker of the Russian language may simply not notice the active use of clichés, "catch phrases" that are characteristic of a particular confessional code. For a Russian native speaker, it is hardly surprising to hear from a teacher such everyday phrases as "for God's sake", "God loves the Trinity", "for Christ's sake", etc. In some studies there is an entire layer of confessional-oriented words and expressions that can be conventionally referred to as "confessionalisms" (Bonvillain, 2019). It is impossible to say that among the languages of world importance with a share of speakers of more than 1 % of the world population, Russian language is most saturated with confessional-oriented vocabulary – such languages as Hindustani, Arabic, Malay, Bengali and Portuguese the share of confession nominatus in vocabulary, for selected statistics, is more by 15-70 % (Bonvillain, 2019).

Meanwhile, among the languages of world significance, there can be also those in which the share of confession nominatus in active vocabulary does not exceed 0.1-0.5 % (English, Japanese, Chinese, modern German), while in Russian the corresponding indicator is estimated to exceed 3.5 % (Figure 2).

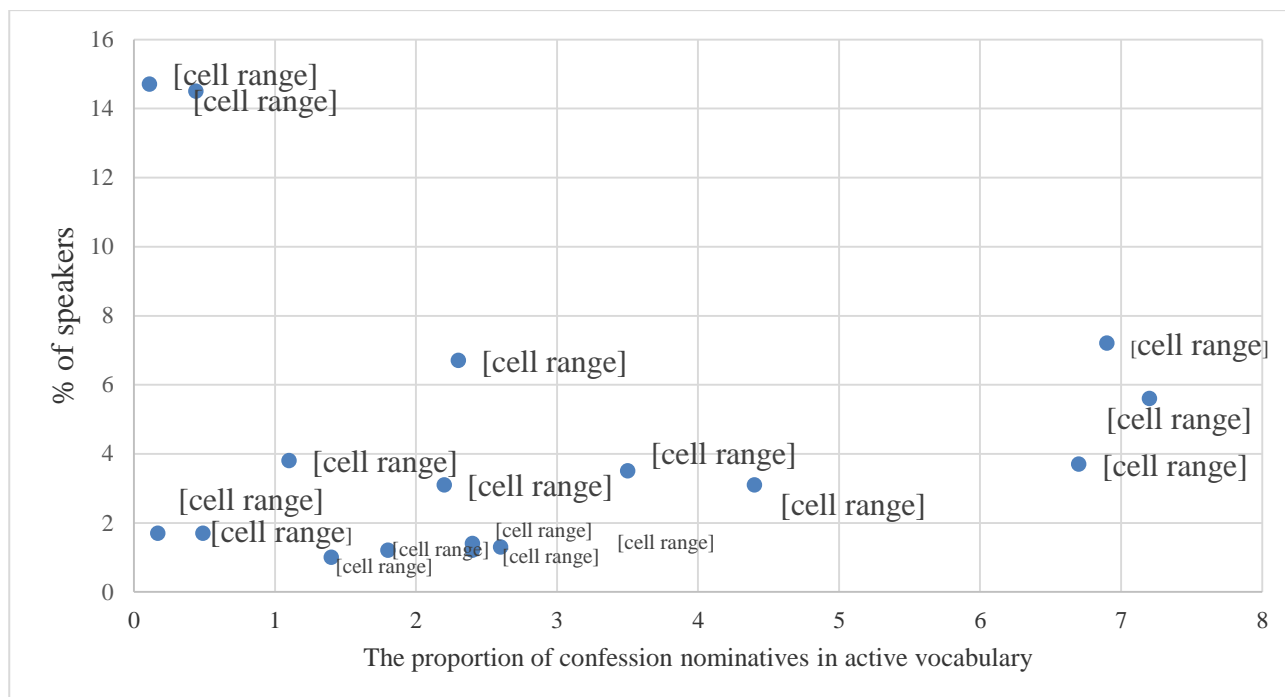


Fig. 2. Distribution of languages of world significance by the share of confession nominates in the active vocabulary (%) and the percentage of speakers (% , 2017)
Note: authors calculations ([Bonvillain, 2019](#)).

Data from cultural and linguistic research should certainly be used with some caution, since there is no universal method for identifying active vocabulary, as well as for calculating the frequency of use of nominatuses. Meanwhile, these calculations, even if they are more indicative, reference in nature, but allow us to distinguish in the world significance languages corpus, in fact, "cleared" from the religious code; such is clearly English, at the same time leading the group world languages as the percentage of speakers and the smallest proportion of religious nomination in vocabulary.

The current situation is connected with the active introduction of tolerance principles and religious indifference in the use of the English language, which began at the turn of the 20–21st centuries and is actively continuing at the present time ([Skiba, 1997](#)). It is no exaggeration to say that the current situation was the result of a social contract formed in the so-called Anglo-Saxon world – states for the vast majority of whose population English is traditionally, historically, the native language, including the language of the dominant group of immigrants – they are Great Britain, the United States, Canada, Australia and New Zealand. Such an unwritten social contract was a response to the growing sociocultural demand for tolerance, political correctness and harmony in public relations, including those with complex cultural and confessional components. These states are either traditionally multicultural and multi-confessional societies, or, like the United Kingdom, faced an active cultural diversification in the 20th century.

From the linguistic point of view, the process of achieving these goals is ensured by excluding from the active dictionary nominatives (lexemes, phrases, phraseological units) that do not have neutral common nominations of political, gender, professional, as well as religious and cultural plan ([Bonvillain, 2019](#)). It is also important to agree that in the mentioned socio-cultural environments, Gnosticism and scientific atheism, occult and mythical practices such as Kabbalistic and others are equated with religious practices ([Khodadady, Dastgahian, 2019](#)).

Refining the English language code from nominatives that have a pronounced socio-negative orientation was provided by replacing them with neutral lexemes, or with correct nominatuses. At the same time, this process occurred rapidly, just over a decade, and then spread no less rapidly around the world, including due to the rapid progress of modern information and communication technologies ([Khodadady, Dastgahian, 2019](#)).

As an example of language substitution for neutral lexemes, the following case can be given: instead of "Merry Christmas/Hanukkah", etc. religious holidays, anglophones say: "Happy holidays", which just refers to specific substituted religious (confessional) holidays traditionally

celebrated at a given time period, and not holidays at all. And an example of substitution for socially correct nominatives can be the widespread use of feminines, for example, "author", "editor", and so on.

As a result, by the beginning of the third decade of the 2000s, English can fairly be called confessionally-neutral, which determines the highest potential for its use for the purposes of multi-confessional communication harmonization, including in the framework of educational activities of the higher school of economics.

The potential of using English in the educational process to harmonize the interests of a multi-faith environment, in our opinion, is as follows: 1) the overall orientation of the bilingual educational model, which forms a productive cross-cultural communication environment, influences the potentially successful overcoming of interfaith differences and the harmonization of interests of representatives of different faiths, as well as religious and atheistic practices; 2) the use of a single neutral language code, spared from confessionally-oriented vocabulary, reduces the tension in the perception of communication by subjects of educational activities, reducing the risks of contradictions and subsequent conflicts of an inter-confessional nature, thereby harmonizing the interests of participants in a multi-confessional educational environment; 3) for third language speakers, the use of a universal and understandable code, which is English, helps to eliminate ambiguities and contradictions in the use of the Russian language of the educational institution and the main contingent of students (program listeners), thereby contributing to a more harmonious understanding of culture, religious and other features and differences in the country of study.

Thus, we can put forward a research hypothesis that the use of bilingual education in Russian and English in modern Russian conditions can be considered as a potentially highly effective platform for harmonizing the interests of the multi-faith environment in business schools and universities.

4. Results

The research hypothesis has been confirmed by international experience, primarily in Western European countries, where the bilingual education model penetrates actively first into the business education system (1960–1980s), and then into universities (1980–2000s). According to available estimates, in the Scandinavian countries in the 2017–2018 academic year, more than 56 % of educational business programs and about 34 % of educational programs of universities are bilingual. In the Netherlands, this figure is 63 % and 29 %, respectively, and in Switzerland, 75 % and 48 % (Flores, 2017; Hernandez-Nanclares, Jimenez-Munoz, 2017; Xi et al., 2018). At the same time, this indicator is calculated not by the total number of implemented (accredited, licensed) educational programs, but by the proportion of students in the total number of students at universities and business schools for the period.

The researchers emphasize the presence of numerous positive aspects of the long-term accumulated practice of bilingual education in Western educational UBS, among which the following are of considerable practical interest: 1) a reduction of more than two times the period of social and cultural adaptation of foreign students (students); 2) reduction by 3-5 times of ethno-cultural and inter-confessional conflicts in the poly-national and poly-confessional combinatorics of students; 3) overall increase in satisfaction with the socio-cultural learning environment from 35-45 % of fully or partially satisfied students identified by the results of the survey to 65-80 %; 4) integral statistically significant increase in the success of educational programs (Flores, 2017; Hernandez-Nanclares, Jimenez-Munoz, 2017; Xi et al., 2018; Ping, 2017).

The accumulated data, despite the ambiguity and disparity, including those related to differences in educational programs and approaches to their development and implementation, confirm the potential for successful application of bilingual education as a platform for harmonizing the interests of a multi-faith environment in business schools and universities.

However while taking a positive view of the best foreign experience, it is impossible not to take into account cultural, social and linguistic specifics of the Russian UBS, counting the context of the specific model of bilingualism characteristic of our country and described above. It should also be noted that the share of bilingual educational programs in Russian higher education is still very small (from 0 % to 10-20 % in some cases), although in the field of business education, the prevalence of these programs, as well as the demand for them, has been growing in recent years; according to our estimates, up to 25-30 % of the student population coverage. At the same time,

according to the results of our survey, the indicators of multi-faith students of the corresponding programs are growing (Table 2, Figure 3), which, in many ways, may reflect the positive experience of graduates of previous years, reflected in the recommendations to applicants and the General atmosphere of approval of courses.

Table 2. Confessional composition of students of Moscow business schools bilingual programs of in 2017–2019, based on the results of the survey (first main choice, n = 202 people)

Confession	2017	2019	Z (p < 0,1)
Orthodoxy	48 %	41 %	0,798
Catholicism	6 %	11 %	-1,106
Islam	6 %	21 %	-1,954
Hinduism	1 %	4 %	-0,797
Other religions	2 %	3 %	-0,201
Atheist	12 %	7 %	1,128
No answer	26 %	14 %	1,758

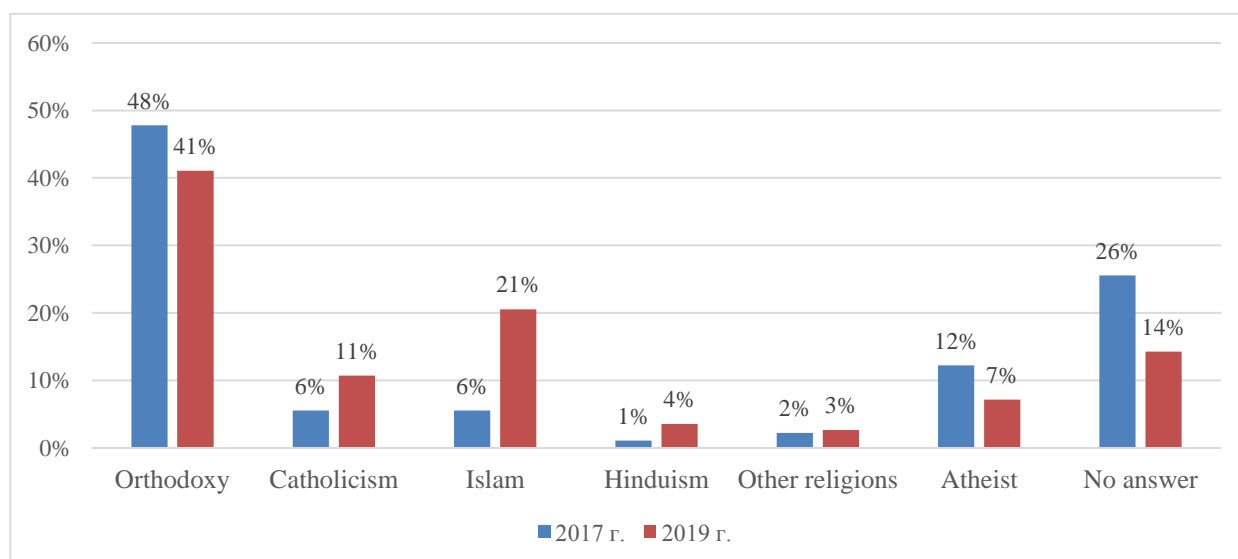


Fig. 3. Confessional composition of students of Moscow business schools bilingual programs in 2017–2019, based on the results of the survey (first main choice, n = 202 people)

As for the bilingual education efficiency as a platform for harmonizing the interests of multi-faith environment in higher and business education, the high potential is confirmed by the data of questionnaires and testing groups of students, shown in graphical form below (Figures 4-5):

1) a positive statistically significant relationship between the indicators of satisfaction with the learning process and the quality of the socio-cultural, including multi-faith environment, observed in students of bilingual programs (correlation coefficient 0.947) and almost not observed in the control group (correlation index 0.204; Figure 4);

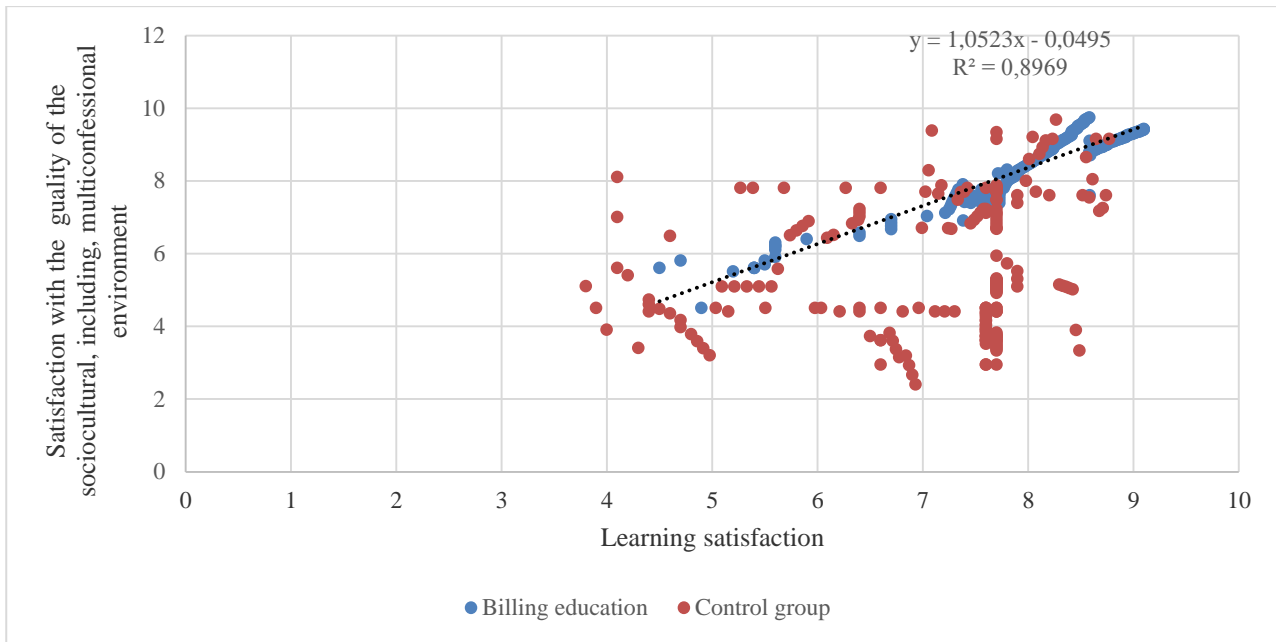


Fig. 4. Indicators of satisfaction with the learning process (points from 0 to 10, max = 10, the highest satisfaction) and the quality of the socio-cultural, including multi-faith environment (points from 0 to 10, max = 10, the highest satisfaction) in the students of bilingual programs (n = 202 people) and in the control group (n = 202 people.)

2) statistically significant differences between estimates of interfaith tension among bilingual students (average value of 6.67 points, standard deviation of 0.74 points) and control group students (average value of 5.54 points, standard deviation of 0.96 points), correlation index between the two groups' scores of 0.9244, student's t-test of 3.995, with $p < 0.01$; [Figure 5](#)).

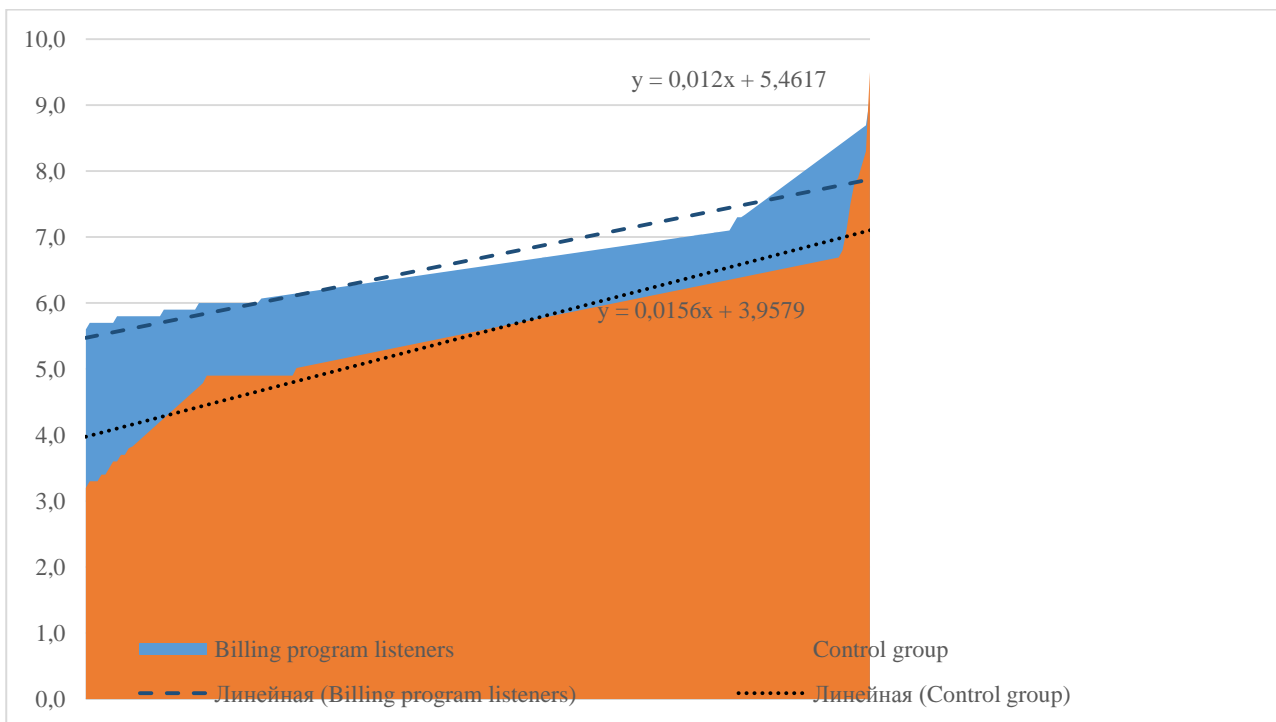


Fig. 5. Estimates of interfaith tension in business school (points from 0 to 10, max = 10, the highest level of tension) made by students in bilingual programs (n = 202 people) and in the control group (n = 202 people)

The presented data allow to confirm the research hypothesis based on the experimental study materials and in compliance with the specified conditions.

5. Conclusion

The results obtained allow us to assert that there is a potential for using bilingual education in Russian and English in modern Russian conditions as a platform for harmonizing the interests of the multi-faith environment in business schools and universities, by simplifying cross-cultural interfaith communications, developing tolerance among participants in the educational process and facilitating mutual understanding, rejecting emotional nominations with a transition to a neutral vocabulary, cleared of confessionally-oriented nominantuses.

However, while trying on and evaluating the results obtained, the limitations of this study, including time, spatial, quantitative, as well as in terms of the coverage of educational programs should be taken into account. Apparently an advanced scientific research should be undertaken by examining relevant data on university bilingual educational programs and their efficiency as a platform for harmonizing the interests of a multi-faith educational socio-cultural environment inclusively.

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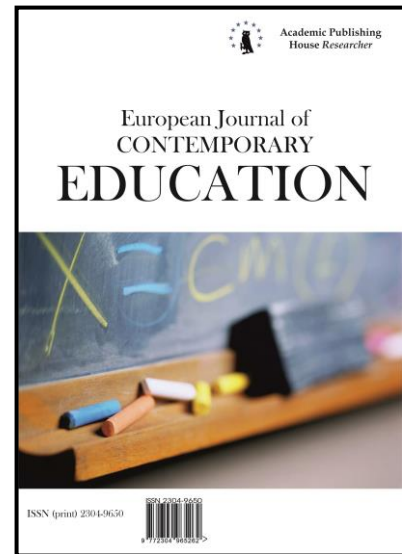
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Digitalization of Education in Modern Scientific Discourse: New Trends and Risks Analysis

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Abstract

The paper presents the results of systematic review of modern scientific publications devoted to the digitalization of education. A review of Russian and foreign studies allows us to conclude that there is a relationship between high academic performance of students and the use of digital technologies. Other advantages of digitalization are: expanding the boundaries of "self-directed learning", developing leadership in the pedagogical environment, creating conditions for the formation of individual educational trajectories of students, modernizing tools for assessing student knowledge, and also differentiating forms and methods for teaching. Based on a critical analysis of publications on this topic, the possible destructive consequences of digitalization of education are determined: ousting experienced teachers with insufficient digital competence from the educational space; information overload; an increase in cognitive distortions; a decrease in the effectiveness of training regarding the formation of interpersonal communication skills of students; the deepening of digital divide; the formalization and dehumanization of education.

Compensators of educational space digitalization dysfunctions are distinguished: improving the teacher training and motivating system, digital content quality control, taking into account the regional specifics of educational systems, a combination of traditional and digital pedagogy, group collaboration, and digital trust. The paper substantiates the conclusion that digital technology is a necessary, but at the same time, insufficient condition for improving the quality of educational work and morale building activities. Based on the analysis of scientific publications, the authors determine the principles of digitalization of education: the formation of institutional conditions for supporting digital innovations, the consideration of situational factors, the resource support of educational organizations, and the priority of personal interests (subject-centered approach).

Keywords: digitalization of education, information and communication technologies, digital trust, digital literacy, digital pedagogy, digital technologies.

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1. Introduction

The development of digital technologies, the formation of digital economy elements ensures the competitiveness of the state, increasing the level and quality of life of citizens, economic growth and modernization of the social sphere.

Digital technologies are part of a new knowledge infrastructure that is now steadily integrated into everyday life. This knowledge infrastructure is “a reliable network of people, artifacts, and institutions that generate and maintain the informational resources necessary for humans” (Edwards, 2010). For the new generation of “digital natives”, the Internet is becoming not just a source of information, but also a sphere of entertainment, a field for acquiring new skills, improving one's skills, and building a career (D'yakova, Sechkareva, 2019).

Digital technologies in the modern world are becoming more and more influential participants in professional and educational practices. As in the case of the industrial revolution of the 19th century, the intensive development of information and communication technologies changes the specifics of activities in many areas of public life (Fenwick, Edwards, 2016). On the one hand, risks and threats of loss of professional identity, dehumanization of society are being formed, on the other hand, new opportunities are opening up for increasing the level of competence, developing the individual's creative potential, and modernizing forms and methods of training.

Digitalization of education is an integral part of the training of a modern specialist. These trends are associated with a repeated increase in the importance and volume of information, and an increase in the number of interdisciplinary research and projects. Surveys show that students today realize the need to increase their competence in the field of artificial intelligence, processing and analysis of big data, information and communication technologies (Mahova et al., 2018). The transition to a digital society imposes fundamentally new requirements both to new competencies of specialists and to the process of forming these competencies (Chekanov, Neizvestny, 2019). The education based on innovative future breakthrough technologies increases the “market value” of a specialist in the labor market (Buryak, 2018). In this regard, the need for the introduction and analysis of new approaches in the education system, the transformation of existing forms, methods and technologies of training is becoming particularly relevant (Short, Korobicyna, 2019).

The importance of social networks, virtual reality technologies, and Internet applications for modern youth encourages educators to use information and communication technologies for educational purposes. However, according to research results, the assessment range for the “usefulness” of digital technologies has a high level of differentiation among educators. On the one hand, there is an understanding of the advantages of digitalization, the needs of young people in the development of digital competencies, and, on the other hand, there are ideas about the need to confront “an overwhelming optimism regarding digital technologies” (Menashy, Zakharia, 2019).

A critical analysis of international scientific discourse made it possible to establish a shift in the focus of attention of scientists to consider the advantages of introducing digital technologies into education (Bicen, Uzunboylu, 2013; Tamim et al., 2011; Hew, Cheung, 2013; Tess, 2013). In particular, a review of Russian and foreign studies allows us to conclude that there is a relationship between high academic performance of students and the use of digital technologies.

Along with this, in the scientific literature there are also works that analyze the problems of digitalization of education and their possible destructive consequences. In the modern scientific discourse, the risks are considered where the “live communication” practice between a teacher and a student disappear, and there is the need to analyze the “feasibility” of the active use of information and communication technologies, taking into account the pedagogical context; situational factors affecting the successful integration of digital technologies in the educational space are emphasized (Burnett et al., 2019; Van den Beemt et al., 2019).

2. Materials and methods

The debatable positions on the issues concerning digitalization of education actualize the need for scientific understanding and review of scientific literature, and the results of empirical research on this topic. A systematic analysis seems to be necessary both on the advantages of introducing digital technologies into education, and on the possible risks associated with its destructive factors. The interdisciplinary nature of the processes involving digitalization of education is driven by the complexity of their study within the scope of a subject field of the single

science. The modernization of pedagogical practices, the transformation of the teacher’s role determines the need for a scientific analysis of these processes within the framework of sociological, psychological, philosophical and pedagogical approaches.

The purpose of the paper is to analyze the conceptual foundations of digitalization of education within the modern scientific discourse, to consider its substantial characteristics, to study new trends, advantages and risks of introducing digital technologies into the educational space, as well as to identify factors that increase the efficiency of these processes. An additional task is to comprehend certain aspects of digitalization presented in the scientific literature: the impact of digital technologies on the quality of education, the readiness of subjects of the educational space to introduce digital technologies, the transformation of models of interaction between a teacher and a student in the digitalization conditions.

For analysis, scientific articles published after 2010 were selected. The total sample of sources amounted to 125 articles. Articles were excluded from the sample, the content of which was based on well-known theses; the results were not distinguished by significant novelty. In addition, articles that indirectly related to the introduction of digital technologies in education and/or did not reveal new trends, advantages, and risks of digitalization of education were excluded. The final sample was 84 articles.

Databases for searching for scientific articles: Web of Science, Taylor & Francis Online, Springer Link, SAGE Publishing, Cyberleninka.ru

Search Keywords for Scientific Articles: information and communication technology, digital technology, digital pedagogy, digital learning, online learning, electronic contexts (Table 1).

The methodological core of the analysis consists of theoretical research methods, in particular, a review analysis to the study of factors and trends in the digitalization of education, the introduction of information and communication technologies in the educational space, and a generalization of conceptual provisions presented in modern foreign and domestic publications.

Table 1. Key studies included in the in-depth review

Author, date, country	Study type	Purpose	Content/ Key findings	Methodology
Selwyn i dr., 2019 (Australia)	New trends	This article addresses the deliberately speculative question of ‘What might the school of 2030 be like?’, with a specific focus on the influences of digital technologies.	The article considers the increasing prevalence of dataveillance, digital deskilling and the de-territorialization of schooling. The article then goes on to consider changing relationships between time/place, material and coded structures, as well as the increasingly platformized and data-driven nature of schooling in the 2020s.	The article adopts the methodological approach of ‘social science fiction’ to explore the ways in which digital technologies might be used in one Australian high school in 2030 (Lakeside), and what this might mean for the people whose lives are enmeshed with these technologies.
Lacka, Wong, 2019 (USA)	New trends	The current study examines the use and outcomes of computer-based instructional technology in the context of graduate business education. Case study data is gathered to explore how computer technology is used in the university classroom, and how computer-based teaching methods differ from traditional teaching methods in terms of class interaction and in-class	The use of computer-based teaching methods requiring hands-on student use appear to offer an advantage over traditional methods and over computer-based methods not requiring hands-on student use in providing a forum for exploratory analysis during class and for acquiring technical procedural knowledge. A model of in-class learning is developed for future	Research examining classroom use of computers consists almost exclusively of experiments examining a specific application of a computer-assisted instruction, a videodisk, or an interactive video. Research on computer-assisted instruction {CAI}

		learning.	research.	
Hawkins i dr., 2019 (USA)	New trends	Studying the impact of digital learning games. In particular, it explores how different images of scientists in an evolutionary learning game can influence motivation.	The results show the importance of further exploring the impact of digital learning games on student motivation.	The author's methodology was based on ranking respondents by gender and age. A distinctive feature of the methodology is the inclusion of participants aged 9-10 years. The method of paired comparisons was used.
Martin i dr., 2019 (Spain)	New trends	Conduct a diagnostic assessment of the level of knowledge possessed by prospective teachers of preschool education in relation to concepts related to ICT.	The main conclusion is that these future teachers had virtually no theoretical knowledge of technology. Therefore, universities should be one of the main institutions responsible for conceptual learning, so that future specialists in the field of preschool education can successfully integrate ICT into their educational practices.	The authors used a quantitative methodology, using an online survey method to collect data, as well as descriptive and logical methods of data analysis. The sample included 332 students in their first year of pre-school education at the University of Salamanca (Salamanca campus), predominantly female (98.6 %), and ages ranged from 17 to 24 years.
Ilina et al., 2018 (RU)	New trends	To study the nature of the transformation of the social status of University teachers during the socio-economic reform of the country and the modernization of higher education.	A significant tightening of the University's requirements for teachers and increased competition in the professional sphere was revealed. The development of skills in the digital environment can become a compensator for the decline in the social status of the teacher.	Three-stage sociological research with the participation of 274 teachers and 215 students of the Russian state social University (RSSU) for 7 years (2009–2016).
McLay, Renshaw, 2019 (Australia)	New trends	Membership categorization analysis (MCA), to examine how a group of young people creates a collective identity in interaction.	The article contributes to a growing body of research that engages with more nuanced ways of understanding contemporary, technology-mediated learning as a process of producing not only knowledge and skills, but also selfhood-both private and shared	We consider the sense of self-awareness and collective identity of young people in connection with their use of specific digital tools available in their school. A detailed analysis of the MCA conversations in the group interviews. Analysis of relational speech acts.
Fenwick, Edwards, 2016 (UK)	New trends	This article aims to examine the impact of digital technologies on professional practice at the individual, organizational, national and international levels.	To date, despite the introduction of many professional codes on the use of digital data and social media, these issues have received limited examination in research addressing professional education. This article aims to explore some of these trends, how they are manifested in different professions and what might be the educational implications. Our argument is that new digital technologies are reconfiguring	The methodology is not selected as a separate block in the abstract of the article. According to the results of the study, there is reason to believe that one of the key research methods is the analysis of documents, statistical and informational data sets.

			professional practice and responsibility, but that the education of professionals has yet to adequately reflect these changes. Digital technologies may therefore be changing the governing of practice rather than simply enhancing the efficiency of practices.	
Buryak, 2018	An analysis of the advantages	The article analyzes the problems of educational support for the strategy of digitalization of the Russian economy.	The author substantiates the conclusion that the successful implementation of the state program of digitalization of the Russian economy requires the support of the higher education system on "disruptive technologies".	The analysis of scientific sources on the research problem is carried out. A comparative analysis of various points of view on the contribution of higher education and digital training technologies to the strategy of digitalization of the Russian economy is used.
Bicen, Uzunboylu, 2013 (Turkey)	An analysis of the advantages	The purpose of this research is to find out how Facebook and Web 2.0 tools create a positive effect when used in education and to investigate teachers' opinions about the Online learning environment.	Results show that, if used for educational purposes, Facebook could bring about a positive change in teachers' opinions. Results also indicate that Facebook virtual environment helps teachers to do many activities with online classes, which is not possible to do in schools. Teachers are convinced that this environment helps students not only to improve their team work, but also to improve their learning skills. Based on the findings, recommendations are made about using Facebook in education.	This experimental study was carried out in primary and secondary schools with teachers who use Facebook. The study took six weeks and 30 hours. The teachers attended lessons and accessed materials online and offline, in face-to-face learning environment. The study sample consisted of 35 teachers from primary and secondary school who constituted a blended learning group and 36 teachers from primary and high school who formed an online learning group that enrolled in the material development for Facebook course. Data was collected using a 5-point Likert scale questionnaire created by the authors and entitled "Teachers' Opinions about Facebook in Education". The questionnaire consisted of 39 positive statements about Facebook. It was completed by teachers at the beginning (pre-experience test) and the end of the study (post-experience test).
Tamim i dr., 2011 (United Arab Emirates)	An analysis of the advantages	Addressing the question, does computer technology use affect student achievement in formal face-to-face classrooms as compared to classrooms that do not use technology.	Insights about the state of the field, implications for technology use, and prospects for future research are discussed.	This research study employs a second-order meta-analysis procedure to summarize 40 years of research activity. A study-level meta-analytic validation was also conducted for purposes of comparison. An extensive literature search and a

				systematic review process resulted in the inclusion of 25 meta-analyses with minimal overlap in primary literature, encompassing 1,055 primary studies. The random effects mean effect size of 0.35 was significantly different from zero. The distribution was heterogeneous under the fixed effects model. To validate the second-order meta-analysis, 574 individual independent effect sizes were extracted from 13 out of the 25 meta-analyses. The mean effect size was 0.33 under the random effects model, and the distribution was heterogeneous.
Hew, Cheung, 2013 (Saudi Arab)	An analysis of the advantages	This study is aimed at identifying the impact of technology in the classrooms for Saudi students at Midwestern University.	The study reached the following main results: - The use of technology in the educational process is very useful if used well, as the student. - This type of study can help educators understand the effects of different factors on student preference for learning devices.	To achieve this goal, the researcher conducted a survey on a group of graduate students in Saudi Arabia who are studying in small universities in the Midwest in the United States. The survey inquiries from students, the type of technology used in their studies in Saudi Arabia, how they helped them teach, and how technology changed from their university level in Saudi Arabia to their graduate level in the United States.
Tess, 2013 (UK)	An analysis of the advantages	This paper summarizes the scholarly writings as well as reviews the findings of empirical investigations. Some limitations are discussed, and future areas of research are proposed.	Many scholars argue for the purposeful integration of social media as an educational tool. Empirical evidence, however, has lagged in supporting the claim. Most of the existing research on the utility and effectiveness of social media in the higher education class is limited to self-reported data (e.g., surveys, questionnaires) and content analyses.	The analysis of scientific works and empirical studies of the practice of using social networks and digital technologies by higher school teachers is carried out. Methods of generalization, systematization and analysis of data sets are used.
Detyna, Kadiri, 2019 (UK)	An analysis of the advantages	Study of the practice of using virtual reality technology in training	The findings are in line with those of previous studies which show that immersive VR (Virtual Reality) environments create a strong sense of perceived presence which leads to higher learner engagement and motivation.	Inductive approach to thematic analysis Three trial runs of full earth simulations in VR (virtual reality) in classroom environments were conducted using high-end VR (virtual reality) hardware
Klochkova, Sadovnikova, 2019 (RU)	An analysis of the advantages	The purpose of the research is to analyze current trends in education in the context	The analysis made it possible to determine the main trends in the field of education. The identified	Methods of descriptive statistics are used. The analysis of information collected during a

		of digitalization.	trends proved the need to improve the quality of education using information and communication technologies. The results of the study demonstrate the demand for specialists in the field of information and communication technologies in the labor market, including among people with disabilities.	sociological survey organized and conducted by the faculty of the Department of statistics in conjunction with the ANO "Council for management and development" at the Department of labor and social protection of the population of Moscow is presented. Data visualization methods are used for visual representation of data. Data processing was performed using MS Excel and the IBM SPSS Statistics application package.
Aleshkina, Apokina, 2019 (RU)	An analysis of the advantages	The article aims to study the current trends in the development of various spheres of society due to the active use of information technologies.	The development of the digital economy and digitalization of most sectors of human life is reflected in the need for retraining, professional development of employees, changes in working methods, and sometimes radical changes in the sphere of activity. These processes require the attention of an individual, an enterprise, and the entire state	The authors used qualitative research methods: analysis of scientific sources, government programs, and statistical data.
Craciun, Bunoiu, 2019 (Romania)	An analysis of the advantages	Analyze how ICT-based formal and non-formal activities incorporating digital comics and other visuals can facilitate learning and can increase student enthusiasm/motivation for learning science.	The use of visuals and ICT, in particular, of digital comics, can be a suitable medium/method for science education and communication for this young generation	In the case of preservice teachers, the study involved the application of an in-house questionnaire (CH ₁), both before and after the didactic activities, which was completed with a focus group at the end of the activity. Post-test and a quasi-experimental design without a control group was used to investigate the perception of secondary school students on the usefulness of digital comics in their science education and ICT integration in learning activities.
Van den Beemt i dr., 2019 (Netherlands)	Analysis of the limitations	The current literature review aims to present a synthesis of conditions and outcomes relevant for a well-considered, evidence-based use of social media, and teacher professional development.	Reported factors include school culture, attitude towards social media, support, teacher professional development, learning goals and a clear position in the curriculum. Considerations and advice for educational practice were formulated.	The review included 271 articles, which were analysed with framework synthesis.

<p>Ma, Vachon, 2019 (Taiwan)</p>	<p>Analysis of the limitations</p>	<p>The aim of the study is to find an answer to the question whether national income, political freedom, and national investment in research and development (R & d) and secondary education are linked to the second digital divide.</p>	<p>R&D spending reduces the socioeconomic gap in educational software use only in low-income countries. Educational expenditures reduce the Internet literacy gap in high-income countries while exacerbating it in low-income ones. Additional analyses suggest that income inequality increases the digital divide, but like political freedom, the effects become non-significant when national income is considered.</p>	<p>Using data from the 2009 OECD Programme for International Student Assessment, we consider two aspects of the second digital divide for 15-year-olds across 55 countries: the gaps in use of educational software at home and Internet literacy.</p>
<p>Manikovskaya, 2019 (RU)</p>	<p>Analysis of the limitations</p>	<p>Search for an answer to the question: how digitalization, which is transforming the modern world, changes relations between people, and how it can transform a person (morality, ethical norms).</p>	<p>The risks and negative consequences of digitalization of human relations are presented. Last seen in possible the dehumanization and instrumentalization of education, distortion of identity, disintegration of the pieces and even to "digital man", the devaluation of traditional moral norms and principles, leading to the destruction of the moral foundations of society, which in the public mind has always been associated with strength, firmness of the foundations rooted in the joint being consciously advocated.</p>	<p>Analysis of moral and ethical relations, reflection on the role and place of morality and morality in the problematic context caused by digitalization.</p>
<p>Noskova i dr., 2016 (RU)</p>	<p>Analysis of the limitations</p>	<p>The main purpose of the article is to answer the question how existing pedagogical theories and practices in an electronic environment.</p>	<p>It is concluded that educational practices in the electronic environment should be subject-centered, with a high degree of interaction, collaboration, and teamwork. They should be transformed in the cognitive, motivational, and regulatory aspects in order to enrich the activities of educational subjects by expanding the range of educational tasks and spatial and temporal boundaries. Such educational practices are an important component of the process of conscious independent development</p>	<p>Methods of analysis and comparison of domestic and foreign pedagogical theory, practice, using the results of a survey of students in the framework of an international study in the field of e-learning in higher education institutions.</p>

Gupta, Irwin, 2016 (USA)	Analysis of the limitations	The study was conducted to examine Facebook (FB) as a distraction in the classroom.	Participants were more susceptible to FB distractions when the primary learning task was of low-interest. The study also found that goal-relevant FB intrusions significantly reduced HI lecture comprehension compared to the control condition (A). The results highlight the need for recourses that will help educators increase student engagement with their learning task. Implications for future research are discussed.	This experiment fills a gap in the literature by manipulating lecture interest-value and controls for duration of FB exposure, time of interruption, FB material and the order of FB posts. One hundred and fifty participants were randomly allocated to one of six conditions: (A) no FB intrusions, high-interest (HI) lecture; (B) no FB intrusions, low-interest (LI) lecture (C) goal-relevant FB intrusions, HI lecture (D) goal-relevant FB intrusions, LI lecture (E) goal-irrelevant FB intrusions, HI lecture (F) goal-irrelevant FB intrusions, LI lecture.
Dobrinskaya, Martynenko, 2019 (RU)	Analysis of the limitations	The purpose of the research is to study the specifics and trends of the formation of the information society in Russia by analyzing various aspects of its digitalization, including those related to the task of reducing the digital divide – a new form of social inequality based on the development of information and communication technologies in the second half of the twentieth century.	The article draws conclusions about the prospects for bridging the digital divide in Russian society and identifies the risks and negative consequences of attempts to accelerate its digitalization.	The method of analysis of statistical data and data from empirical research in 2015-2017 was used. The three-level division of the digital divide is used as a methodological basis for analyzing digital inequality, where the first level records the difference in access to the latest information technologies. The second level of the digital divide captures the difference in skills required for effective use of information technology. The third level is life chances and opportunities due to the use of information technologies.
Kozlova, 2019 (RU)	Analysis of the limitations	The purpose of the article is to determine the main directions a digital transformation that radically changes the economy, education, and lifestyle in General.	It is established that digital technologies for the educational process – a necessary but insufficient condition for improving the effectiveness of educational work. It is concluded that the transition to a new model of educational process organization requires the use of high-tech organizational, pedagogical and methodological solutions.	The research methodology is not specified. However, the study of the materials of the article allows us to conclude that the author uses episodes of systematization, generalization, and analysis of documents. The data from the original author's research is missing.
Kohanova i dr., 2019 (RU)	Analysis of the limitations	The purpose of the study is to determine the trends of the current stage of digital education development. Special	The key trend is the transfer of traditional training methods to the digital environment. At the same time, such risks	Questionnaire survey of 286 students of journalism faculties of Moscow Universities.

		attention is paid to the issues of Internet risks and threats that arise for communicators when working with social networks.	as content risks, communication risks, consumer and technical risks are high. it is established that Internet addiction as a consequence of the development of digital technologies is also gaining momentum.	
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3. Results

3.1. Conceptual Characteristics of Digitalization of Education

The study of the problems concerning the transition from computerization of education to its digitalization is of particular relevance. A comparative analysis of these processes makes it possible to more reasonably approach the issues of determining the essence and content of the “digitalization of education” concept. A number of studies highlight the following informatization characteristics: the use of automated data banks, distance learning resources, fragmented use of information and communication technologies in the processes of knowledge transfer and assessment (Strekalova, 2019). In contrast to these characteristics, the basis of digitalization is the widespread introduction of electronic resources and digital technologies in pedagogical practice, which opens up wide opportunities for the formation of students' competencies. In particular, digital education is inextricably linked with the possibilities of using electronic content, electronic educational environment, social media, virtual reality technologies, and open information systems (Kohanova et al., 2019). In contrast to informatization, digitalization involves a transition from the simple use of information and communication technologies to the systemic modernization of the educational space based on digital technologies, the formation of "digital maturity" of teachers and students (Badykov, 2018). So, within the context of digitalization, the forms of information transfer from a teacher to a student are changing. The range of pedagogical forms is expanding significantly, including not only presentation materials, illustrations or videos, but also direct connections to information networks, databases, and integration into network communities (Petrova, Bondareva, 2019).

As E.Yu. Levina stresses, digitalization is becoming a continuation of informatization by strengthening it with the transition of many functional processes exclusively to the virtual sphere, and expanding it with the possibilities of consolidating information and communication, mobile technologies and global information resources (Levina, 2019)

In the process of digitalization, the content and structure of training, approaches to the organization of the educational process are radically changing (Safuanov et al., 2019). Particular attention in modern studies of the digitalization of education is given to virtual reality technologies. E. McGovern considers their role in shaping the soft skills of students, in particular, such as participating in public speaking, business negotiations and communication, and preparing presentations. In addition, virtual reality technologies allow students to self-evaluate their skills, to see the direction of their development, and to adjust training programs (McGovern et al., 2019). Complementing this study, M. Detyana and M. Kadiri highlight the benefits of using virtual reality technologies such as higher student engagement and motivation (Detyana, Kadiri, 2019).

T.N. Noskova's (Noskova et al., 2016) point of view deserves special mention in the process of analyzing current trends in digitalization and its key semantic components. As part of this study, new educational practices have been identified that show the direction of modernization of education in the context of digitalization. Summarizing the scientific literature on this issue, we can distinguish the following elements of digitalization:

- Online teaching;
- Tutor's support in the process of mastering knowledge;
- Use of electronic educational content;
- Interactive methods for the development of students' competencies and the formation of their skills;
- Digital technologies for knowledge assessment;

- Digital technologies for monitoring and managing an educational organization (learning management systems, network organizers, testing systems, etc.).
- Network horizontal communications, both between subjects of the educational space, and between organizations;
- Virtual learning environments and social networks, and also robotization (Lacka, Wong, 2019);
- Digital learning games (Hawkins et al., 2019).

Gamification methods deserve special attention; they are considered as a key factor for increasing interest in learning within the context of digitalization (Vinichenko et al., 2019; Demchenko et al., 2018). Networking and collaboration are one of the central elements of digitalization. They include the creation and implementation of projects, the exchange of not only information, but also resources and experience. The conditions for the exchange construction are trust (Rogach et al., 2018), cooperation, and infrastructure support of self-organization processes. Within the framework of network interaction, an “activity contact” is formed between the participants; that forms a new systemic quality (Simonova, Dvornikova, 2018).

The analysis of key trends and characteristics of “digitalization of education” in comparison with “informatization of education” allows us to draw a number of conceptual conclusions. The lack of a clear distinction between these concepts leads to a distortion of the performance evaluations for the introduction of digital technologies. The focus of attention by the heads of educational organizations is shifting towards increasing digital resources (video lectures, presentations, content), using elements of distance learning and/or digital presentation of learning outcomes (electronic diaries). These practices are the essence of education informatization, while digitalization involves a transition to a qualitatively new content of the educational process (the use of virtual reality technologies, interactive methods, horizontal network connections, etc.)

The increased attention of the authorities to the introduction of digital technologies in education is orienting universities and schools to step up their positions in this area. However, given the weak technological base and insufficient level of readiness of the pedagogical community, these practices do not provide the required performance, while sometimes leading to destructive consequences and imitation of activities. For example, in many universities, teachers are required to develop electronic content for their courses or even present videos of their lectures. As part of the implementation of the E-School project, these requirements also extended to school teachers who are motivated to digitize their materials, to place lesson scripts in an electronic environment, etc. It should be noted that a simple transfer of printed texts into electronic format cannot be considered as a meaningful description for digitalization of education.

An increase in an additional burden on teachers shifts the pedagogical work vector in the direction of decreasing the fraction of the time allotted for close and “live” interaction with students. A teacher is more focused on formal criteria for the quality of the educational process: timely preparation and placement of digital content, and work in an electronic environment. Excessive intensification of pedagogical work and organizational pressure from the leadership of educational organizations interested in the rapid introduction of digital innovations in the educational process initiate negative trends such as imitation of activity, increased anxiety, stress, and professional burnout.

The sharp changes in educational practices in the context of digitalization form new requirements for the teacher’s computer literacy and their skills in the digital environment. This issue is especially acute for teachers of the older age group. Limited access to continuing education systems and tutor support may be an additional risk factor for expelling from the educational space of the experienced teachers, who do not have the appropriate level of computer literacy.

3.2. New trends in the development of education in the context of digitalization

In the context of digitalization, it is natural to change the traditional models of interaction between key subjects of the educational space. The availability of electronic resources and videos of the best lecturers in the world, the emergence of automatic translation of texts and speech from any language creates new challenges for the education system and, in particular, for teachers (Safuanov et al., 2019). The following questions become the center of the scientific discourse: what are the functions and role of a teacher in the context of digitalization; what should be the subject of evaluation; what should be a new form of the lesson/lecture/seminar? If a teacher was the key figure in the educational process as a relay of knowledge earlier, this role loses its relevance in the context of digitalization.

Fundamental is the evolutionary shift of education forms from cognition (the “knowledge” paradigm of education) to constructive creation (the “cognitive” paradigm of education). Under the new conditions, student’s ‘competencies are seen as readiness and ability to take specific actions, and they are the result of each period of “building up” their knowledge (Levina, 2019). The growth in the scale and importance of intellectual and creative activities (Efimov, Lapteva, 2018; Ilina et al., 2018) set a new vector for the modernization of the educational sphere.

In modern conditions, approaches to the organization of the educational process in universities and schools are changing. Experts today express fears that leading universities may lose their leading position, their place will be taken by network providers of educational services.

In addition, questions on transformation of the identity of young people in the context of digitalization are of interest. Modern training based on digital technologies is a process of production of not only knowledge and skills, but also self-awareness, and personal values (McLay, Renshaw, 2019). Digitalization has a significant impact on the norms of informal communication. Informal digital practices are changing patterns of communication and collective action in the face of social and academic inequality. The expansion of the boundaries of social interaction and the emergence of new forms of self-presentation form new alternative identities of students (Timmis, Munoz-Chereau, 2019). In this regard, the risks of increasing the distance between new generations of students and the teaching staff increase (different value systems, world views, lifestyles, ways of learning) (Efimov, Lapteva, 2018).

3.3. Digitalization Benefits

The integrated implementation of information and communication technologies in schools is a key factor in empowering students. Pedagogical observations demonstrate the potential of digital technologies in the field of knowledge modeling, updating existing knowledge control tools, and ensuring transparency of assessment results for students (Campelj et al., 2019).

Considering informal digital practices of students, S. Timmis and B. Munoz-Chereau consider that digital technologies enrich collective activity, contribute to the development and strengthening of social, cultural and educational capital (Timmis, Munoz-Chereau, 2019). According to a number of researchers, the boundaries of leadership are expanding for teachers in the context of digitalization; the basis for the development of their authority in the process of school management is being formed (Berry, 2019).

The active implementation of digital technologies ensures a high-quality modernization of the training content, and also meeting the needs, interests and expectations of all subjects of the educational space (students, teachers, and employers) (Klochkova, Sadovnikova, 2019). Information and communication technologies can increase the intensity of the educational process, and ensure the personal development of students in the context of dynamically changing labor market requirements (Aleshkina, Apokina, 2019). The introduction of digital technologies allows students to be not only consumers of electronic resources, but also their creators (Ahmetzhanova, Yur'ev, 2018).

The actualization of the student’s constructive position is ensured by setting personal educational goals, choosing learning paths, constructing the content of educational activities (Pac, 2015; Ahmetzhanova, Yur'ev, 2018), focusing on project activities, and developing “soft” student skills (Moskalyuk, 2019).

For the most part, the analysis of the advantages of digitalization of education represented in foreign scientific literature includes the study of the links between the formation of specific skills (for example, competencies in the field of information literacy) and the use of certain digital technologies (Takacs et al., 2015; Mills, 2010). Also of interest are studies that reveal the positive factors of using social networks in the learning process: cooperation (Shraim, 2014), flexibility, the ability to build individual educational paths (Kohtz et al., 2012).

Based on empirical data collected at public and private universities located in Delhi (India) and its environs, S. Paul and K. Lal conclude that the use of digital technologies contributes to the development of students' creativity, improves their learning abilities, and increases academic performance. The results of their research illustrate students' opinions on the advantages of using digital technologies: “they contribute to a clearer understanding of the material; they are a better illustration of ideas; they provide the opportunity to communicate with students, and ensure that education meets international teaching methods” (Paul, Lal, 2018).

Digital technologies allow us to radically change the content and form of the material and to reduce the level of routine in learning. Direct connections to databases, forums, and virtual reality simulators can differentiate educational services, overcome unification, and increase interest in learning (Nguyen, 2019). Information and communication technologies open up even more significant advantages for management systems of educational organizations, transferring them to a new technological level (Timofeeva, Shapoval, 2019).

The development of these ideas is presented in the work by P. Short. Based on the results of the use of digital technologies, the use of online platforms and online systems in the field of education in the Tambov region, conclusions were drawn by him about the positive trends in the content of educational and research work of both students and teachers, providing them with the conditions for forming their own “educational route”. A new scheme for obtaining knowledge in an interactive intellectual environment provided ample opportunities for the exchange of experience and information contributed to the formation of project competencies, and the ability to develop and implement non-standard management solutions. An additional advantage of using digital technologies was the high level of differentiation of training and provision of each student with an individual teacher, whose role was played by the computer (Short, Korobicyna, 2019). Similar findings were obtained in other studies examining the specifics of using artificial intelligence in the field of education and its role in the talent management system (Vinichenko et al., 2019). Paskova A.A. emphasizes that artificial intelligence technologies provide the development of personalized e-learning while minimizing teacher involvement (Paskova, 2019). This is especially true for the educational space where digital technologies occupy a dominant position, for example, within the framework of distance learning, and additional professional education. Information and communication technologies create the foundation for the implementation of the continuing education trajectories, which is especially important in the dynamic labor market conditions. Further training of a functioning specialist actualizes such advantages of digitalization as the ability to work at a personal pace, in a convenient mode and according to a convenient schedule (Bojchenko, Smirnova, 2019).

O.V. Bojchenko and O.Yu. Smirnova connect the advantages of digitalization of education with overcoming the spatial-temporal boundaries in training. Digital technologies allow persons to access high-quality educational services, regardless of where they live, and also to remotely exchange data. In the context of regional differentiation both between and within countries, these advantages of digitalization reduce the risks of social inequality, allow a person to become a competitive specialist, to study at leading educational organizations, and to unlock their creative potential (Bojchenko, Smirnova, 2019).

Experts emphasize in their studies the discovery of new opportunities that digitalization provides for young people, in particular children from poor and low-resource families. The development of digital technologies ensures the growth of social inclusion in the field of education. Achievement of these goals is possible under the conditions of overcoming such restrictions as language barriers (more than half of educational resources use English, which does not allow most Russian children to find, understand, and use the necessary educational content), and lack of digital skills (Pryazhnikova, 2018). Analysis of these limitations allows us to formulate a research question. Besides the advantages, what are the risks of introducing information and communication technologies into the educational process?

3.4. The destructive effects of digitalization

The gap in the digital skills of young people, formed on the basis of their socio-economic status, is defined as the second digital inequality. Gaps in the use of educational software and inadequate digital literacy have been identified in a number of countries among low-income groups (Ma et al., 2019).

According to experts, the digitalization of society will contribute to the development of social inequality. These destructive trends are due to the increasing requirements for skills, human skills in the new digital reality. The condition for obtaining high-tech competencies is the availability of financial resources (Manikovskaya, 2019). Achieving digital literacy is one of the key factors in the competitiveness of a modern specialist in the labor market.

The international scientific discourse raises the question of the need to match digitalization trends and the needs, interests, and socio-psychological characteristics of the new digital generation. At the same time, not only objective transformation of values, educational motivation

of the new generation, but also existing information threats and addictions should be taken into account (Noskova et al., 2016).

Negative learning outcomes in the process of using digital technologies were often associated with risks of an “effect of distraction” from educational goals, and a decrease in concentration of students' attention (Gupta, Irwin, 2016; Junco, 2015).

The observations of educators on the "digital natives", which are young people born in the era of virtual reality, indicate a significant transformation of their values, lifestyle and skills. The digitalization of education reinforces these trends and often excludes competences related to interpersonal communication and creativity from the focus of educators (Cladis, 2018). The specificity of the lifestyle of modern schoolchildren in digitalization conditions is its multitasking mode, information overload, and the presence of numerous gadgets. Such a digital background does not contribute to the development of cognitive skills (Kryukova, 2018; Vinichenko et al., 2018).

An interesting analysis of the digitalization risks is presented in the work by N.B. Strekalova: lack of cognitive competencies of students, a decrease in the level of training, a loss in the fundamental nature of education, a decrease in the need for highly intelligent specialists, a decrease in the number of personal contacts between a teacher and a student, information overload, an increase in the requirements for the psychological stability of a teacher (Strekalova, 2019).

A significant increase in the volume of disseminated information leads to "information overload" which is manifested in cognitive distortions, impaired memory and attention. Zero cost of information storage, the ability to quickly access it at any convenient time does not contribute to remembering even important material, and also forms a dependence on numerous electronic devices. Such dependence, in turn, contributes to the loss of many personality skills (Dobrinskaya, Martynenko, 2019).

The main dysfunctions of the digitalization of education within the framework of the philosophical approach include the following: dehumanization, formalization of the learning process, deformation of a person's identity, devaluation of moral norms (Manikovskaya, 2019).

3.5. Factors Enhancing Digitalization

Analysis of the risks and threats of digitalization of education focuses scientists on the search for strategies and factors that optimize the implementation of digital technologies. These include the following aspects: changing stereotypes of the organization of the educational process in the digital educational environment; creation of a system of compulsory training and retraining of a teacher; optimization, adaptation and digital transformation of the content of the main professional educational programs (Bogoslovsky et al., 2019).

Particular attention in scientific research is paid to the quality of digital content, the effectiveness of online learning, and successful practices in the use of digital technologies in education. A survey of teachers who received awards in the field of online learning from one of the three professional associations in the United States made it possible to identify five main factors of effectiveness (Kumar et al., 2019):

- Authentic and relevant course materials that are related to practice
- Use of multimedia resources,
- Involving students in the creation of digital content
- Monitoring of the learning process, analysis and improvement of course materials
- Instructor's explanation of the purpose of actions, technologies and assessments in the online course.

Additional factors that increase the quality of digital content are as follows: taking into account the regional specificity of educational systems (Gudmundsdottir, 2010), the needs of students; and an interdisciplinary approach to attracting experts (not only concerning the content of the academic discipline, but also in computer science and pedagogy) developing electronic resources (Song, 2018).

E.A. Dyakova and G.G. Sechkareva draw attention to the need to create a quality control system for the materials presented in the electronic educational environment (D'yakova, Sechkareva, 2019). This conclusion is confirmed by the results of empirical studies within the framework of the analysis devoted to the implementation of the “Moscow Electronic School” project. A large amount of low-quality material limits a teacher's enthusiasm for the use of digital

resources in the selection of information for their lessons. The opinions are often expressed by teachers that the educational contents do not meet quality standards. Lesson scripts hosted in the electronic environment often have informative and methodological errors (Frolova et al., 2019). Moreover, the information glut of the educational space without ensuring quality control of electronic resources leads to serious losses, pushing authorial scientific developments and innovative pedagogical finds to the periphery of public attention.

The results of research and pedagogical observations illustrate a number of problems related to financing (Slama, Choukir, 2019) and the provision of educational institutions with the necessary infrastructure and software. The effectiveness of the digitalization of the educational environment is determined by the competence of IT specialists, resource support of teaching practices, the level of accessibility of digital technologies for each teacher (Antonova et al., 2018). At the same time, accessibility includes not only the availability of technological capabilities of an educational organization, but also the ability to take advantage of them (possessing appropriate skills, motivation, and temporary resources).

The effectiveness of introducing digital technologies into the educational space is determined by teachers' digital competencies and motivation. Personal and pragmatic reasons that motivate teachers to improve their skills in the field of information and communication technologies (Bullock, 2013) play a significant role here. N. Wright emphasizes the role of the teacher's pedagogical goals. The needs of students, in his opinion, are the main "personal motivators" of a teacher in the practice of using digital technologies, even when it is necessary to overcome technological obstacles (Wright, 2015). These findings are correlated with other studies in which particular importance is attached to issues of digital trust, the formation of a conscious attitude, and loyalty to the processes of implementing digital technologies. "Perceived utility" is a key factor in determining the willingness and effectiveness of using digital technology in the learning process (Matsiola et al., 2019). In this regard, marketing of "digital learning" in the educational sector, which is traditionally afraid of technological innovations, is becoming especially relevant.

The research results illustrate that in the context of digitalization of education, the personal and professional qualities of teachers become especially important: their experience, working skills in an online environment, the desire to improve their skills, the desire to learn, and the continuous improvement of their skills. A teacher should strive to use a wide range of strategies in the process of interacting with students, using new materials and analytical data (Kumar et al., 2019). Developing the point of view by S. Kumar, one should consider the possible directions of the formation of the teacher's motivation to use digital technologies. This is one of the fundamental issues determining the success of the digitalization of education. The teacher's lack of interest in this process may limit any managerial ideas and attempts to introduce digital technologies "from above". As a result, many studies emphasize that there is a "great gap" between the declared need for digitalization of education and the real situation in classrooms.

When choosing alternatives that provide teachers with a motivation to use digital technologies, trust and cooperation are considered as the most promising areas as opposed to organizational pressure. Digital trust refers to the fundamental aspects of information and computer social interactions (Dedyulina, 2016). Digital trust is ensured by the following factors: preservation of copyrights when posting materials in an electronic environment, the teacher's confidence in the usefulness and reliability of digital services, an understanding of the main directions of digitalization, and the predictability of the actions of subjects in the educational space. Collaboration and horizontal connections contribute to the development of shared values (Evstratova et al., 2016), and informal institutional norms aimed at enhancing the teacher's position in improving their computer literacy, and their readiness for the active introduction of digital technologies in the educational process. Institutional norms play an important role in overcoming the prevailing stereotypes and rejection of digital innovation (Rogach et al., 2017).

Continuing education, additional education of teachers in the field of information and communication technologies can be considered as a compensator for the negative consequences of digitalization of education to ensure the involvement and interest of teachers in digital technologies (Chapman et al., 2010). Didactic and methodological training of teachers (Zahorec et al., 2019), support by school management, and also tutor support (Fleisch et al., 2016) in the process of acquiring new skills can increase the success of the implementation of information and communication technologies in the educational space.

4. Discussion

Answering the question “What kind of school will be in 2030?” scientists see digital technologies as the main determinant of transformations. Trends in the scientific literature include prevalence of data control, digital registration, and the de-territorialization of school education (Selwyn et al., 2019). Attributes of the new reality in the context of digitalization will be such phenomena as the “digital divide”, “digital citizenship”, and “digital socialization” (Safuanov et al., 2019).

In connection with the actualization of these trends, the contradiction between the youth’s need to develop their digital competencies and the awareness of the insufficient knowledge and skills for using information and communication technologies in academic life or in their professional future is particularly worrying (Martin et al., 2019). According to scientists, the education system does not fully meet the new modern challenges and trends associated with the development of information and communication technologies.

Although digital technologies are being integrated everywhere in the system of general and professional education today, they are considered only as “additional tools”. In the future, experts predict a change in this situation. Intensive development of digital technologies can “marginalize” or exclude the human factor and direct interaction from many areas of public life, including education (Fenwick, Edwards, 2016).

In the context of digitalization, the foundation for the formation and development of competencies are educational electronic contents, interactive forms of developing skills and abilities (virtual reality, simulators, etc.), network interaction and cooperation, and gamification methods. Formal and informal activities based on information and communication technologies, including digital interactive methods, game practices, and visual effects, can facilitate learning and increase student motivation (Craciun, Bunoiu, 2019). Additional advantages of digitalization of education are the following: a personalized approach in the learning process to the needs and interests of the person through the use of artificial intelligence, building individual educational routes, increasing the intensification of the educational process, differentiating the forms of teaching material and knowledge control, developing self-organization of subjects of the educational space, and formation of flexible mechanisms for motivating students. An analysis of the scientific discourse on the digitalization of education allows us to conclude that there are stable relationships between the development of network interactions, cooperation between students and teachers in the online space and the formation of the social and cultural capital of an individual.

A comparative analysis of the conceptual provisions presented in the scientific literature made it possible to identify several bipolar trends in the digitalization of education. On the one hand, the availability of library resources, electronic content, and lecture materials of the best teachers in the world creates the conditions for obtaining a quality education, regardless of income or place of residence of students. On the other hand, according to experts, only the part of the population that has digital literacy and online work skills can take advantage of digitalization. Moreover, scientists connect the development of information and communication technologies with the formation of a new digital divide. The increasing demands of the labor market for the skills and competence of individuals in the context of digitalization reduce the competitiveness of young professionals who do not have the material and financial base for their formation. In addition, the lack of digital literacy in the near future may be seen as a significant barrier to educational services.

The level of teachers’ digital competence, their motivation and willingness to introduce digital technologies are among the most significant conditions for the successful use of digital technologies in the educational space. It is the figure of a teacher that is the central link and the conductor of the transition from the declaration concerning the education digitalization ideas to their actual implementation in school classes or lecture halls in universities. Without the active involvement of the pedagogical community in the digitalization processes, and without their interest in the success and productivity of digital learning, the risks of imitating activities in this area, and primitivizing the goals and objectives of digitalization are actualized.

Factors that increase the teachers’ effectiveness in the development of their digital competencies include the following: involvement of experts in the development of curricula (Song, 2018); their relevance to the specifics of regional educational systems (Gudmundsdottir, 2010); formation of teacher’s loyalty to the implementation of digital technologies (Matsiola, 2019); development of sustainable organizational relationships (Mueller-Oppliger, 2010;

Badykov, 2018); resource and personnel support for teacher training (Fleisch et al., 2016). Monitoring and moderation of electronic content and elimination of technical problems can be considered as drivers of successful digitalization of education. Despite a significant backlog on the formation of the teacher's digital competencies, the issues of developing teachers' readiness to use digital technologies in the educational process and overcoming key stereotypes remain insufficiently studied.

A critical analysis of publications on this topic allows us to determine the possible destructive consequences of the digitalization of education: ousting experienced teachers with insufficient digital competencies from the educational space; information overload, an increase in cognitive distortions, practices of activity imitation, deepening of the digital divide, and transformation of the evaluation criteria of the teacher's activity. In addition, the problems of formation of interpersonal communication competencies, students' analytical skills, dehumanization and formalization of training, narrowing the boundaries of direct interaction between teachers and students have a high degree of relevance. In addition to this, E.V. Ustyuzhanina and S.G. Evsyukov in their study reveal the factors that determine the decrease in the level of students' preparation in the context of digitalization of education (Ustyuzhanina, Evsyukov, 2018):

- Motivation dysfunctions. The development of "digital dependence" on external information. Decreased motivation for the accumulation of knowledge in the context of their wide availability in the online space. Lack of knowledge (students are sure that it is not necessary to remember anything, since all the information is on the Internet) does not allow the corresponding competencies to form

- Dysfunctions of the control and assessment of knowledge (tests are perceived as the only and universal assessment mechanism). In addition, in the context of digitalization of education, the load on the independent development of educational material is significantly increased. The insufficient level of media competence of modern youth shifts the focus of preparation towards eclecticism; there are risks in matters of assessing the "necessary" information and the "best" source of information.

- Communication dysfunctions in the learning process: socio-psychological problems in communication, insufficient level of development of competencies associated with teamwork, solving problems of interpersonal and intercultural interaction

- Dysfunctions of "Internet education" (freedom of choice of information sources, risks of manipulation and distortion of information in the Internet space can negatively affect the spiritual and moral aspects of personality development, its civic identity, value orientations and beliefs).

The transformation of the identity and moral attitudes of young people is associated not only with the processes of globalization, the dominance of the values of the consumer society, but also with the new risks of digitalization. The effects of the digital age are changing consumer strategies and the social structure of society, and prioritizing the enjoyment of life. The large-scale transfer of civic and political practices to the online space, the mobilization opportunities of the Internet (Brodovskaya, Huang, 2019), along with factors such as the risks of information distortion, the possibility of manipulating the public consciousness, present new requirements for the institution of education. In the context of digitalization, pedagogical practices should ensure the formation of media competences of individuals and their civic-mindedness.

The authors turn to the ideas manifested by N.Sh. Kozlova, according to which digital technology is a necessary but not sufficient condition for improving the quality of educational and upbringing work (Kozlova, 2019). The effectiveness of the educational process is determined, first of all, by teachers' activities, and by the practices of their direct interaction with students. In modern conditions, digital technologies should be integrated into the educational space, but not supplant traditional forms of learning. A reasonable combination of digital and traditional pedagogy will allow us to adequately respond to the challenges of the time in the educational field, and to prepare competitive specialists (Kryukova, 2018).

A critical analysis and generalization of the results of the scientific discourse on the introduction of digital technologies in the educational process allows us to formulate a number of principles that increase the success of the education digitalization process, at the same time, decreasing its negative consequences:

1. Formation of institutional conditions that ensure the effectiveness of the introduction of digital technologies in the educational space. Of key importance in this context are the

predictability of the management entity's actions, the actualization and popularization of reforming the educational sector in the pedagogical community. Institutional conditions can be divided into formal and informal. Formal conditions include resource support for the introduction of digital innovations, normatively consolidated requirements for pedagogical activity, the use of digital technologies to enrich the educational process, assess students' knowledge, and increase their interest in learning. Informal conditions include the legitimization and dissemination of the values of the digital society, the support of pedagogical practices based on the recognition of the "usefulness" of digital technologies. We are talking about the formation of socially approved patterns of behavior, and the orientation of teachers towards the search for new solutions to optimize the educational process, and to increase the interest of young people in learning in the context of digitalization. A motivating and stimulating system can be a significant factor providing material and moral support to teachers, who effectively use information and communication technologies in the educational process, and who are ready for self-education and self-development in the context of digitalization.

2. Consideration of situational factors. Situational factors determine the level of compatibility of digital innovations with the actual situation in a particular educational organization, and the interests of the main subjects of its microenvironment, as well as with the wider context of socio-cultural and economic conditions for the development of society. "Cultural norms challenge educational technology" (Al Lily et al., 2016). Innovative managerial practices acquire permanence when they are enshrined in the organization's activities, the skills of the main subjects of the educational space. Internal organizational factors include the needs and requirements of students, technological potential, objective (digital readiness, skills) and subjective (willingness, motivation to work in a digital environment) teaching staff capabilities. This principle assumes the maximum consideration and compliance of methods and forms of digitalization of education with the specifics of the learning process in a particular educational organization, the real situation of professional activity in terms of its subject and social content.

3. Resource support for the practical implementation of digital technologies in the educational space. According to V.A. Agafonov, the potential prerequisites for implementing progressive innovations are faced with resource and organizational and managerial constraints (Agafonov, 2015). The adaptability of the subjects of the educational space to the new requirements of digitalization is determined by the technological, infrastructural and methodological support of the formation and development of the electronic learning environment. Resource support for the digitalization of education includes the following elements: information and communication infrastructure, organizational support from management and IT specialists, a continuing education system and tutor support for professional activities

4. The priority of the interests of an individual as a key criterion for the effectiveness of digitalization processes; the creation of conditions for successful socialization and unlocking the potential of students in the electronic educational environment. The subject-centered approach actualizes the practice of cooperation, teamwork. The development of strategies for digitalization of education should be based on the consolidation of the interests of the professional pedagogical community and the needs of students. The contradiction between the need for digitalization of education and the existing target settings, and the insufficient level of readiness of the pedagogical community to use digital technologies can be offset by prioritization in favor of active and self-governing actions of subjects of the educational space and the development of digital trust.

5. Integration of the digital and traditional pedagogy concepts. The role of a teacher, even in a digital environment, cannot be limited to tutorial support. Communication between a teacher and a student has a meaning-forming value; it allows the analytical and communicative skills of students to form. It is traditional pedagogy that ensures the implementation of the educational function and creates conditions for the socialization of youth. In conditions of modernization of approaches to education (from the paradigm of knowledge formation to the paradigm of competency formation), it is the methods of traditional pedagogy that will become crucial in the practice of training a competitive specialist.

5. Conclusion

Digital technologies, being an integral part of the new social development reality, significantly change the learning process in schools and higher educational institutions.

Digitalization of education is a process of systemic modernization of the educational space based on the use of digital technologies. New trends in the digitalization of education include online teaching, interactive teaching methods, including digital gamification technologies, virtual learning environments, artificial intelligence, horizontal network communications, etc. The lack of infrastructural support and the willingness of teaching staff to introduce digital technologies into the educational process is the reason for the primitivization of the key tasks of digitalization in low-resource educational organizations.

The main advantages of digitalization of education are the following: an individual approach to students through the use of artificial intelligence, the formation of personal learning paths, increasing the intensification of the educational process and students' interest in it, increasing academic performance, differentiating forms of teaching material and knowledge control, developing social and cultural capital of an individual. However, despite the obvious advantages of using digital technologies in the educational process, there are certain risks and destructive consequences associated with the deformation of the teacher's pedagogical work and the practice of teaching and educating young people. From the teacher's point of view, this is the displacement of experienced teachers with an insufficient level of digital competencies from the educational space; transformation of the evaluation criteria for teachers; increase in additional load, displacement of the vector of pedagogical work in the electronic educational environment, narrowing the boundaries of direct interaction between teachers and students. From the point of view of students, they are: information overload, an increase in cognitive distortion, the emergence of problems in the formation of interpersonal communication competencies, students' analytical skills, dehumanization and formalization of training. In the context of digitalization, risks associated with a decrease in the quality of education and the student training level become actual. These risks are determined by the following dysfunctions: motivation (lack of need to memorize knowledge in the conditions of their wide availability), control and assessment of knowledge, communication, and "Internet mentoring".

The main compensators for the negative consequences of the digitalization of education may include the following: improving the system of teacher training and motivation, modernizing control practices of the educational content, group collaboration, digital trust. Digitalization can be considered as an optimal trend in the development of education, if it corresponds to a number of principles: the formation of appropriate institutional conditions (normatively consolidated requirements for pedagogical activity, the legitimization and dissemination of the values of a digital society), the consideration of situational factors, resource support, the priority of personal interests (subject-centered approach), the integration of the digital and traditional pedagogy concepts.

An analysis of the scientific discourse on the issues of digitalization of education allows us to state that, despite the existing backlog, a number of problems have remained insufficiently studied. The following areas can be considered relevant: further development of digital learning, development of digital trust, technologies for digital maturity formation, methods for evaluating the quality of electronic content, mechanisms to increase the productivity of digital learning, and preventing digital inequality.

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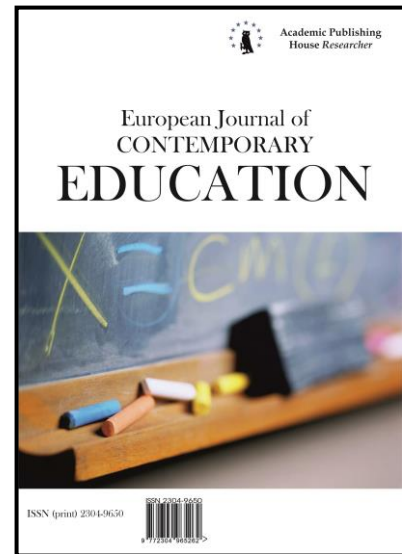
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Co-creation of Learning: A Concept Analysis

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Abstract

This paper presents the results of the concept analysis of co-creation of learning and discusses how this concept is applied in the educational context. The concept co-creation of learning is a border concept, which is increasingly used in diverse areas, however, there is a lack of a current theory regarding the subject in the existing educational literature. The objective of the concept analysis was to make a dissection of the concept of co-creation of learning into simpler elements to promote clarity while providing mutual understanding within education by giving the particular concept a specific meaning. The concept analysis reflects the situation in contemporary education when learning becomes a co-creative practice and is based on partnership and collaboration, changing roles of teachers and students; it takes place at different stages of curriculum implementation. The article discussed the defined key attributes of the concept co-creation of learning, which are linked to collaborative process, collaborative output, transformative interaction and teacher position, learner's agency, new space for learning, self-authorship, learning community and partnership in learning, metacognitive practices and value co-creation. The research revealed that co-creation of learning can be successfully enhanced and supported by relevant and creative pedagogical strategies. They include generative dialogue, negotiation, collaborative work, participatory design model and others. Non-hierarchical relationships, flexible curriculum and scaffolding practices, formative assessment were identified as the antecedents for co-creation of learning to emerge while such factors as added value, increased learning ownership, better engagement in the learning process and learners' empowerment were identified as the consequences of co-creation of learning.

Keywords: co-creation, learner's agency, transformative practice, collaboration.

1. Introduction

Co-creation of learning in education has raised much attention in the last decade and was discussed through multiple perspectives including partnership (Bovill, 2015; Bovill et al., 2016),

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learning communities (Lubicz-Nawrocka, 2017), student-centred and person-centred learning (Mincu, 2012a; 2012b), personalised learning (Zmuda et al., 2015). All these approaches mainly discuss the problem of learning ownership, co-creation, learners' deeper engagement in the process and motivation. Several trends could be identified which explain these approaches and their roots. Students' voice and agency owe to the idea of democratisation processes in education and date back to Dewey (Bovill, 2019; Jensen, Krogh, 2017). Other approaches might be explained through market-oriented and education modernisation perspective (Hartley, 2008).

Not surprisingly that with the spread of ideas of the new public management, higher education was very much affected by marketisation trends. Less impact was observed in general education, however, the concept of students as "customers" has gained significant importance in nineties. The idea behind the concept was that customers were very often left behind the creation and development of the product or service, and their changed role from passive recipients to active co-creators playing an active role in developing and establishing values.

Current higher education literature which strongly positions students as active participants in and of their learning, underestimates the contribution of critical pedagogy which spoke of negotiated curricula and active role of learners from the point of transformative and democratisation processes in education (Bovill et al., 2016). Unfortunately, today, students' participation is somehow limited to their engagement, retention, creation of learning communities, development of employability skills etc. For this reason, the analysis of the co-creation concept in education is actualised today. It is important to un-shell meanings of the concept as it is used in various educational contexts and practices. The analysis of the concept will contribute to the understanding how co-creation in education transforms learners and teachers' pedagogical interaction, learning process and how it impacts curriculum in all its phases starting from development, implementation and finalising with the assessment.

The objective of the concept analysis was to make a dissection of the concept of co-creation of learning into simpler elements to promote clarity while providing mutual understanding within education by giving the particular concept a specific meaning.

2. Methodology

For the analysis of the co-creation of learning concept the methodology was based on the steps for concept analysis recommended by Walker and Avant (2005). Even though this method is widely used in nursing, it can be successfully applied in the analysis of concepts in social sciences. The initial phase was aimed at analysing and identifying the use of the concept in dictionaries, scientific literature, which allowed to move further and identify the determining attributes, finding antecedents and disclosing consequences. The method consists of eight consequential steps: (1) selecting a concept which will be analysed; (2) defining the objectives of analysis; (3) identifying meaning of the concept; (4) identifying the main attributes; (5) identifying and explaining a model case; (6) identifying and explaining alternative cases (borderline, related, and contrary cases); (7) identifying antecedents and consequences; (8) identifying empirical referents (Walker, Avant, 2005).

In order to identify the attributes of the concept, an extensive and in-depth literature analysis was conducted. The process of defining all uses of the co-creation concept included the review of different sources of literature, both theoretical and empirical. The theoretical sources included dictionaries, theoretical articles and literature review articles.

The search and selection of the relevant literature was conducted using EBSCO and Web of Science databases. The process consisted of several main steps. The initial step of the literature selection started from the basic search by setting the key word "co-creation" and adding the words such as „in the classroom“, „in education“ in order to limit the scope. Also, the settings included language (only articles published in English) and period (from 1999 till 2019) determination. In addition, the search was limited to full-text and Open Access sources. It should be noted that articles from the field of economics, management were not included for the initial analysis of the concept. The search was not limited by the geographical regions, specific publishing journals, age group or form of learning (traditional, online, blended) or type (formal, non-formal, informal). The primary search provided 623 (EBSCO) sources and 346 (Web of Science) sources (969 pieces of literature in total).

The second step included a careful abstract reading and application of inclusion/exclusion criteria (Table 1) in order to eliminate irrelevant pieces of literature. The articles or their abstracts

were studied and further were selected for deeper analysis, which dealt with the meaning and attributes of the concept. Many sources contained information about co-creation as a secondary, peripheral concept for analysis, thus, they were eliminated from the list. As a result, 89 (EBSCO) and 32 (Web of Sciences) pieces of literature were selected for the in-depth analysis. The criteria of inclusion and exclusion were both inspired by pragmatical and conceptual issues related to the current research. The criteria were based on the working definition of key word “co-creation”, and, thus, included several principles of literature selection.

Table 1. The inclusion and exclusion criteria for literature review

Criteria	Inclusion criteria	Exclusion criteria
Sources of information	<p>Include articles based on empirical findings or theoretical analysis.</p> <p>Articles published in the peer-reviewed, open access journals, full-text articles.</p> <p>Articles must be published in a period from 1999 to 2019.</p>	<p>Exclude sources published without peer-review, with no full-text available.</p> <p>Exclude articles published till 1999.</p>
Content	<p>Include studies where co-creation is regarded as a core subject.</p> <p>Include studies where co-creation is viewed in terms of education and classroom practice.</p> <p>Include studies where co-creation is being practiced by in-service school-level teachers and students at schools of different forms of property (private, public schools); practiced in higher education.</p>	<p>Exclude studies where co-creation in the classroom/education is regarded as a secondary concept.</p> <p>Exclude studies where co-creation is viewed in terms of organizational management.</p> <p>Exclude studies where co-creation is being practiced within business organizations, in relation to consumer behaviours.</p>
Type of Study	English, quantitative and qualitative studies, reviews	Conference abstracts, reports and editorials, commentaries

Outcomes	Applicability of the concept “co-creation” is a focus of the study	No evidence of the applicability of the concept “co-creation”, exclude studies with peripherally included business management. Exclude studies in cultural and creative industries.
Availability	Full-text accessible to the authors	Full-text non accessible to the authors

The final step included an in-depth reading in order to disclose the usage of „co-creation“, reveal defining attributes. The review was conducted by analysing the content and use of the concept, identifying recurring themes, their key components, and analysing how they relate to and interact with one another. Several articles were excluded after the in-depth reading as they did not meet the inclusion criteria. The final sample of the analysed data sources consisted of 41 (EBSCO) and 11 (Web of Science) journal articles (52 in total).

3. Results and discussion

Identifying meaning of the concept

Initially we analysed the meaning of the concept of co-creation as it is defined in dictionaries. The dictionaries (MacMillan, Meriam Webster, Collins online dictionaries) define the word “co-creation” as “a way of working together where people from different backgrounds are invited to jointly produce a product or service that will benefit all of them”, “when a company makes a product but you design or even finish the work; you are participating in an act of co-creation”, co create as a verb is explained as “to create (something) by working with one or more others, to create jointly”. Scientific literature also suggest several definitions of co-creation as 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 conceptualization, decision making, implementation, investigation, or analysis” (Cook-Sather et al. 2014: 6-7). In co-creation both the ‘co’ and the ‘creation’ are significant. The ‘co’ signals that the process is social and the ‘creation’, that something new appears because of the process. The presented definitions imply that the concept has several important attributes such as “creating, working jointly (collaborative learning)”, “creating something new together”, “getting value/mutual benefit in collaborative process (value co-creation)”, “to contribute equally (partnership)”. These attributes have been further included in the concept analysis of the concept “co-creation of learning”.

Identifying the main attributes

After the extensive analysis of scientific literature, the following attributes of the co-creation concept have been identified:

- 1) Collaborative process;
- 2) Collaborative output;
- 3) Transformative interaction and teacher position;
- 4) Learner’s agency;
- 5) New space for learning;
- 6) Self-authorship;
- 7) Learning community and partnership in learning;
- 8) Metacognitive practices;
- 9) Value co-creation.

Collaborative process: dialogue, negotiation and research. The literature analysis suggests that co-creation process, according to Bovill et al. (2016) is a joint and collaborative work of teachers and students in developing curriculum components and/or pedagogical approaches.

It should be differentiated co-creative practices in and of curriculum. Co-creation in curriculum is the most typical area where collaborative work of students and teachers happens. Dunne and Zandrstra (2011) note that co-creation of learning is implemented through a challenging engagement process and point out that it requires learners to demonstrate significant intellectual and intense emotional investment in the classroom. Co-creation in curriculum, thus, can be achieved through the mutual partnership, which following Bovill and Bulley (2011), transforms in different phases and levels of interaction. The level of interaction ranges from a fully teacher led curriculum which has the least level of interaction to a curriculum where students are gaining more roles and influence on the final model, where students are in total control of curriculum. Co-creation in curriculum, thus, requires teachers be aware of possible models and thus different level of interaction.

Co-creation in curriculum is very much related to pedagogical approaches. Scharmer (2007), Hassan (2014) indicate that pedagogical approaches or the methods should engage students as stakeholders of the learning process in a collective learning which requires shared commitment. Variety of methods such as dialogue, field studies, interviews, narratives, technologies enhanced methods (flipped class, digital story telling) are most frequently used and still underexplored (Scharmer, 2007; Hassan, 2014; Al-Jeraisy et al., 2015; Jensen, Krogh, 2017; Richter, Courage, 2017; Stoten et al., 2018). Bovill et al. (2013) indicate that co-creation usually involves negotiations and negotiated decision making. This process, however, is under-researched and negotiation approaches are not very clear.

Summing up, co-creation in curricular indicates a processual aspect of co-creation which uncovers new challenges for students and teachers, it may have different models of interaction and should be facilitated by the involved stakeholders (students or teachers).

Collaborative output. Co-created curricula by some researchers is viewed from the perspective of the ecology of participation (Bovill et al., 2019). Analysis of scientific literature suggests that co-creation as an outcome could be new knowledge (co-created knowledge), innovation or co-created curriculum through the partnership of the teacher and students.

One of the interesting definitions of co-creation as an outcome of communication and teacher position is proposed by Iversen and Pedersen (2017). They refer to the writings of Scharmer (2007) who speaks about the relationships and communication where different modes of attention determine the quality of communication, which consequently, determines the outcome of the situation. He identifies the positions of four different sources of attention from which social action can emerge: “The I-in-me” (monologue, frontal teaching), “The I-in-it” (discussion, critical scrutiny), “The I-in-you (emphatic listening, dialogue, and reflective inquiry) and “The I-in-now” (generative dialogue). As an outcome through generative dialogue a new knowledge is co-created.

Other researchers see co-creation as a phase in the knowledge appropriation model (Leoste et al., 2019). This model explains knowledge creation practices that lead to the transformation and maturation of knowledge through particular steps: appropriation of an idea; sharing the idea; co-creating solution/knowledge; formalization when the idea is transformed so that it can be shared more widely; standardization when a norm or guideline is developed that encourages wider adoption and application of the solution within the relevant context or organisation.

Researchers (Bovill, 2017, 2019; Bovill et al., 2016; Cook-Sather et al., 2014; Murphy, Nixon, 2017; Lubicz-Nawrocka, Simoni, 2018) link co-creation with the students and teachers’ partnerships in collaboratively co-created curriculum. Co-creation of the curriculum, when students and university teachers and staff collaborate in designing, developing or updating a study programme, is more complicated than co-creation in the curriculum, which implies collaborative learning, partnership and new roles during the course (Bovill et al., 2016).

Transformative interaction and teacher position. Already Rogers and Freiberg (1994) argued that the teacher became a co-learner in the process. Critical pedagogy offered valuable insights about the democratisation processes in the school where the teacher accepts learners as knowledgeable and critical partners in learning.

Co-creation as outlined by McWilliam (2008) may have three relational positions in teaching: sage on the stage, guide on the side and meddler in the middle. The most typical role teachers used to assume is the first one – sage on the stage, whereas the shift to the relational position to the guide-on-the-side required changing the focus of pedagogy from the teacher to the

learner. Today teachers meet with a new challenge – changing relational position to the meddler-in-the-middle. Meddler-in-the-middle position means that the teacher and student are mutually involved in assembling and dis-assembling cultural products. This position brings the teacher and the student into a new experience of becoming co-creators of the learning process. (McWilliam, 2008). This requires flexibility, improvisation and creativity from the teacher.

Iversen and Pedersen (2017), Darsø (2017) emphasise the teacher's ability to contain anxiety as essential for something new to emerge. It requires a great deal of courage to become a co-creating teacher. This shift is always associated with resistance, sometimes frustration, and always a conflict (Ghais, 2005). These evidences indicate that courage is an essential quality for daring to start and facilitate a co-creative process, pushing students out of their zones of comfort and developing one's capacities of becoming the meddler in the middle.

New space for learning. This pedagogy of co-creating the curriculum can be seen as a Third space, a zone of proximal development (Bhabha, 2004: 86) that develops a cosmopolitan learning environment in which students and staff bring different forms of expertise to the development-focused experience that brings them together. Co-creation as a learning space can be physical (classroom, virtual and imaginary). Co-creation experience brings teachers and students into different situations where no one has a priority in knowledge. Co-creation is linked to diverse learning environments which stimulate students' engagement on the one hand, and on the other, it is a Third space, which in the process of generative dialogue allows co-create new knowledge.

Learner's agency. Co-creation practices stimulates student transformation to become "more than just a student (Lubicz-Nawrocka, 2019). Contemporary education refers to the importance of the learner, which maintains informal and active role in the learning process. Learners ask teachers for more ways of learner-centred approaches, fitting their personal learning requirements and interests (Loyens, Gijbels, 2008). The idea of learners as change agents, active partners, producers and co-creators of their own learning has been a topic of increased interest in recent years (Carey, 2013). Development of student-led, collaborative initiatives leads educational institutions towards promoting co-creating of learning processes and co-created learning outputs. Dunne and Zandstra (2011) proposed a theoretical model for integrating students into educational change. The matrix for students as change agents has four positions: a) students as evaluators of their HE experiences; b) students as participants in decision-making processes; c) students as partners, co-creators and experts; d) students as agents for change. Bovill et al. (2016) identified four roles students often assume in co-creating learning and teaching: (1) consultant teaching; (2) co-researcher; (3) pedagogical co-designer; (4) representative.

Analysis of scientific literature confirms the breadth of opportunities offered by different forms of partnership, including student involvement in pedagogical planning (Bovill, Bulley, 2011), students-as-researchers (Maunder et al., 2012), and students as strategic developers (Healey et al., 2010). It is important to note that this new type of interaction does not eliminate the need in teacher's expertise but requires additional skills in facilitation and negotiation.

Self-authorship. Co-creation is associated with self-authorship, another concept, which was elaborated by Baxter Magolda (Baxter Magolda, 1999). She emphasises that self-authorship involves cognitive, interpersonal, and intrapersonal development. Self-authorship is an "orientation to knowledge construction and evaluation based on balancing an understanding of the contextual nature of knowledge with interpersonally grounded goals, beliefs, and values" (Magolda, 2007a: 32). In the co-creation of the curriculum, through working in the partnership of students and the university staff and academics, all parties gain interpersonal self-authorship, respecting each other's contributions, and learning from each other. As an obvious benefit from co-creative practice, participants in co-creation projects have perceived increased cognitive development, critical analysis and applying theory to practice.

Learning community and partnership. According to Lubicz-Nawrocka (2017) co-creation promotes a learning community due to the evidences that students engage more and develop ownership; students develop empathy for staff; students feel respected; students feel their learning is more authentic and relevant. Co-creation of learning between educators and learners can significantly impact sense of learning community and enhance collaborative and flexible learning experiences.

Metacognitive practices. Co-creation of learning stimulates the development of a metacognitive awareness about what is being learned (Cook-Sather et al., 2014). Metacognition is defined as the ability to reflect and critically analyse one's way of thinking. Through metacognitive practices individuals are enabled to monitor, reflect and analyse their performance. Metacognition is also a distinct concept, which is related to co-creation in the sense that co-creation in education very often involves collaborative metacognitive practices.

Value co-creation and benefits of co-creative experience. Co-creation broadens the field of knowledge by encouraging both sides (students and teachers) to explore things more and transform learning experiences into something that adds value to learners who become active agents of the process (Fraser, Bosanquet, 2006). The main benefits are related to the development of shared responsibility, respect, and trust; learning from each other within a collaborative learning community; and satisfaction and development of individuals. Even though co-creation in the curriculum brings complex challenges for teachers and students, including increased responsibilities for students, increased time and effort involved for both students and staff, researchers Cook-Sather et al. (2014), Lubicz-Nawrocka (2017) note that co-creation experience contributes to the development of nowadays significant competences as such leadership, communication and teamwork, etc.

Identifying and explaining a model case

A model case presents the situation when the concept is used when containing all the defining attributes (Yazdani, Abardeh, 2017). The constructed model case presents all attributes of co-creation of learning.

The lesson on Lithuanian literature in one of the gymnasiums starts with clear presentation of the lesson objectives which should be achieved. The students are encouraged to reflect for some time and define their personal learning objectives aligned to the overall objectives of the lesson. In order to develop further engaging learning process, the teacher sets groups of students into three and asks to identify their current knowledge on the subject and co-construct the knowledge collaboratively following the method of three steps interview. It is an iterative process when students rotate the roles from an interviewer, an interviewee and a rapporteur. This is a great way to engage all students in the activity as students need to listen carefully so that they could write down their thoughts without distorting the information and concentrate on asking questions or answering them. After all steps of interviews are completed, the groups present their findings and identify knowledge gaps. This information allows the teacher further planning the education process based on the contributions from every learner. The identified learning gaps are presented on the smart board so that students could pick up one topic which they would like to analyse more. The teacher explains that the students may use creative approaches to develop their projects collaboratively. The new groups are set up based on the topic choice of the students. Next steps are discussed at the end of the lesson. The last minutes are devoted for reflection on the learning process and new knowledge acquired.

The teacher is a conductor of the process to set up a special space for students' collaborative work. Through partnership and collaboration, focusing on the new topic, students work collaboratively and actively identify their existing knowledge and knowledge gaps. Based on the existing individual knowledge they develop new understanding on the topic through co-creative and metacognitive practice (reflection). The case demonstrates a transformed teacher's role, students' agency and ownership of the learning process which brings finally added value to all the participants of the lecture.

Identifying and explaining alternative cases

Identifying alternative cases allows to clarify attributes of the concept by defining what is not co-creation. The case below presents a case which is very close to co-creation, however, some attributes are missing: the case presents a borderline situation when co-creation was not fully realised.

We organised 4 systemic interventions during a school year in one of Kaunas gymnasiums for the improvement of the English language lessons. Students were split into groups based on the diagnostic test results. Each group were assigned to work on different tasks based on their level of knowledge of the topic. Only one group was given flexibility to choose a topic of interest to develop a discussion. Groups which demonstrated lower level of knowledge required more teacher's support and scaffolding. Each student had to develop one's learning objectives for the lesson as aligned to the general objectives of the lesson as explained by the teacher. After each group

completed their work, they had a chance to present their results to the class and to provide feedback for their peers. The lesson ended with a short reflection and the teacher's feedback.

This case indicates that several important attributes of co-creation can be identified, however, not all of them are present. Some moments in the case also demonstrate a contrary situation as it is not appropriate to group students on the basis of the test as it does not accurately and objectively assess the student's knowledge. Instead, the learner should choose what task to start with. This will make the lesson run smoothly and maintain the work with interest and engagement of all students.

Thus, contrary cases are characterised by a frontal way of teaching, lack of flexible pedagogies, teacher-dominated strategies, little flexibility in the lesson, pre-determined positions and roles, lack of students' engagement and empowerment.

Identifying antecedents and consequences

Antecedents are those events that precede the occurrence of the concept. An antecedent may contribute to the occurrence of the concept it may be associated with its occurrence or it may need to be present for the concept to be present. After the analysis of scientific literature, the most frequent antecedents of co-creation were defined.

Non-hierarchical relationships and partnership indicate a shift in power relationship in education. Students are considered as equal partners in schools, universities and even kindergartens, and they have potential to contribute to the learning process through variety of means such as generative dialogue, flipped class and other creative methods.

Flexibility of curriculum is reflected in the defined long-term and short-term learning outcomes which can be achieved in alternative ways. Learning outcomes indicate what the learner should know, understand, and demonstrate, and the curriculum only suggests how to reach them. Flexibility of curriculum in educational institutions does not imply that learners alone decide on the content of learning rather they provoke teachers collaboratively discover alternative contents and ways to achieve the defined objectives and learning outcomes.

Scaffolding in learning aims to reduce learners' learning difficulties, supporting and guiding learning decisions, coordinating the individual goals of the learner with the intended goals of the program, providing comprehensive support throughout the personalised learning process (Halverson, Pepler, 2018). Supporting and motivating learners, teachers increase their learning motivation and allow them to feel owners of the learning process.

Formative assessment is crucially important in co-creative practices as it allows students to get involved into the peer assessment. Peer assessment might be a powerful approach if well mastered, however, it requires preparation of students, careful explanation of assessment principles, assessment criteria, which are used in the assessment of the work of peers. If properly organised and implemented, peer review stimulates co-creation of new knowledge and further learning.

Participatory design could be defined as the second crucial antecedent for co-creation to appear. It also implies trust in learners and openness to learners' capacities and risks as part of the institutional culture. Participatory design in learning is both a methodology and philosophy of the school which considers every person as significant contributor and co-creator of learning.

Consequences are those events or outcomes that happen after the occurrence of the concept. Literature analysis reveals the main recurrent themes in relation to the consequences of co-creation. In most cases we are talking about benefits of co-creation and, thus, it results in additional added value, increased learning ownership, better engagement in the learning process and learners' empowerment. Thus, added value is an umbrella concept as learning ownership, engagement in the learning process and students' empowerment could be considered as added value of co-creation practice and still they also produce additional benefits such as increased motivation, learner's satisfaction, stronger interest in learning and specific subjects or phenomena, etc.

Identifying empirical referents

Empirical referents allow measuring existence of the concept. After the analysis of the co-creation concept, the operationalisation resulted in a set of empirical indicators grouped into the following categories which are presented in [Table 2](#).

Table 2 Empirical referents of co-creation

<p>1) Collaborative process</p> <ul style="list-style-type: none"> • Engaging pedagogical process (Bovill et al., 2016; Dunne, Zandstra, 2011; Scharmer, 2007; Hassan; 2014); <ul style="list-style-type: none"> • Level of interaction (Bovill, Bulley, 2011); • Active learning methods (Scharmer, 2007; Hassan, 2014; Al-Jeraisy et al., 2015; Jensen, Krogh, 2017; Richter, Courage, 2017; Stoten et al., 2018); <ul style="list-style-type: none"> • Elements of negotiation (Bovill et al., 2013);
<p>2) Collaborative output</p> <ul style="list-style-type: none"> • Participatory design (van Doorn, 2016) <ul style="list-style-type: none"> • Collaborative analysis and communication (van Doorn, 2016); • A phase in the knowledge appropriation model (Leoste et al., 2019); • Collaboratively co-created curriculum (Bovill, 2017, 2019; Bovill et al, 2016; Cook-Sather et al., 2014; Murphy, Nixon, 2017; Lubicz-Nawrocka, Simoni, 2018);
<p>3) Transformative interaction and teacher position</p> <ul style="list-style-type: none"> • Teacher as co-learner (Already Rogers, Freiberg, 1994); • Teacher's courage (Iversen, Pedersen, 2017; Darsø, 2017); • Teacher's flexibility and improvisation (McWilliam, 2008);
<p>4) Learner's agency</p> <ul style="list-style-type: none"> • Pro-active role (Lubicz-Nawrocka, 2019; Carey, 2013; Dunne, Zandstra 2011); <ul style="list-style-type: none"> • Students as evaluators of their experiences (Dunne, Zandstra, 2011); • Students as participants in decision-making processes (Dunne, Zandstra, 2011; Bovill et al., 2016; Healey et al., 2010); <ul style="list-style-type: none"> • Students as partners and experts (Dunne, Zandstra, 2011); • Students as co-researchers (Maunder et al., 2012);
<p>5) New space for learning</p> <ul style="list-style-type: none"> • Different forms of expertise brought together (Bhabha, 2004); • New learning platforms (Richter, Courage, 2017; Stoten et al., 2018);
<p>6) Self-authorship</p> <ul style="list-style-type: none"> • Increased cognitive development (Magolda, 2007a); <ul style="list-style-type: none"> • Critical analysis (Magolda, 2007a); • Applying theory to practice (Magolda, 2007a);
<p>7) Learning community and partnership in learning</p> <ul style="list-style-type: none"> • Empathy for staff (Lubicz-Nawrocka, 2017); • Feeling of being respected (Lubicz-Nawrocka, 2017);

- 8) Metacognitive practices
- Reflection (Cook-Sather et al., 2014);
 - Social meta-learning practices (Cook-Sather et al., 2014);
- 9) Value co-creation
- Ownership of learning (Lubicz-Nawrocka, 2017);
 - Authentic learning (Bovill, Bulley, 2011; Cook-Sather et al., 2014);
 - Increased responsibilities for students (Cook-Sather et al., 2014; Lubicz-Nawrocka, 2017).

The identified empirical referents are used in the analysis of the defined phenomenon, learning co-creation in the field of education.

Co-creation of learning concept might have a set of diverse attributes in different contexts involving other than educational sectors. For example, in business or marketing, co-creation will have attributes related to customers' engagement, added value of goods or services, etc. Slightly different attributes might be observed in design, arts or other sub-sectors in cultural and creative industries. Our aim was to analyse co-creation concept in the field of education, not limiting to any sector (pre-school or higher education). It is worth mentioning, that the available literature had limitations while analysing co-creation in early childhood education. It might be explained by the fact that co-creation requires certain conditions and capacities of learners, which are not sufficiently developed in early ages. On the other hand, co-creation in pre-school and primary education is a growing field. Most of the analysed contexts were related to higher education, as it involves adult learning and thus, provide a wide range of co-creation experiences in curriculum, in research, etc.

The concept analysis of co-creation of learning and identification of the key attributes, a model case, antecedents and consequences, allowed to develop a concept map (Figure 1).

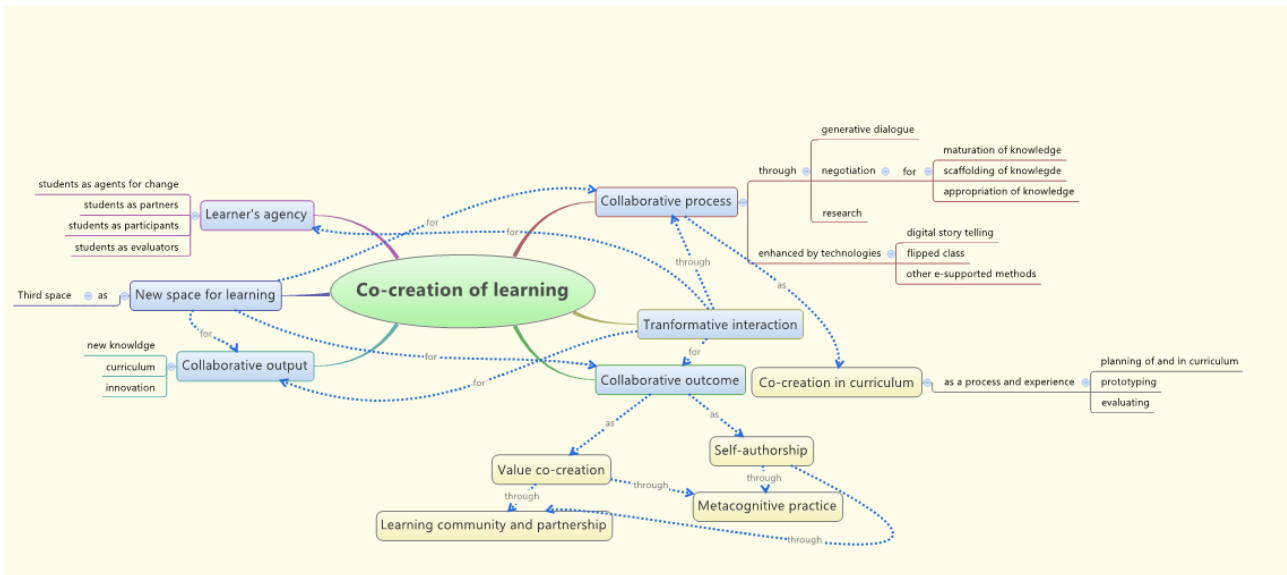


Fig. 1. Co-creation of learning concept map

The identified attributes of the concept were clustered into 6 major themes: collaborative process, transformative interaction, collaborative output, collaborative outcome, learner's agency, and new space for learning. Three attributes such as value-co-creation, self-authorship and metacognitive practice were clustered into one theme collaborative outcome, which indicates a long-term positive impact of co-creative practice. Collaborative output indicates a relatively immediate result of co-creative practice, which results in new knowledge (co-created through

generative dialogue, negotiation or research), new curriculum or educational innovation. Analysis of scientific literature also suggested distinguishing as a separate sub-theme co-creation in curriculum as most of the co-creation practice takes places in the learning process (in curriculum) or for designing and implementing new curriculum. Metacognitive practice was also defined as a separate sub-theme even though one could argue that it is a collaborative process. However, metacognitive practice is both a process and an outcome of co-creation.

4. Conclusion

Significantly, that this research revealed a diversity of complexities current teachers and learners face today. Educational research already suggests pedagogical strategies which might be helpful in practical realisation of co-creation practices within the classrooms. They include generative dialogue, negotiation, collaborative work, participatory design model and others.

This study was based on a concept analysis. Each phase of the research was extremely useful in decoding the co-creation as multidisciplinary phenomenon but still focusing on the field of education. The conducted concept analysis helped to identify the main attributes of the concept as well as to define antecedents and consequences. The study helped to see interconnections of the main themes identified and they include collaborative process, transformative interaction, collaborative output, collaborative outcome, learner's agency, and new space for learning.

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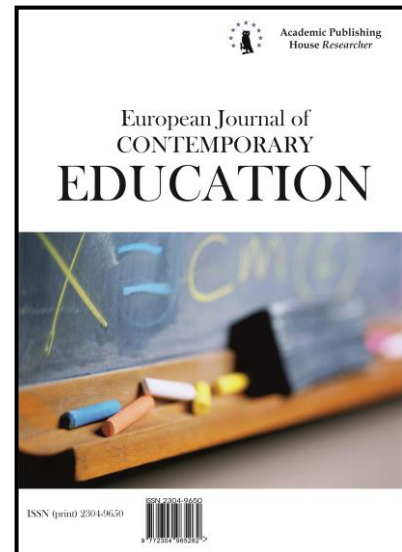
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Vocational Teacher's Inclination to Impart Values in Vocational Training: the Importance of Pedagogical-Didactical and Psychological Factors

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Abstract

The purpose of this paper was to present empirically tested model of the importance of vocational teachers' pedagogical-didactical and psychological factors for inclination to impart their value positions in vocational education. 346 vocational teachers from 27 vocational training institutions and colleges in Lithuania completed paper-pencil questionnaires. A correlation study was designed to determine the extent to which the pedagogical-didactical and psychological determinants are related to values education. The results of Structural Equation Modelling (SEM) indicated 7 significant factors on the inclination of vocational teachers to convey values to learners in vocational education and training. Teachers' efforts to provoke or cause emotions in students during didactical processes, as well as matching students' practical experience and open teaching strategies were identified as the most important pedagogical-didactical factors for teacher's inclination to impart values education. Teachers as pedagogical experts were more concerned with values education than were teachers as didactical or subject matter experts. Important psychological factors included vocational teachers' personality traits of openness to experience and conscientiousness as well as extrinsic social motivation that were significantly related to teacher's inclination towards values education. To our knowledge, this research is the first comprehensive attempt to evaluate the importance of pedagogical-didactical and psychological factors on the inclination of vocational teachers to convey values to learners in vocational education and training. In the future, longitudinal studies are needed to make causal inferences regarding the hypothesized relationships among the variables.

Keywords: values education, vocational teacher, vocational training, inclination to impart values, pedagogical-didactical factors, psychological factors.

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1. Introduction

Recent educational research supports the perception that values education has widespread and indispensable effects on student learning and well-being (Lovat, 2011) and facilitates the development of moral maturity and a holistic mindset (Gupta, 2015), student satisfaction within institution (Moosmayer, Siems, 2012), greater self-awareness, and improvement in academic diligence (Lovat et al., 2011). Research findings provide economic evidence of the positive effects of value-related teaching; i.e., as Moosmayer and Siems (2012) noticed “there are business-related reasons for influencing students’ values” since students want to receive value-related training during their education (ibid: 258). Values education is especially important in the skilled trades, since the qualified workers are expected to exercise their professional knowledge and skills in a responsible manner; or, as Gupta perceived, “they need to be socially and morally competent in addition to being technically competent” (Gupta, 2015: 501). According to Turturean (2013), there are consequences not only in terms of how students experience their education and well-being but also in terms of their value as future productive members of the society to which they belong.

Values are expressed in everyday teaching practice. The teacher is concerned not only with knowledge transfer but also with how the student, affected by knowledge, becomes a moral human being. Teachers should play positive roles for students in the process of learning values. There has been a great deal of research in recent years concerning the attitudes of teachers towards values education (Katilmis, 2017; Iscan, 2015; Celikkaya, Filoglu, 2014; Tirri, 2011; Thornberg, 2008), as well as comparative studies examining teachers’ perspectives on values and moral education in different countries (LePage et al., 2011; Thornberg, 2013; Thornberg, Oğuz, 2016).

Although values education is inevitably embedded in teachers’ work (Thornberg, Oğuz, 2016), there has been very little research examining vocational teachers’ inclinations to convey values while preparing young people for the job market. Previous studies investigated how social studies teachers define values and “values education” (Celikkaya, Filoglu, 2014; Katilmis, 2017), how engineering teachers integrate values with professional engineering education (Gupta, 2015), how secondary school teachers view values and holistic pedagogy (Tirri, 2011), elementary and junior high school teachers’ approaches to moral (LePage et al., 2011) and values education (Iscan, 2015) and first year student teachers’ preferences on moral and citizenship goals in education (Thornberg, Oğuz, 2016). We focused – perhaps, for the first time – on the target group: teachers in vocational education and training centers and tried to view the phenomenon from another angle: what relationship exists among inclination to impart values and individual psychological as well as pedagogical-didactical factors. Examples may include professional identity, personality traits and motivation as well as pedagogical-didactical assumptions made by teachers in communication with students, forms of cognition and teaching strategies.

Therefore, the aim of this study is to identify pedagogical-didactical and psychological factors that are important for vocational teachers’ inclination to impart their value positions in vocational education and training.

Figure 1 presents our conceptual model. The model includes two groups of antecedents for values education (pedagogical-didactical and psychological factors) and students’ attitudes and behaviour together with well-being and success in the labour market as outcomes. Noteworthy, the top boxes and the bottom boxes are at the teacher level, and the middle ones at the student level. Based on our research aim, our empirical research will focus only on the antecedents of values education.

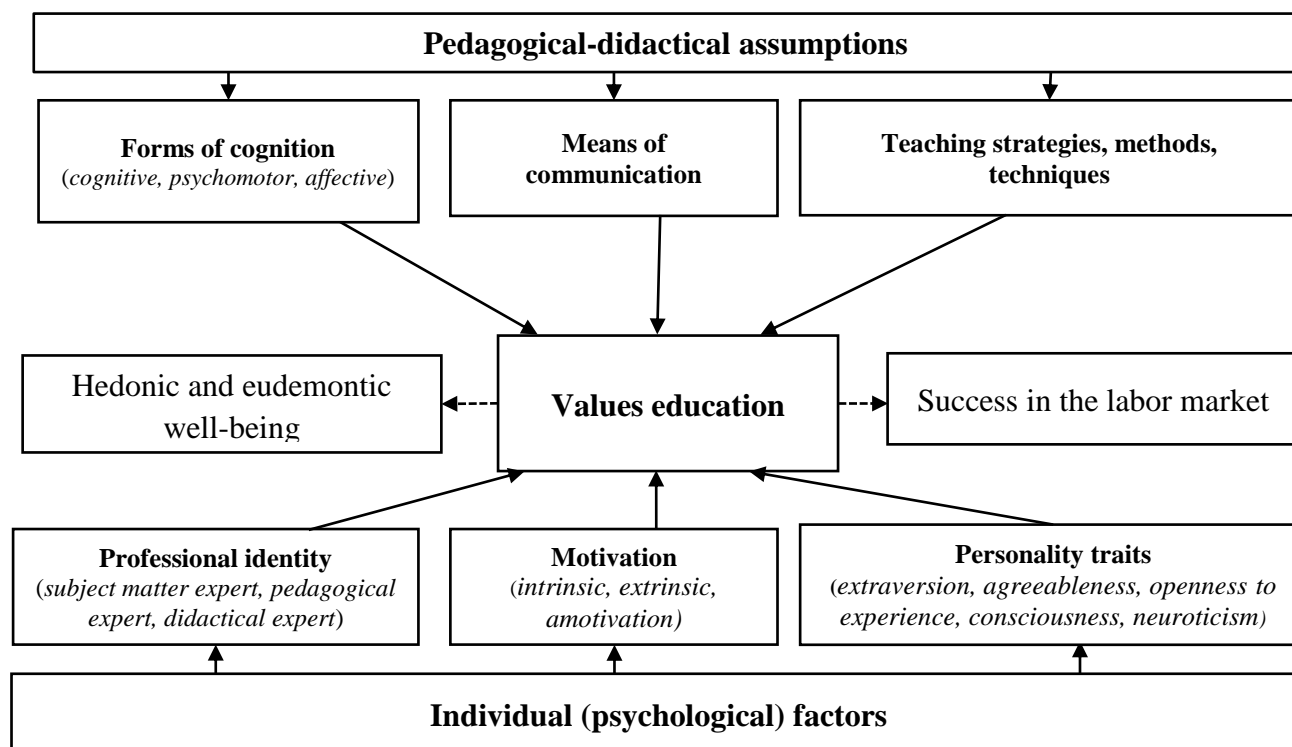


Fig. 1. Theoretical model of values education antecedents and outcomes.

Notes: The straight lines represent the relationships between the factors measured in this study. The dotted lines represent possible relationships between factors not measured in this study. In this study, values education is considered as teacher’s inclination to impart values.

Pedagogical-didactical assumptions. Values education is at the core of the educational process and curricula (Iscan, 2015) since, according to Tirri (2011), school pedagogy consists of three main components, namely, values and worldviews, field-invariant pedagogical components and field-dependent pedagogical components. Within the teaching and learning process, vocational teachers develop their own strategies for teaching and organizing the process of cognition (knowledge) for vocational training objects, and, at the same, participate in it. The success of a teacher often does not depend on official documents, programmes, or detailed instructions, but rather depends on how he or she creates an alternative working environment. In other words, the teacher chooses the material and the best tools and methods of teaching, responds to conditions, and makes value judgements in his choices. Duobliené (2017) summarized empirical research on teacher performance in different countries and set out that in developing alternative micro-settings (environments), teachers perpetuate flawed standardization and bureaucratic politics based on “managerialism” (ibid., 23). Hence, in our pedagogical-didactical assumptions, we presume that vocational teachers in the course of pedagogical interactions develop individual didactical systems. These systems comprise the following aspects of the curriculum: the means of pedagogical communication, the forms of cognition in the profession, and methods and techniques used.

The forms of cognition in the profession include the cognitive, psychomotor, and affective domains of learning (Spurlin et al., 2008; Vanasupa et al., 2007; Salimet al., 2013). The cognitive domain of learning is concerned with knowledge and understanding and encompasses the entire “content” of the professional field. The psychomotor domain focuses on manual tasks requiring physical activity and the use and manipulation of objects (Merrit, 2008). The affective domain represents an individual’s attitudes, beliefs, emotions and feelings (Bott, 1996). The parts of this trichotomy cannot be isolated from one another because almost all learning activities involve more than one domain (Bott, 1996; Merrit, 2008). In the context of individual didactical systems, the three domains in vocational pedagogy engender what Setiawan (2016, 403) calls “signature pedagogy”: “habits of the mind” refers to the ways in which teachers and students think, “habits of

the hand” refers to the practical-habitual activities done by teachers and students, and “habits of the heart” refers to teachers’ and students’ attitudes.

Means of communication refers to the multi-faceted, professional communication of teachers with students in the learning process, which involves interaction, understanding and cooperation. Pedagogical communication creates the pedagogical and psychological conditions that ensure effective involvement in the process of cognition in the profession as well as determining teaching methods and educational influence, which manifest themselves in the expectations and behavioural requirements for students. Two opposing styles of communication with students can be distinguished. Some educators are open; they foster friendly relationships, respect, and trust between teachers and pupils and seek to create a good emotional environment that motivates students to perform activities and allows them to better understand one another’s values. Others expect the obedience of the students; and knowledge based on textbooks and “learned by heart” is set against individual perceptions and experience. Electronic communication technology, in its own way, “facilitates” the pursuit of vocational learning goals by limiting the interaction between teachers and students. Of course, this communication style often creates tension and uncertainty.

The approaches to teaching affect teacher’s training strategies and influence all aspects of the job, including methods and techniques of instruction. Over the last decade, changes in pedagogical approaches are underway in vocational education and training (Daukilas et al., 2017). The dominant traditional teaching methods, which include the teacher’s role as content creator, transferring knowledge through traditional lectures using reproductive techniques (such as demonstration, presentation, photocopying, and recording) to be passively consumed by learners, poorly meet the needs of students. Research indicates that that active learners’ involvement in the learning process significantly improves knowledge retention and the ability to apply that knowledge (Piercy et al., 2012). In other words, students do not simply need to learn about an established body of knowledge, but also, how to apply practically new ideas to ‘manage the situation’. Therefore, reality is seen as personally constructed and determined by personal experience, i.e., each learner constructs means by which new knowledge is both created and integrated with existing knowledge. Typical teaching environments include interactive learning modes such as lectures-theatres, science laboratories, workshops, problem-based learning, simulation, and case studies. The teacher plays the role of guide and equipment supplier; he or she leads students through experimentation, project-based learning and simulation (Güneş et al., 2011).

We set up two hypotheses to test how pedagogical-didactical factors are related to values education:

Hypothesis 1. *An affective domain of cognition supported by open, friendly styles of communication leads to inclination to impart values in vocational training.*

Hypothesis 2. *Teachers who use open teaching strategies reflecting learners experience are more inclined towards values education.*

Professional identity. There are various theoretical approaches to teacher identity. Professional identity is often interpreted as a person’s perception of who he or she is and who he or she would like to become (Beijaard et al., 2000); it also includes the various purposes teachers attach to themselves and the purposes attributed by others (Day et al., 2006; Marcelo, 2009). Some authors have defined identity as a complex and multifaceted construct that includes many roles (Day, Kington, 2008; Chong, 2011; Komba et al., 2013; Marcelo, 2009) and a permanent integration of personal and professional roles (Akkerman, Meijer, 2011; Ibarra, 1999). A teacher’s professional identity includes sufficiently stable features, teacher-related self-efficacy (personal beliefs about his or her ability to behave in complicated and critical situations), values and teaching philosophy, and motivations and experiences based on competence and preparation (Yamin-Ali, Pooma, 2012; Ibarra, 1999). Most contemporary approaches, however, agree that identity is constructed in a social context and that, rather than being stable and fixed, it is shifting and dynamic (Chong, 2011; Chong, Low, 2009; Komba et al., 2013; Marcelo, 2009; Olsen, 2015).

In our study, we have approached identity from a professional mastery (expertise) point of view, which describes what a teacher needs to know and be able to do (Beijaard et al., 2000; Komba et al., 2013) and has clear connections to pedagogical-didactical assumptions. The teacher as a *subject matter expert* is characterized by a full understanding of the subject area. The teacher, who possesses a specific, professional knowledge base, conveys his or her knowledge and skills to students by developing effective tasks, explaining things at an understandable level, and adequately

diagnosing students' misunderstandings and misconceptions (Beijaard et al., 2000: 751). However, teaching is much more than the transmission of knowledge. The concept of a teacher as a *pedagogical expert* concerns the teacher's involvement, engagement, and communication with students. According to McInerney (2013), positive pedagogical relationships with students and a good emotional atmosphere in the classroom are prerequisites for effective teaching and learning. This is relevant to teachers' conceptions of their personal and professional roles (the teacher as classroom manager, leader, etc.) as well as to moral and ethical concerns in their interactions and relationships with students. The concept of the teacher as a *didactical expert* includes models of teaching, i.e., the planning, execution, and evaluation of lessons (ibid, 752-753). The main shift of the didactical dimension is from traditional teacher-centred conceptions of teaching to more student-centered ones with a greater emphasis on learning than teaching. This shift forces teachers to look for appropriate teaching strategies, methods and techniques and has far-reaching consequences for teachers' roles (guiding, facilitating, coaching, etc.) and their perceptions of their professional identities.

All these characteristics are strongly interwoven, but in scientific literature more attention is paid to the pedagogical dimension. Recent research by Choy, Wong, Chong and Lim (2014) reveals the importance of pedagogical expertise in terms of better student outcomes, better management of social and cultural diversity, better classroom management, and better demonstrations of helpfulness and attention. On the other hand, as Day and Kington (2008) found, "teacher identities are neither intrinsically stable nor intrinsically fragmented, but can be more or less stable and more or less fragmented at different times and in different ways based on the interaction of a number of personal, professional and situational factors". One of these factors is personality.

Personality traits. The development of professional identity is closely related to personality traits (Lounsbury et al., 2007; Göncz, 2017; Hirschi, 2012). Personality traits are a person's stable qualities or characteristics and determine his or her everyday practices and behaviour (Mount et al., 2005). They affect professional interests and are relevant to adults choosing careers (Guranda, 2014). Thus, many studies have emphasized the influence of personality traits on self-efficacy in career decision making (Ambiel, Noronha, 2016; Pandey, Kavitha, 2015), engagement in work (Inceoglu, Warr, 2011; Woods, Sofat, 2013), career satisfaction (Lounsbury et al., 2004), work performance (Rusbadrol et al., 2015), and teaching effectiveness (Buela, Mamman, 2015; Fatemi et al., 2016; Klassen, Tze, 2014). In this study, we are interested in the relationship between values education and personality traits, i.e., how stable internal personality traits are related to teacher's inclination to impart values. For this, we applied the Big Five model (John et al., 2008), which nowadays is one of the most significant theories explaining the structure of personality. The model is characterized by its empirical support, practical significance and intercultural validity. The Big Five model of personality covers five broad domains that define human personality: extraversion, agreeableness, conscientiousness, openness to experience and neuroticism.

A few studies (Alghamdi et al., 2017; Iruloh, Ukaegbu, 2015) showed a significant relationship between teachers' emotional intelligence (EI) and Big Five personality traits. Three personality traits, namely, extraversion, agreeableness, and openness to experience, emerged as significant predictors of EI (Alghamdi et al., 2017). Pandey and Kavitha (2015) analyzed the relationship between teacher personality traits and self-efficacy. The results of their research revealed that extraversion, agreeableness, openness to experience and conscientiousness are positively related to teacher self-efficacy; on the other hand, a significant negative correlation was found between self-efficacy and neuroticism. A study by Rusbadrol and colleagues (2015) indicated a positive association between personality traits and teacher performance. Their findings revealed that openness to experience and agreeableness are positively related to job performance; on the other hand, there is a negative association between neuroticism and job performance. In addition, personality traits and work commitment were significant factors influencing teachers' job performance.

Work motivation. Individual differences affect vocational teachers' job characteristics and motivation. Work motivation consists of a set of forces that originate both within as well as beyond an individual to initiate work-related behaviour and determine its form, direction, intensity, and duration (Latham, Pinder, 2005).

There are several motivational theories that explain the extrinsic and intrinsic motivation. To describe the work motivation of vocational teachers, we have chosen self-determination theory,

which has received widespread attention in education and other fields (Gagne, Deci, 2005). This theory conceptualizes the main types of motivation and proposes that individuals experience these types of motivation to varying degrees. Intrinsic motivation occurs when an individual participates in an activity for the enjoyment inherent to the activity itself. Intrinsic motivation, also called self-motivation (Wang, Hou, 2015), promotes activities related to personal self-realization, providing pleasure and a sense of self-satisfaction (Levin et al., 2012). Extrinsic motivation occurs when behaviours are undertaken to avoid negative self-feelings such as shame or to attain positive self-feelings such as pride (Howard et al., 2016). The current conceptualization of work motivation suggests that extrinsic regulation is best described through two components, namely, extrinsic-social and extrinsic-material (Gagne et al., 2015). Extrinsic-social regulation is characterized by the desire to gain approval or respect from others or to avoid criticism, whereas extrinsic-material regulation focuses on material rewards and keeping one's job. This type of motivation is also called controlled motivation (Wang, Hou, 2015). Amotivation is the absence of any desire to exert effort. Amotivated individuals are likely to feel detached from their actions and may feel a lack of control over their present situation or behaviour; therefore, they invest little time and energy towards their behaviour. This state was shown to be associated with a wide range of negative workplace outcomes, including decreased vitality, job satisfaction, affective commitment, adaptivity, proactivity, and job effort, as well as greater emotional exhaustion, burnout, and turnover intention (Gagne et al., 2015; Howard et al., 2016).

Ryan and Deci (2000), along with Gagne et al. (2015), provide four different types of extrinsic motivation based on the degree of personal autonomy. *Extrinsic regulation* is behaviour performed to satisfy an external demand or obtain an externally imposed reward (e.g., to conform to teacher qualification standards), *material regulation* is identified with expectations of financial reward (e.g. seeking higher qualification for a better paid position), *introjected regulation* describes a type of intrinsic regulation based on the avoidance of guilt and anxiety or the desire for ego-enhancements and pride (e.g., to be responsible for students' learning), and *identified regulation* occurs when extrinsic regulations have been fully assimilated into the self and become congruent with one's other values and needs. Identified forms of motivation share many features of intrinsic motivation, but they differ from intrinsic motivation because the activity is not carried out for internal satisfaction but has an instrumental value (Gagne et al., 2015). Moreover, psychological needs such as competence, autonomy, and relatedness support intrinsic motivation and facilitate the internalization and integration of extrinsically motivated tasks (Ryan, Deci, 2000).

Following literature review, we hypothesize:

Hypothesis 3. *Teachers who identify themselves more strongly as pedagogical experts are more concerned with values education than are teachers as subject matter and didactical experts.*

Hypothesis 4. *Extraversion, openness to experience, conscientiousness and agreeableness are positively related to teacher's inclination to impart values for learners, while neuroticism is negatively related.*

Hypothesis 5. *Teacher's intrinsic motivation is more strongly related to inclination to impart values for learners than teacher's extrinsic motivation.*

2. Methods

Participants. There are 73 state and private vocational education and training institutions with 2880 vocational teachers in Lithuania. In this study participated 346 vocational teachers (or 12 % of the population) working in 27 (or 37 % from all VET institutions) vocational training institutions and colleges. A probabilistic cluster sampling of 27 vocational schools was selected to provide a cross-section of geographical and institutional diversity. Within these institutions, teachers were randomly selected using random number tables. Sample characteristics and comparison with the population are given in Table 1.

The teachers' characteristics more or less corresponded to the overall ratio for the country. Thus, the surveyed vocational teachers seem to represent an average vocational training institution in Lithuania.

Table 1. Sample characteristics

Characteristics	Sample		Population*	
	n	%	N	%
<i>Gender</i>				
Male	93	27.6	893	31
Female	244	72.4	1987	69
<i>Total</i>	<i>337</i>	<i>100</i>	<i>2880</i>	<i>100</i>
<i>Age</i>				
18-29	18	5.2	189	6.6
30-39	60	17.5	456	15.8
40-49	73	21.3	611	21.2
50-59	132	38.5	1035	35.9
60 and more	60	17.5	589	20.5
<i>Total</i>	<i>343</i>	<i>100</i>	<i>2880</i>	<i>100</i>
<i>Education</i>				
Higher education	275	82.6	2409	83.6
College education	55	16.5	353	12.3
Secondary/vocational	3	0.9	118	4.1
<i>Total</i>	<i>333</i>	<i>100</i>	<i>2880</i>	<i>100</i>
<i>Qualification (position)</i>				
Without qualification	4	1.2	680	23.6
Teacher	72	20.8	337	11.7
Senior teacher	164	47.4	1276	44.3
Teacher-methodologist	97	28.0	551	19.1
Teacher-expert	9	2.6	36	1.3
<i>Total</i>	<i>342</i>	<i>100</i>	<i>2880</i>	<i>100</i>
<i>Teaching subjects</i>				
General subject teachers	66	19.9	913	31.7
Vocational subject teachers	241	74.4	1967	68.3
General and vocational subject teacher	19	5.7		
<i>Total</i>	<i>332</i>	<i>100</i>	<i>2880</i>	<i>100</i>
<i>Career experience</i>				
0-2 years	19	5.5		
3-5 years	23	6.7		
6-10 years	48	14.0		
11-15 years	34	9.9		
16-20 years	45	13.1		
More than 20 years	175	50.9		
<i>Total</i>	<i>344</i>	<i>100</i>		

*Source: Lithuanian Education in Figures, 2016. Vocational Training.

Note: the sample data that significantly differ from the general population is marked in bold.

Procedure. The vocational teachers completed paper-based self-administered questionnaires. 27 vocational training institutions and colleges were selected from 10 Lithuanian regions using criteria that ensured representation of schools by type (vocational schools and vocational training centers), size (small, medium, and large according to the number of students), and geographic location (rural area, small town, or city). The number of selected schools accounts for one third of all currently operating state and non-state vocational schools. The questionnaires were sent with self-addressed stamped envelopes to school administrations with requests that they be distributed to teachers in that school. All participants were provided with written information about the nature and purpose of the research. Voluntary participation and confidentiality were guaranteed. The questionnaires were returned to us in sealed envelopes. The response rate was 70.6 %.

The research data were processed using SPSS 22.0. Descriptive statistics (mean scores, standard deviations and correlations) were used to represent the main variables of the study. To test the theoretical model, Structural Equation Modelling (SEM) was employed using AMOS 22.0.

Measures. The instrumentation of the research comprised several parts, including individual (psychological) factors, pedagogical-didactical factors, a focus on inclination towards values education and socio-demographic questions. Psychological factors included teachers' professional identity, motivation and personality traits.

Professional identity. Vocational teachers' professional identity was assessed with the Teachers' Professional Identity Questionnaire (Beijaard et al., 2000). This instrument consists of 18 items along three dimensions: subject matter expert, pedagogical expert, and didactical expert. The instrument was translated (Dutch-Lithuanian and Lithuanian-Dutch) and used with permission from the author. Teachers were asked to evaluate the extent to which they agreed with the items on a four-point scale ranging from 1 (*disagreement*) to 4 (*complete agreement*). Examples of items include "The subject I studied determined my decision to become a teacher" (subject matter expert), "In my lessons, I pay a great deal of attention to varied learning activities" (didactical expert), and "As a teacher, I serve as a model for the way students should interact" (pedagogical expert).

According to Beijaard and colleagues' (2000) approach to teachers' professional identity, a didactical expert is a teacher who bases his or her work on knowledge and skills regarding the planning, execution, and evaluation of teaching and learning processes (in this study, Cronbach alpha is .700). A pedagogical expert is a teacher who bases his or her work on knowledge and skills that support students' social, emotional, and moral development ($\alpha = .692$). A subject matter expert is a teacher who bases his or her work on subject matter knowledge and skills ($\alpha = .637$).

Personality traits. Vocational teachers' personality traits were assessed using the Big Five Inventory (BFI; Benet-Martinez, John, 1998; John et al., 1991, John et al., 2008). It is a self-reported inventory designed to measure five personality traits: extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience. The scholars from Vytautas Magnus University (Department of Psychology) approved translation of the questionnaire into Lithuanian. The questionnaire comprises 44 short phrases based on trait adjectives that respondents were asked to evaluate on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

The trait of extraversion includes an inclination to sociability, activeness, talkativeness, and optimism (in this study, Cronbach alpha is .671). Conscientiousness includes planning, organizing, setting tasks, self-discipline and the need for achievement ($\alpha = .739$). Agreeableness is related to altruism, attempts to help others, and the ability to understand and sympathize with others ($\alpha = .584$). Neuroticism is defined as a tendency to experience unpleasant emotions: fear, sadness, anger, discontent, guilt, etc. ($\alpha = .676$). Openness to experience covers vivid imagination, attention to inner experiences, aesthetic sensitivity, the desire for intellectual knowledge, and interest in the inner and outer worlds ($\alpha = .558$).

Motivation. Vocational teachers' daily motivation for their work was assessed with the Multidimensional Work Motivation Scale (MWMS; Gagne et al., 2015). With permission from the author, a double translation of the questionnaire (English-Lithuanian, Lithuanian-English) was carried out and aligned with the original. The questionnaire consists of 19 items. The respondents were asked to evaluate answers to the question "Why do you or would you put efforts into your current job?" For each item, teachers rated the extent to which they agreed with it on a 7-point Likert scale ranging from 1 (*not at all*) to 7 (*completely*). The questionnaire consists of 6 scales. Amotivation is defined as the absence of motivation towards an activity (3 items, e.g., "...I don't, because I really feel that I'm wasting my time at work", Cronbach alpha is .870 in this study). Extrinsic regulation refers to doing an activity to obtain rewards or avoid punishments administered by others. It includes extrinsic social regulation (3 items, e.g., "...to get others' approval (supervisor, colleagues, family, students, etc.)", $\alpha = .880$) and extrinsic material regulation (3 items, e.g., "...because others (employer, supervisor, etc.) will reward me financially only if I put enough effort into my job", $\alpha = .810$). Introjected regulation refers to regulation of behaviour that stems from internal forces, such as ego-involvement, shame, and guilt (4 items, e.g., "...because I have to prove to myself that I can", $\alpha = .823$). Identified regulation refers to doing an activity because one identifies with its value or meaning and accepts it as one's own; this form of internalization is volitional (3 items, e.g., "...because putting effort into this job aligns with my

personal values”, $\alpha = .878$). Finally, intrinsic motivation is defined as doing an activity because it is interesting and inherently enjoyable (3 items, e.g., “...because the work I do is interesting”, $\alpha = .918$).

Since no measures of pedagogical-didactical factors existed, we developed questions based on a literature review. These items were piloted with a convenience sample of 10 vocational teachers. Minor adaptations have been made.

To measure teacher’s *inclination to impart values* in vocational education, we used the item “I try to show my value positions when teaching my subject”. The developed items for *communication with students* reflect direct communication (“I am better at direct communication with students”) and positive emotional climate (“I try to create a good emotional environment in lectures through various means”). We identified and measured three *forms of cognition* used in the educational process: educating thinking, causing emotions, and matching students’ practical experience. Items were also added about *teaching methods*, both interactive (fostering reflection and assessment of the material) and experiential. For each item of pedagogical-didactical factors, vocational teachers rated the extent to which they agreed with each item on a 5-point Likert scale ranging from 1 (*do not use at all*) to 5 (*often use*).

Demographic variables. The questionnaire included socio-demographic questions about teachers’ age, gender, education, qualification (position) and work experience.

3. Results

First, it was analyzed whether the variables (pedagogical-didactic and psychological factors) differ according to the socio-demographic characteristics of the respondents (gender, age and overall pedagogical experience). No differences were found. The descriptive statistics and correlation matrix for the *pedagogical-didactical components* and inclination to impart values in vocational education are presented in [Table 2](#).

Table 2. Pedagogical-didactical components: descriptive statistics and correlations with teachers’ inclination to impart values (N = 346)

Categories	Components	Mean	SD	Intention to impart values
Communication	Direct communication	4.50	.68	.182**
	Positive emotional climate	4.47	.66	.207**
Forms of cognition	Educating thinking	4.38	.68	.245**
	Causing emotions	3.54	1.01	.337**
	Matching learners’ practical experience	4.16	.81	.278**
Methods	Interactive	4.18	.82	.205**
	Experiential training	3.96	.83	.135**

Notes: **correlation is significant at the .01 level

The results reveal that all items scores are very high and are significantly related to intention to impart values. It can be assumed, that vocational teachers often use direct communication with students and try to ensure a positive emotional climate. In terms of the forms of cognition, educators tend to use educating thinking and matching the learners’ practical experience more than causing emotions. Finally, vocational teachers use both interactive and experiential training methods quite often.

[Table 3](#) presents the mean scores, standard deviations and correlations for the *psychological components* of the research. In terms of vocational teachers’ professional identity, the results reveal that the most expressed professional role of vocational teachers is that of subject matter expert. In addition, the most expressed personality traits of vocational teachers are conscientiousness and agreeableness. Although the personality trait of neuroticism is expressed

least, its level of expression almost reaches the midpoint of the scale (which is 3). The analysis also revealed that vocational teachers most commonly exhibited intrinsic and identified motivation.

Table 3. Psychological components: descriptive statistics and correlations with teachers' inclination to impart values (N = 346)

Categories	Components	Mean	SD	Intention to impart values
Professional identity	Pedagogical expert	3.34	.41	.302**
	Didactical expert	3.31	.41	.142**
	Subject matter expert	3.41	.41	.200**
Personality traits	Extraversion	3.59	.52	.080
	Agreeableness	3.88	.49	.093
	Conscientiousness	3.90	.57	.184**
	Neuroticism	2.57	.61	.009
	Openness to experience	3.46	.43	.241**
Motivation	Intrinsic	5.71	1.16	.094
	Identified	5.79	1.10	.176**
	Introjected	4.76	1.53	.151**
	Extrinsic material	3.65	1.57	.058
	Extrinsic social	3.89	1.72	.193**
	Amotivation	2.06	1.44	-.012

Notes: **correlation is significant at the .01

In order to test the part of the theoretical model of this study and to identify factors that are important for the values education provided by the vocational teachers to their students, Structural Equation Modelling (SEM) was employed. At first, all paths to value education from the Figure 1 were included in the model, and then dropping the ones that were not significant. The final model is presented in Figure 2.

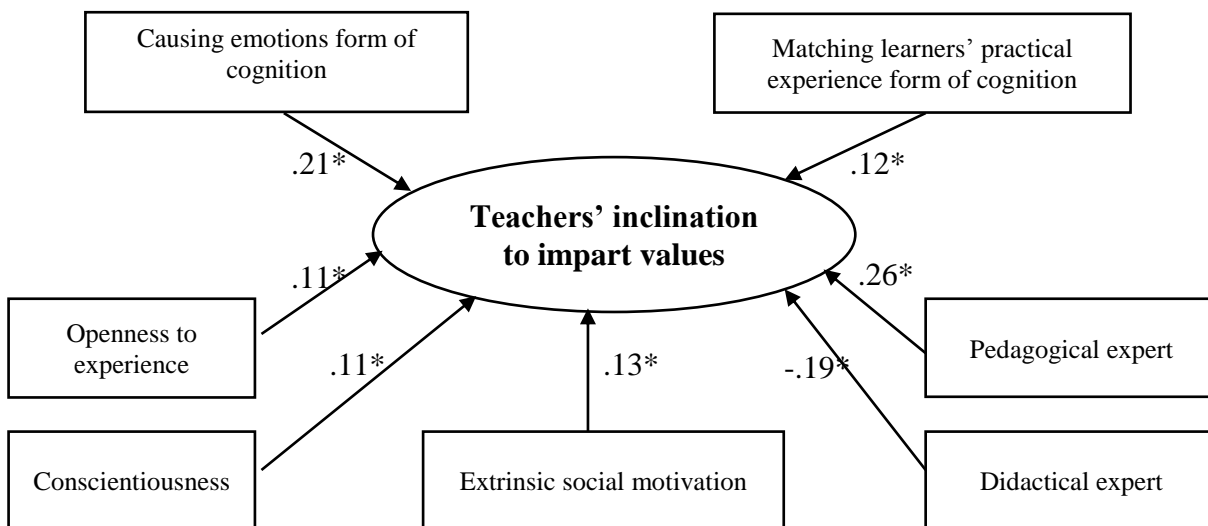


Fig. 2. Empirical model of pedagogical and psychological antecedents of teachers' inclination to impart values in vocational education

Notes: single-sided arrows and numbers adjacent to them – standardized regression weights (β), * significance at the .01 $p < .05$.

The resulting SEM model fit indices indicate that the hypothesized theoretical model fits the data: $\chi^2 = 13.93$, $p < .05$, RMSEA = .064, CFI = .985, and GFI = .992. The results indicate that vocational teachers' attitudes regarding causing emotions ($\beta = .211$, $p < .01$) and matching learners' practical experience towards ($\beta = .123$, $p < .01$) significantly predict teacher's inclination to impart values for students. In addition, vocational teachers' openness to experience ($\beta = .111$, $p < .01$), conscientiousness ($\beta = .113$, $p < .01$), and extrinsic social motivation ($\beta = .132$, $p < .01$), as well as higher expressed pedagogical ($\beta = .263$, $p < .01$) and less expressed didactical ($\beta = -.191$, $p < .01$) professional roles, have significant predictive value for teacher's inclination towards values education in vocational training.

The findings of this study attracted attention of the researchers to the role of pedagogical-didactical and psychological factors that acts as antecedents of teacher's inclination to impart values for students in vocational training. The hypothetical model of relationships explained 22 % of vocational teacher's inclination towards values education.

4. Discussion

In this study, we examined the roles of various pedagogical-didactical and psychological factors on vocational teachers' inclination to impart values in the course of vocational education and training. In this study, we assumed that communication, forms of cognition and pedagogical assumptions are important pedagogical-didactical factors that may influence values education. Teachers' efforts to provoke or cause emotions in students during didactical processes, as well as matching students' practical experience, were identified as the most important pedagogical-didactical factors for teacher's inclination to impart values education in vocational training. We can assume that tendency to impart values is inseparable from the affective domain, which includes students' attitudes, beliefs, emotions and feelings (Bott, 1996). Thus, our first hypothesis was confirmed: the affective domain of cognition, when supported by open, friendly styles of communication, is related to teachers' inclination to impart values in vocational training.

The results also confirmed the second hypothesis of this study, which claims that teachers who use open teaching strategies are more inclined towards values education. It appears that interactive learning environment and teacher's role as an expert guide (Chaitanya, 2017) that leads students to gain experience through experimentation and simulation promotes tendency to impart values for students. Summing up the results, intention to impart values could be an explanatory variable alongside intention to cause emotions or to match learners' practical experience.

Our results also supported the third hypothesis, which states that teachers as pedagogical experts, compared to other professional roles, are more concerned with inclination towards values education. Although the most commonly expressed professional role of teachers is that of subject matter expert (which is consistent with the fact that the main function of vocational teachers is to teach a profession involving knowledge and skills), the pedagogical expert's professional role is important for teachers' inclination to impart values in vocational training. The pedagogical component includes the teachers' involvement, engagement, and communication with students along with their support of students' social, emotional and moral development (Beijaard et al., 2000). This result is consistent with the results of other studies that confirm the importance of pedagogical expertise (Choy et al., 2014; McInerney, 2013; Beijaard et al., 2000): good pedagogical relationships with students and demonstrations of helpfulness and attention lead to a positive emotional atmosphere, which results in effective teaching and learning.

In contrast to the results of Beijaard et al. (2000), this study revealed that the role of didactical expert can be a barrier to values education since didactics and values may sometimes conflict. For example, depending on the needs and experience of learners, values education may require modifying the plan, implementation or even the teaching model of the lesson provided. A teacher with a typical didactic role can experience difficulties with shifting and adapting.

The fourth hypothesis of this study was only partially confirmed. Only the personality traits of conscientiousness and openness to experience are significantly related to teacher's inclination towards values education. Other studies have revealed these personality traits as some of the most important in teachers' work (Alghamdi et al., 2017; Pandey, Kavitha, 2015; Rusbadorol et al., 2015). This means that teachers' ability to convey the values of their profession is related with their tendency to plan, organize, setting tasks, and self-discipline, as well as seeking for achievement related to vivid imagination, attention and interest in the inner and outer worlds.

The fifth hypothesis of this study stated that teachers' intrinsic motivation is more strongly related to inclination to impart values for learners than extrinsic motivation. Although the results revealed that, among vocational teachers, the two highest forms of motivation are dominant intrinsic and identified, the inclination towards values education itself is provided by extrinsic social motivation. This means that most teachers work because their job is interesting and enjoyable in itself (Gagne et al., 2015). However, in terms of conveying values to students, extrinsic social motivation is more significant. This means that values education is more closely related to the teacher's orientation towards people than to self-realization. If the teacher's social interest is strong, if the teacher perceives respect and support from others (e.g., colleagues, family, students, manager), he or she will be motivated to convey his or her value positions during the educational process. These results can be interpreted that teachers with a general tendency toward relating to students also include values education in that tendency. Thus, the last hypothesis has not been confirmed, but the results are worthy of attention.

Finally, our empirically tested model confirmed the theoretical model (that part of the model which considers paths of teachers' psychological and pedagogical-didactical factors and the inclination to impart values). In regard to previous research on values education, this study provides evidence of relation between teacher's inclination towards values education and pedagogical-didactical as well as psychological factors. We hope that our results will add more detail to previous research on values education in different aspects of the field.

5. Conclusion

This study, like all studies, has some limitations. First, teachers filled out self-administered questionnaires. For similar research in the future, it would make sense to include more objective methods, such as collecting data about teachers' inclination to convey values in the teaching process from the perspective of other sources (e.g., their students). Furthermore, it is recommended that social desirability be controlled: in responding to the questionnaire, teachers could present themselves as better than they actually were (due to high social interest). For this reason, the results should be evaluated critically, and future research is needed. Second, in this study, our findings are limited because we developed our own instrument to measure pedagogical-didactical factors as well as one item to measure teachers' inclination to impart values, because there are other important facets of values education that might be taken into account. While our measures are appropriate and suitable, the items developed should be reconsidered, refined and supplemented. Third, the correlative nature of the study prohibits causal inferences. Therefore, the results of this study must be interpreted with these limitations in mind. In the future, longitudinal studies are needed to make causal inferences regarding the hypothesized relationships among the variables. This would lead to solve the issue of competing explanations, e.g. that there is a common cause for teacher characteristics and values education. Also, in further research, teaching strategies should be explored, refined and specified more carefully in terms of transferring values to youth. This is an extremely delicate and rarely identified field of investigation. According to Thornberg (2008), values education is an "unreflective practice" which is "partly or mostly unconsciously performed", which means it is necessary to develop a valid research tool for measurement. We hope this study will inspire further research and instrument development in this area.

Finally, and most importantly, in this study we focused on the pedagogical-didactical assumptions and psychological characteristics of vocational teachers and did not examine the possible outcomes of values education in terms of successful career paths and well-being for students. Different approaches and more rigorous measures are needed to explore the impact of values education on students' later lives.

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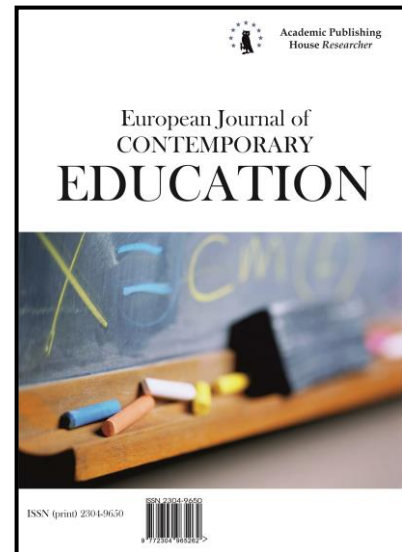
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Decrease of the Cognitive Dissonance of the Foreign Students at the Russian University based on the Extracurricular Activities

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Abstract

This article reviews the various features of the cognitive dissonance state of the foreign students arising at the beginning of their studies at the Russian University. The aim of the study is to identify the features and level characteristics of the cognitive dissonance of the foreign students and reduce this state on the basis of the author's individual trajectory for the implementation of the extracurricular activities at the Pedagogical University. Study participants: the second-year international students studying in the bachelor's degree program (n = 149) at the Russian University. The results of the study were processed using (X²) by the Statistical Program SPSS Statistics 20. The experimental intervention included the activation of foreign students in the process of extracurricular activities of the university based on the author's individual trajectory. These students actively participated in social and educational activities that were implemented at the institute. Extracurricular activities at the Pedagogical University were represented by a complex of main areas: the center of student initiatives, the student scientific society, the department of student self-government, the center of leisure and creativity of students, the student sports and fitness club, the department of student teaching teams. Three main indicators of the cognitive

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dissonance were identified in the study: the level of the socio-psychological maladaptation of the students, neuro-psychiatric instability of the students and the level of their psycho-emotional discomfort. As a result, foreign students who were actively involved in the implementation of extracurricular activities along the author's individual trajectory had a significantly reduced ($p < 0.01$ and $p < 0.05$) state of cognitive dissonance for each indicator from a high to a low level.

Keywords: cognitive dissonance, foreign student, extracurricular activities, individualization of learning, University.

1. Introduction

Under the influence of Russian higher education reforms, the modern education has entered the next stage of the modernization – the formation of some mechanisms for ensuring the education quality based on the innovative changes (Kwan et al., 2018). In the educational process, the innovations are introduced in the content of education, methods, technologies, forms, tools, as well as in the organization and management of the educational organizations (Kaufman, Scott, 2016; Nagovitsyn et al., 2019). Today, the geopolitical situation in the Russian Federation and in the world makes it a priority educating the young generations in the field of intercultural interaction (Rostovtseva et al., 2018). A distinctive feature of the modern Russian higher education institutions is the growing number of the foreign students (Nagovitsyn et al., 2018). The education of this students' category is a certain indicator of the status of the University, Institute or faculty (Klassen, Tze, 2014). The quality standard of Russian higher education makes it attractive choosing the occupational training programmes for the foreign students (Hammerness, Klette, 2015; Nagovitsyn et al., 2019). In this regard, the issue of adaptation and socialization of the foreign students to the educational process in a multicultural environment becomes the key to organizing the effective and conflict-free professional training (Kalman, Lattery, 2019).

In turn, the process effectiveness of adaptation and socialization of the foreign students depends on the level of their cognitive dissonance (Carkenord, Bullington, 1993; Maddi et al., 2012; Maurer, 2006), which is manifested in the first training stage (Avdeeva, Tulyakova, 2018; Merckelbach, Merten, 2012). For some students, this condition can be expressed at the stage of entrance tests (Toom et al., 2017). The concept of the cognitive dissonance (Festinger, 1995) was proposed by the American psychologist L. Festinger. In the study this definition is understood (Carkenord, Bullington, 1993) as a state of mental discomfort of the foreign student based on the collision in his mind of the conflicting ideas in the new educational environment (Barutchu et al., 2013; Elliot, Devine, 1994; Maurer, 2006), which is connected and arises as a result of interaction with the Russian students who have a different culture, values and overall preference in the education, livelihoods and life (Carkenord, Bullington, 1993).

In this regard, it is necessary searching for the new approaches to improving the training effectiveness of the foreign students through their adaptation and socialization in the Russian Institute by reducing the level of their cognitive dissonance.

The state of the cognitive dissonance among the students, mostly foreign students studying at the Russian University, starts showing itself and becomes the most relevant in the public life of the XXI century. By the way, the foreign students who are from different cultures and have different values and preferences often have a low level of awareness about the political, economic and social life of the Russian Federation (Nagovitsyn et al., 2019). As well as about the norms, customs, traditions and culture of the people, the way of life in the country and the higher education system (Klassen, Tze, 2014). In turn, the socialization, as one of the key components of the cognitive dissonance (Festinger, 1995; Maurer, 2006) is a synergistic process of introducing the student into the structure of a society (Burke et al., 2017; Carkenord, Bullington, 1993) by mastering the social rules, values, orientations and traditions (Schmeichel et al., 2003). In turn, their knowledge helps the foreign student becomes an effective individual in the new society (Kalman, Lattery, 2019; Rostovtseva et al., 2018). On the one hand, the student perceives the social experience (Merckelbach, Merten, 2012) and on the other hand, the student develops his relationships and connections actively (Baier et al., 2019). Performing a variety of role functions, the student transforms the surrounding society and himself (Kwan et al., 2018). In the process of group activity in the society, the main role is the socialization, which allows the student becoming a member of the social groups and educational collectives (Corcoran, O'Flaherty, 2017; Toom et al., 2017).

Many foreign students face the problem of internationalization, the need to communicate with people of different social, ethnic and national norms (Kalman, Lattery, 2019). This is why it becomes necessary to provide comfortable living and learning conditions in a new social environment (Hammerness, Klette, 2015; Stepanchenko, Briskin, 2019). Co-education of the students in a multicultural group has a number of advantages (Shower, 2017). First of all, it is an opportunity forming the intercultural interaction between the representatives of different cultures, learn more about other ethnic groups, their culture and customs (Carkenord, Bullington, 1993), as well as creating the favorable working conditions and a spirit of mutual understanding and cooperation (Kalman, Lattery, 2019).

The relevance of this study, which is focused on solving the stated problem, is confirmed by the requirements of the results of mastering the bachelor's degree program on "Pedagogical education" on the example of a Pedagogical Institute. In particular, the need of forming the general cultural competencies of the students – the future teachers. Moreover, the ability to communicate orally and in writing in Russian and foreign languages solving the problems of interpersonal and intercultural interaction. And a willingness to work in a team, tolerant of social, cultural and personal differences (Nagovitsyn et al., 2019).

The Federal set of competencies required developing them for each student requires an interdisciplinary approach and integration of the students' academic and extracurricular activities at the Pedagogical Institute (Baier et al., 2019). This will be effective through the implementation of non-traditional programs in the training of the future teachers (Kaufman, Scott, 2016; Kwan et al., 2018), implementation of the principles of multiculturalism, integration and synergy in the implementation of the educational and upbringing process (Rostovtseva et al., 2018; Toom et al., 2017). It is necessary to organize the occupational training not only to the substantive preparations, but also in the extracurricular time of the students (Shawer, 2017) involving all students in the training process purposefully taking into account their individual cognitive interests and emotional mood (Corcoran, O'Flaherty, 2017; Erturan et al., 2020; Hammerness, Klette, 2015).

Thus, the scientific literature has thoroughly studied the issues of training the students in the conditions of the educational and upbringing activities in different levels of the multicultural groups based on the various technologies (Baier et al., 2019; Corcoran, O'Flaherty, 2017; Shawer, 2017). However, the development of features and improvement of the professional training of the foreign students on the basis of their active implementation of the extracurricular activities to reduce their state of the cognitive dissonance has not been carried out to date.

If the foreign students who have a high or medium level of the cognitive dissonance are actively participated in the extracurricular activities of the Pedagogical Institute on the basis of the author's individual trajectory, then their level of the cognitive dissonance will be significantly reduced. This may ultimately affect the effectiveness of the implementation of professional training of the future teachers from the foreign contingent in the Russian Institute.

The aim of the study: to identify the features and level characteristics of the cognitive dissonance of the foreign students at the Russian University and reduce this state on the basis of the author's individual trajectory for the implementation of the extracurricular activities at the Pedagogical Institute.

2. Materials and methods

The research work was based on the implementation of a system of the theoretical methods for the analysis of Russian and foreign psychological and pedagogical theory, practice and experience in the field of features and characteristics of the cognitive dissonance of the students from the Higher school of different social groups. As a result, the main components of the foreign student's cognitive dissonance were developed. There were three synergistically interrelated qualitative and quantitative indicators: the level of socio-psychological maladjustment of the students, neuropsychiatric instability of the students and the level of their psycho-emotional discomfort.

The experimental study is implemented using a set of experimental methods such as the modeling, analysis, synthesis, comparison, collate and synthesize of the results and conclusions in the study. Also, in the study the following diagnostic tools are used that systematically reflect the level of the cognitive dissonance. The social and psychological questionnaire of adaptedness by K. Roger and R. Dymond (Rogers, Dymond, 1978), the multi-level personality questionnaire

“Adaptability” (Maddi et al., 2002) and the adaptive resilience test using the techniques of C. Maddi and the California test for evaluating goals in Khan's life (Maddi, 2006; Maddi et al., 2012).

Based on these diagnostic procedures, the main indicators of each state indicator of the cognitive dissonance among the foreign students were identified:

Socio-psychological maladjustment of the student

The “Communication” indicator allows you diagnosing the level of communication between the foreign students and Russian students, as well as the ability to form and improve the interpersonal relationships of the students during the academic and extracurricular time (Baier et al., 2019; Kalman, Lattery, 2019). On one side, this indicator includes in its content the integration of a set of personality traits, such as the conflict (Metzger et al., 2020; Stepanchenko, Briskin, 2019) and on the other hand, the social traits such as having an experience, motivation and needs for the process of communication and mutual assistance (Avdeeva, Tulyakova, 2018; Goldberg, Grandey, 2007; Shower, 2017).

The “Dominance” indicator determines the orientation level of the foreign student to lead or manage the interpersonal relationships with the students from different cultures and with other value orientations (Festinger, 1995). The diagnostic procedures for this indicator allow us determining the individual-differentiating mobility of the student through the state analysis of adaptation and maladaptation (Burke et al., 2017; Corcoran, O’Flaherty, 2017). This indicator allows us identifying the students' perceptions features of the degree of positive adaptation to the professional training (Maurer, 2006) or the level of negative maladaptation in the process of interpersonal relations between the foreign and Russian students (Rostovtseva et al., 2018).

The “Morality” indicator allows you diagnosing the ability of the foreign student to perceive a certain social role adequately offered to them in the professional training process (Carkenord, Bullington, 1993; Hammerness, Klette, 2015). The student's ability to perceive, analyze and synthesize his moral norms without compromising himself (Maddi et al., 2002), representations and values (Burke et al., 2017; Schmeichel et al., 2003). The readiness of the foreign student accepting the norms of the new society and meet the requirements of the immediate social environment at the University and beyond it.

Student's neuro-psychiatric instability

The “Self-acceptance” indicator reflects a positive level of friendliness and a negative level in relation to one's own “identity” of the foreign student, compared to the personal feelings of the Russian students (Toom et al., 2017). This indicator determines the degree of stress tolerance of the foreign student and their ability regulating their behavior in the first half of the day during the academic classes (Maurer, 2006) and in the second half of the day during leisure activities (Carpenter, 2019; Elliot, Devine, 1994). It should be noted that psychological-adaptive adaptabilities are determined based only on a holistic assessment of neuro-psychiatric stability through monitoring the level of their behavioral regulation (Avdeeva, Tulyakova, 2018; Merckelbach, Merten, 2012; Rogers, Dymond, 1978).

The “Acceptance of others” indicator reflects a positive degree of friendliness and a negative degree of hostility (Elliot, Devine, 1994; Rogers, Dymond, 1978) among the foreign students to other students in the group, at the faculty, at the University and in the dormitory (Kalman, Lattery, 2019). On the one hand, the diagnostic procedures for this indicator allow us identifying at what level the foreign student feels like in terms of the self-esteem and stability (Carpenter, 2019; Toom et al., 2017), and on the other hand, the need for positive or negative approval by the Russian students. This indicator reliably demonstrates the ability of a person to creatively and actively adapt to the educational and extracurricular environment of the pedagogical process (Burke et al., 2017; Olefir et al., 2019; Schmeichel et al., 2003).

The “Challenge” indicator allows you determining the degree of the student's conviction that everything that happens to them contributes to their formation as a person due to the knowledge, skills and abilities derived from the pedagogical experience (Toom et al., 2017), on the one hand, a positive experience and on the other, negative one (Klassen, Tze, 2014). Performing a diagnostic procedure on this indicator shows the level of acceptance of the surrounding educational environment as the main way acquiring the professional experience, readiness for active activity (Metzger et al., 2020), despite the lack of reliable guarantees of the success (Hammerness, Klette, 2015). Besides, the monitoring shows the activity degree of the student on the principle of "at your

own risk", considering the desire for simple comfort and safety as a factor of reducing pleasure (Merckelbach, Merten, 2012) and the harmony of the implementation of professional training of the future teacher. The diagnostic procedure is based on an analysis of the level of students' acceptance of the individual risk of unrealisation of their future professional activities (Corcoran, O'Flaherty, 2017).

The emotional discomfort of the student

The "Internality" indicator shows at what level the foreign student feels like an active object of their own academic and extracurricular activities, and at what level they feel like a passive object of the actions of other students (Carkenord, Bullington, 1993) in micro and macro groups and external circumstances (Elliot, Devine, 1994). This indicator reflects the predominance of positive or negative emotions in the educational process, as well as in the everyday life of the foreign students. Moreover, the diagnostic procedures reliably represent the student's level of confidence that the considerable activity can influence the outcome of what is happening (Schmeichel et al., 2003). Even if this activity may affect a small number of the subjects of the educational process (Maurer, 2006; Melki et al., 2018) and despite the fact that the success and results are not guaranteed (Shawer, 2017). As a negative side of the personality, this indicator can diagnose the feeling of individual helplessness of the foreign student. Such a student with a highly developed indicator may feel that he chooses his own activity and his most effective educational trajectory (Carkenord, Bullington, 1993).

The "Resilience" indicator allows you analyzing the foreign student's system of beliefs about themselves, the world, and their relationship to them as an individual (Carpenter, 2019), which allow them to withstand and effectively overcome stressful situations in the course of academic and extracurricular activities (Klassen, Tze, 2014). Besides, the diagnostics shows the individual characteristics of the student's resilience clearly according to the levels of stress tests (Kalman, Lattery, 2019). Also, the monitoring of this indicator shows the indicative models of measures increasing the resilience in the educational environment of the Pedagogical Institute (Avdeeva, Tulyakova, 2018).

The "Commitment" indicator allows you determining the degree of conviction of the foreign student in the degree of their involvement in various areas of the environment (Toom et al., 2017). As far as he has the maximum or minimum chance to find what is really necessary for him (Maddi, 2006) and interesting activity for his personal formation (Festinger, 1995). This indicator reveals the development level of involvement from getting the pleasure from the individual educational and extracurricular activities to the lack of such conviction, which in some cases can give a rise to a sense of negativity within the micro or macro academic group, as well as a sense of being rejected as a person (Baier et al., 2019). Monitoring this indicator to some extent allows you determining the degree of self-confidence of the foreign student and whether the personal self-esteem corresponds to the opinion of other students (Carkenord, Bullington, 1993).

All the indicators presented above and diagnostic procedures adapted for their monitoring are intended for the students from 16 years old without any restrictions on educational, social and professional characteristics. Each diagnostic procedure, depending on the severity of the corresponding characteristic, differentiates the students into three levels: high, medium and low. The proposed personal characteristics each of which includes a system of indicator values form an integral system for monitoring the cognitive dissonance state at the levels of the students of the higher educational organization of the pedagogical specialty. It should be noted that when formulating the final conclusions of the study after the implementation of the diagnostic procedures for the indicators presented above, the obtained high-level indicators show the opposite result when diagnosing the cognitive dissonance. Namely, the manifestation of a low state of the cognitive dissonance of the student, as a positive or harmonious state, corresponds to the high levels of the indicators presented above. In turn, the manifestation of a high state of the cognitive dissonance of the student, as a negative or disharmonic state, corresponds to the low levels of the indicators presented above.

The low level of the cognitive dissonance corresponds to the high adaptability of the student existing in the educational environment of the University in accordance with the requirements of the academic society (Maurer, 2006; Merckelbach, Merten, 2012). Some students in this category have a high level of determinism in their emotional attitude to the current reality (Goldberg, Grandey, 2007; Rogers, Dymond, 1978), surrounding the objects and phenomena in the process of

educational and extracurricular activities (Carpenter, 2019; Festinger, 1995). The student with a low level of the cognitive dissonance has a high self-esteem and a degree of satisfaction with their individual characteristics of the personality (Elliot, Devine, 1994). Moreover, the foreign students of this category have a high motivation and need communicating with the Russian students, in co-education and extracurricular activities.

The medium level of the cognitive dissonance is manifested among the students with a low or medium level of fitness to implement the professional training in a new environment. For this contingent, due to the lack of compliance of their own needs, motives and interests on the one hand (Burke et al., 2017; Carpenter, 2019) and these same characteristics of other students on the other hand, there is uncertainty of the expression of emotions to social reality (Metzger et al., 2020). Besides, the students show low or medium self-confidence in learning success and a degree of satisfaction with their individual qualities and abilities (Carkenord, Bullington, 1993; Elliot, Devine, 1994; Rogers, Dymond, 1978). Also, the foreign students of this category have a low or medium need for interaction and communication in the academic group and at the faculty and do not seek implementing the group educational and extracurricular activities.

A high level of the cognitive dissonance is manifested among the students who have a high degree of dissatisfaction with their individual's personal traits and individual national and regional characteristics (Festinger, 1995; Maurer, 2006). They are actively moving away from the interaction with the academic group, from team and social activities (Kalman, Lattery, 2019; Rogers, Dymond, 1978). This group of the students shows immaturity of personality, disharmony in the sphere of decision-making and failure in the learning process (Burke et al., 2017). These students clearly feel insecure, depressed and lethargic about the surrounding educational environment (Schmeichel et al., 2003) absolute inactivity in the process of academic and extracurricular activities at the University.

Statistical analysis

The results of the study were processed using the Statistical Program SPSS Statistics 20. The significance of differences of the results was determined using the Chi-squared (X^2) by $p < 0.01$ and $p < 0.05$. Statistical analysis was performed between the indicators of the experimental and control groups for each indicator and indicator proposed in the study. The choice of this criterion for the statistical analysis is determined by the following characteristics: it allows you comparing the distributions regardless of whether they are distributed normally or not, as well as regardless of the different number of the respondents in the focus groups. The criterion can be applied when the results of the focus groups are divided into more than two categories, in our case (high, medium and low), in accordance with the state of the indicator being studied.

Study participants

The foreign second-year students studying for bachelor's degree programme on Education and Pedagogical Sciences ($n = 149$). These students came to study at the Glazov State Pedagogical Institute (Udmurt Republic) and Siberian Federal University (Krasnoyarsk Region) from Turkmenistan, Tajikistan and Kazakhstan. In the preliminary section before the experiment, the foreign students were diagnosed with their level of the cognitive dissonance at the end of their first year (June 2018). As a result, a sample of the students was formed ($n = 104$) who had a medium or high level of the cognitive dissonance. Some students with the indicators corresponding to a low level of the cognitive dissonance were excluded from the experimental process.

Research organization

The study was implemented from September 2018 to July 2019 (full academic year). The students from Turkmenistan, Tajikistan and Kazakhstan were actively involved in the extracurricular activities of the Pedagogical Institute, in addition to the implementation of the educational process in the first half of the day. Under the terms of the experimental work, these students were offered to attend the Pedagogical Institute during their extracurricular time and actively participate in the social and educational activities that were implemented at the Institute. The extracurricular activities submitted a set of key areas at the Pedagogical Institute: the center of the student initiatives, student scientific society, student self-government, and the center of leisure and creativity of the students, student athletic & fitness club, division of the student pedagogical teams. In turn, each area of the extracurricular activities at the Pedagogical Institute was differentiated into different types and forms of the educational, upbringing and scientific activities (Figure 1)

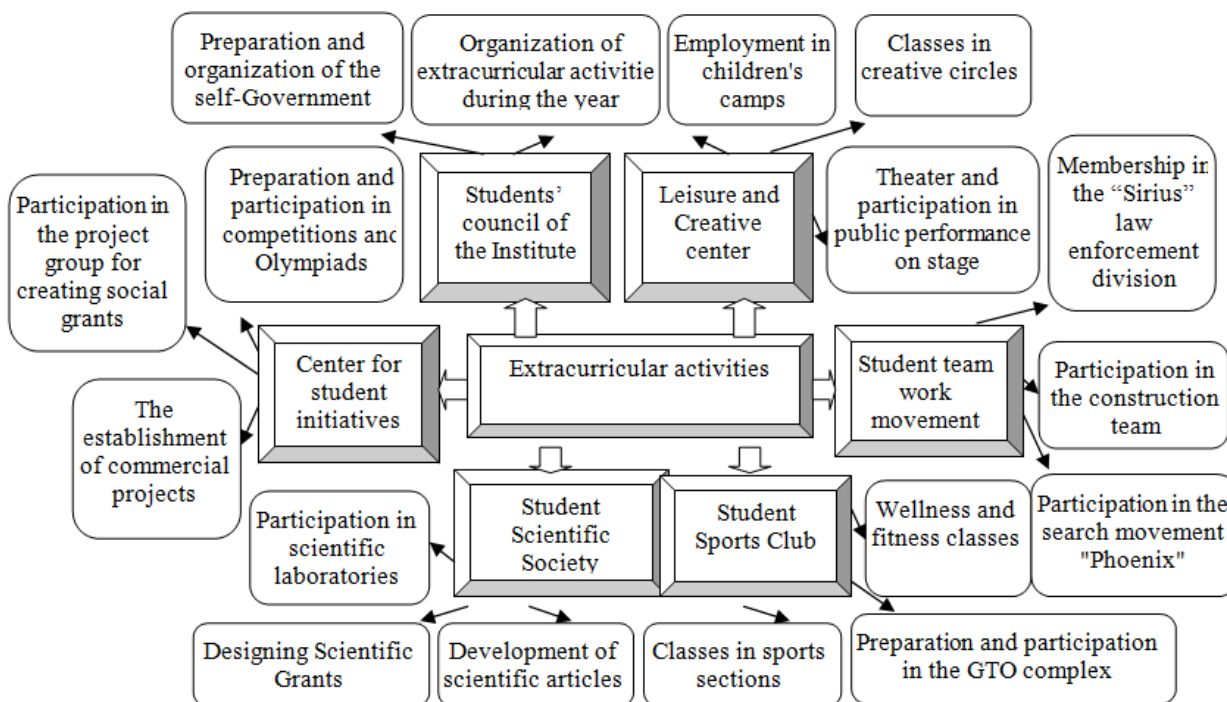


Fig. 1. The model of extracurricular activities at the Pedagogical University

At the first stage of the study, from September 2018 to January 2019 (fall semester of the school year), the foreign students of the experimental sample, at their request, engaged in social and educational activities in various areas of the extracurricular environment of the Pedagogical Institute. Some students from Turkmenistan, Tajikistan and Kazakhstan were actively involved in various areas presented in the model of the extracurricular activities at the Pedagogical Institute (Figure 1). Nevertheless, a part of the foreign students joined passively or did not join at all to some extracurricular activities in this period of the school year. This happened due to the fact that some of these students were not motivated, and some could not independently choose for themselves the direction of their extracurricular activities.

At the second stage of the study, from February 2019 to July 2019 (the spring semester of the school year), some foreign students of the experimental sample engaged in social and educational activities in various areas of the extracurricular environment of the Pedagogical Institute, as well as with the help of the author's recommendations. The author's recommendations were compiled on the basis of the analysis recorded before the experiment of level indicators of the cognitive dissonance among the foreign students and the development of the author's individual-differentiated trajectory of the implementation of the extracurricular activities at the Pedagogical Institute (Figure 2).

The individually-differentiated trajectory is proposed for the implementation of the extracurricular activities (Figure 2). This trajectory is designed for some students from Turkmenistan, Tajikistan and Kazakhstan who have a high or medium level of the cognitive dissonance recorded before starting the experimental work. However, in the experimental sample not all students were actively involved in the extracurricular activities during the school year. Despite the author's recommendations in the second half of the experiment, these students passively participated in the educational and social activities of the Pedagogical Institute in the second half of the school day or did not participate at all. From this contingent of the experimental sample of the foreign students, a control group was formed, then CG (n = 46). Moreover, the foreign students who actively participated in the experiment on their own and on the basis of the author's individually-differentiated trajectory for the implementation of the extracurricular activities were included in the experimental group, then EG (n = 58).

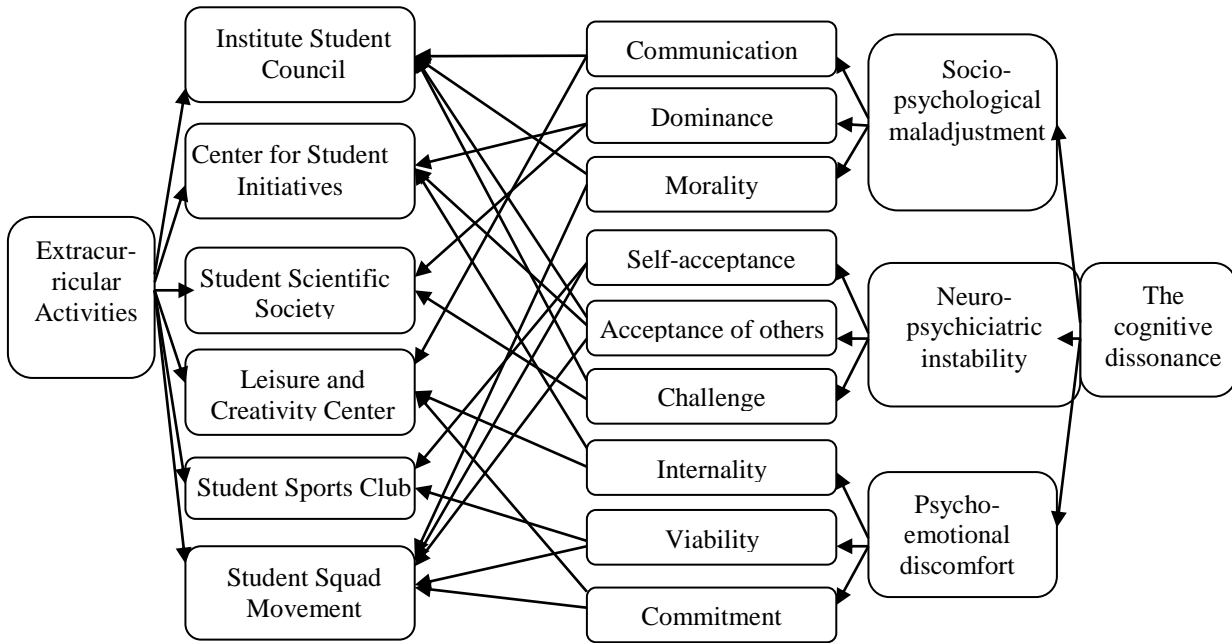


Fig. 2. Model of individually-differentiated trajectory for the implementation of the extracurricular activities for the foreign students at the Pedagogical Institute

Thus, on the basis of an individual desire to participate in the experiment of each foreign student of the experimental sample, two groups were formed: the EG from foreign students actively participating in the extracurricular life of the institute, and the CG from foreign students who refused to take part in the extracurricular activities of the institute.

3. Results

After the implementation of the experimental work (July 2019), a second diagnosis was carried out to identify the levels of the cognitive dissonance of the foreign students of the EG and CG. These groups were not equal in the number of participants in them. In this regard, the amount was converted to percent (%) obtaining a more reliable result. It should be noted that in the preliminary diagnostics implemented before the experiment, these students had only two levels of the cognitive dissonance: high and medium. Statistical analysis of the results at the X² method that were found in the EG and CG before the experiment showed an insignificant significance of the results for each indicator at $p > 0.05$ with the degree of freedom (df) = 1. X²_{emp} before the experimental work was 2.088 ± 1.247 for all indicators. This value is less than X²_{cr} (0.05). This confirms that these two groups were statistically equal before the experiment. After the end of the experiment, the implementation of the diagnostic procedures showed the following data (%) of the students by the indicators levels of the social and psychological maladaptation of the student (Table 1):

Based on the statistical analysis data in comparing the EG and the CG after experimental work, the effectiveness of the study was revealed. The experiment had a significant effect ($p < 0.01$) to a greater extent on the foreign students increasing their communication skills. To a lesser extent ($p < 0.05$), the impact is fixed on their moral attitudes in the new educational environment. However, the implementation of the experimental work reliably ($p > 0.05$) did not affect the increase in the number of the foreign students with the dominant positions in interaction with other students.

Table 1. The experiment results identifying the students (%) by the levels according to the indicators of their socio-psychological maladjustment:

Levels	Communication		Dominance		Morality	
	EG	CG	EG	CG	EG	CG
High	71	48	62	57	36	20
Medium	29	41	38	43	60	72
Low	0	11			4	8
df	2		1		2	
X2emp	17.504 > X2cr(0.01)		0.332 < X2cr(0.05)		X2cr(0.01) > 6.996 > X2cr(0.05)	
P	< 0.01		> 0.05		< 0.05	

According to the following indicator “Neuro-psychiatric instability” after the end of the experiment, the implementation of the diagnostic procedures showed the following data (%) of the students by the levels and by each indicator (Table 2):

Table 2. The experiment results identifying the students (%) by their levels according to the indicators of their neuro-psychiatric instability:

Levels	Self-acceptance		Acceptance of others		Challenge	
	EG	CG	EG	CG	EG	CG
High	67	57	79	56	34	22
Medium	33	43	21	33	64	59
Low			0	11	2	9
df	1		2		2	
X2emp	1.72 < X2cr(0.05)		17.584 > X2cr(0.01)		X2cr(0.01) > 6.722 > X2cr(0.05)	
P	p > 0.05		p < 0.01		p < 0.05	

The implementation of the statistical analysis of the obtained comparative data of the EG and the CG in terms of the “Neuro-psychiatric instability” indicator showed the significant effectiveness of the impact of the extracurricular activities of the foreign students. After the experiment, the number of the foreign students significantly increased ($p < 0.01$), able to perceive the values of the Russian students internally and externally. And also a statistically significant ($p < 0.05$) increase of the number of the students who have a high degree of conviction in the importance of the new educational environment for forming them as a person through the knowledge, abilities, learned from the pedagogical experience. However, the implementation of the experimental work statistically valid ($p > 0.05$) did not affect the increase in the number of the foreign students with dominant positions in interaction with other students. The experiment did not have a significantly considerable influence on the increasing number of the students who can positively perceive their own “Myself” in a new professional environment.

According to the last of the measured indicators “Psycho-emotional discomfort” after the implementation of the experimental work and the final diagnostic procedures, the following data (%) of the students for each indicator were revealed (Table 3):

The obtained statistical data of the diagnostic procedures for the indicator “Psycho-emotional discomfort” revealed a significant positive effect after the experiment. Statistically significant ($p < 0.05$) the number of the foreign students with a high and medium level of internality and motivated to perceive a new culture and social beliefs was increased. After the experiment, an unreliable ($p > 0.05$), but a visible increase was recorded in the number of the foreign students with a high level of vitality in the new educational and upbringing environment of the Russian higher education.

Table 3. The results of the experiment to identify the students (%) by the levels according to the indicators of their psycho-emotional discomfort:

Levels	Internality		Viability		Commitment	
	EG	CG	EG	CG	EG	CG
High	74	57	64	55	38	26
Medium	26	43	36	45	60	65
Low					2	9
df	1		1		2	
X2emp	X2cr(0.01) > 5.664 > X2cr(0.05)		1.328 < X2cr(0.05)		X2cr(0.01) > 6.904 > X2cr(0.05)	
P	p < 0.05		p > 0.05		p < 0.05	

4. Discussion

The results obtained are consistent with a number of the research works that prove that the training of a future teacher should be carried out not only on the basis of academic studies (Kalman, Lattery, 2019; Klassen, Tze, 2014) and educational or industrial practice (Corcoran, O'Flaherty, 2017; Hammerness, Klette, 2015; Melki et al., 2018). The full process of the formation of a teacher should be accompanied by an immersion in the educational and social environment of the institution of each student (Stepanchenko, Briskin, 2019; Shawer, 2017; Toom et al., 2017), especially those students who are included not only in the higher education system, but also in general in the new culture of the state. Only the active extracurricular activities of such a student, in the context of our study, the student of the Russian University who came studying from another country, it will allow him to become a competent, harmoniously and comprehensively developed young specialist for the system of secondary and additional education. As the results of this study showed, it was the active, goal-oriented activity of the foreign students in the development of a multifaceted extra-curricular environment that allowed us to obtain the positive dynamics of their adaptation and socialization reliably to the Russian University.

The revealed indicator characteristics of the state of the cognitive dissonance that the student experiences when immersed in a new educational environment presented in this study complement the theoretical and practical studies of the Russian and foreign scientists (Baier et al., 2019; Carpenter, 2019; Nagovitsyn et al., 2018; Schmeichel et al., 2003). While substantiating this state of the socio-psychological adaptation of a person (Burke et al., 2017; Carkenord, Bullington, 1993; Olefir et al., 2019), some scientists give the main emphasis in substantiating this state; some researchers determine the level of the psychological stability of the youth (Carpenter, 2019; Rostovtseva et al., 2018). However, in the presented study, an attempt was made to combine the presented states synergistically and add another important component in understanding the state of the cognitive dissonance. It is the psycho-emotional comfort of the student in the positive vector (Carpenter, 2019) and the psycho-emotional discomfort from the negative side that can systemically supplement the content of the cognitive dissonance (Goldberg, Grandey, 2007; Klassen, Tze, 2014). Due to the detailed differentiation of each state indicator of the cognitive disability from the psycho-emotional comfort to the socio-psychological adaptation and neuro-psychiatric instability according to some indicators, the study obtained statistically valid ($p < 0.01$, $p < 0.05$), versatile and systemically substantiated results.

The study obtained the results of the inefficiency of the extracurricular activities of the students using the author's individual route. Despite the individualization of the active immersion of some foreign students in the educational and social environment of the Pedagogical Institute, inefficiency is revealed by some indicators. The indicators "Domination", "Self-acceptance", "Resilience" received not reliable results on increasing the number of the students with a low level of the cognitive dissonance. These data are consistent with the results of other experimental studies (Carpenter, 2019; Hammerness, Klette, 2015). The scientists have proven (Carkenord, Bullington, 1993; Goldberg, Grandey, 2007) that external exposure to the students changing the student's belief system about themselves, the world, and their relationship as an individual requires a longer experimental period (Kalman, Lattery, 2019). In turn, a change in one's attitude to individual values, an adjustment in self-acceptance of one's own "Myself" requires deeper motivational and value-based (Carkenord, Bullington, 1993) and psychological studies (Merckelbach, Merten, 2012; Rogers, Dymond, 1978),

which go beyond scope of this study. This circumstance is oriented toward the continuation of the research work on the study of the cognitive dissonance in these statistically unreliable areas.

Limitations

The presented scientific work was limited to a sample of the foreign students from the Glazov State Pedagogical Institute and Siberian Federal University who entered the Pedagogical Institute according to bachelor's degree programs on pedagogical specialties. In this regard, the number of the study participants was heterogeneous in size in each experimental sample. The foreign students of the experimental group, when implementing their occupational training outside the classroom, used the author's experimental, individually-differentiated program based on the preliminary observation, implemented before the experiment. In turn, the foreign students of the control group used a standard model of the occupational training focused on the educational activities of the learning process only during the academic studies and educational practice. This model is common for the system of higher educational institutions of the Russian Federation for the preparation of the bachelors on teacher training education. The obtained experimental sample of some foreign students does not make it possible to cover the entire target audience, since the study was conducted at only two universities. In accordance with this, the results can be determined as preliminary, and for further more detailed analysis it is necessary conducting a comparative analysis of several higher educational institutions of the others Russian regions. A larger sample of the students will provide more diverse information on this subject.

Future scope of the work

The results of the experiment will be of interest to a wide range of the students and specialists in the field of pedagogical science, as well as to the teachers and administrative staff of some faculties and universities of other non-pedagogical spheres. The author's recommendations on the implementation of the diagnostic procedures for monitoring the state of the cognitive dissonance among the students will allow holistically realizing the adaptation and socialization of the students of different contingents to the new educational environment which ultimately can help increasing the students' motivation to set individual goals in the field of improving the professional results. Some further research will be aimed at studying the influence of the various states of the cognitive dissonance among the students on their success in academic studies and the formation of the competencies set according to the standard and curriculum of the university. This direction is especially relevant for the further development, in connection with the activation of this problem in the scientific works (Goldberg, Grandey, 2007; Maddi et al., 2012; Maurer, 2006). Moreover, the future experimental research will cover a large sample of the students with various individual gender, social and age characteristics, as well as the psychological and physiological characteristics and training needs.

5. Conclusion

Thus, the introduction of individually differentiated technologies in the professional training of the future teachers contributes to the fact that some methods and approaches in the pedagogy of cooperation and intercultural interaction should be improved and mobilized in the multicultural environment of the university. In the context of integration processes in the system of higher education in Russia, they should be focused on the search for more effective, efficient ways of the transformation, development, thanks to the modern introduction of innovations in the process of training the young specialist. The implementation of the extracurricular activities of the students in all its diversity and multifaceted, is especially important for improving the system of the modern teacher education. However, the influence of innovations requires the development of the deep theoretical and practical base, which, in its turn, will be the object of the further scientific research, and organizational and managerial decisions.

The obtained statistically significant results for six ($p < 0.01$, $p < 0.05$) of nine indicators allow us to conclude that there is a statistically significant pattern in the implementation of the professional training of the foreign students in Russian higher education. The environment of the Russian Pedagogical Institute into which the student is immersed from the Near Abroad should contain two of its main synergistically related components: educational and extracurricular. Only with experimentally substantiated mentoring or tutoring activities of the teachers to orient the foreign students and help in choosing their individual direction or trajectory of their extracurricular activities, a positive result is possible. A harmoniously developed foreign student, not only with the educational component, but also with the social and cultural direction, will

become a worthy young teacher in his homeland who will correctly and consciously understand the Russian society, Russian culture and some Russian individual.

Declaration of conflicting interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and publication of this article.

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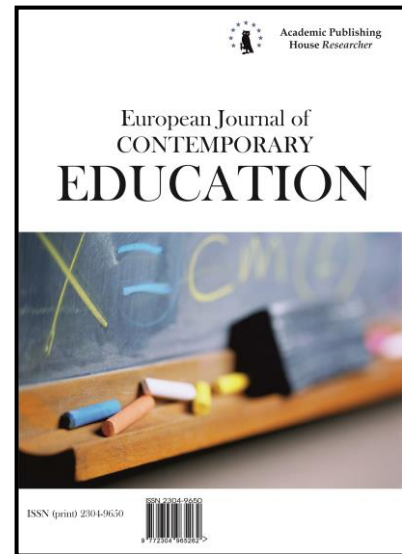
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Addiction Levels Toward the Internet: Empirical Evidence in College Students at Instituto Tecnológico De Sonora, México

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Abstract

The purpose of the study focused on determining the level of internet addiction in university students and whether this differs by gender. Participants were 463 students who, at the time of applying the survey, were taking any of the school semesters in the different academic offerings at ITSON. The instrument used for the field work was Young's IAT scale (1998) and the statistical procedure for the measurement of data that allowed identifying the variance of the study phenomenon was exploratory factor analysis with Polychoric correlation matrices and ANOVA for gender difference contrast.

The main findings point to the identification of a factorial structure of four factors that explain 50.35 % of the variance, in addition the highest percentage of cases that measure the level of internet addiction, was in the mild and moderate range. Finally, it was shown that there is no gender difference in addiction.

The authors can point out that, because the participants were university students, this can be beneficial, since the institution where these young people study has the power to generate strategies aimed at preventing internet addiction. As an example of this, General training courses can include activities to develop a culture of proper use of the internet, taking advantage of the resource without making excessive use of it. Implementing strategies to prevent addiction, as well as programs to recover from an internet addiction, in themselves are projects that can be developed by the students themselves with the guidance of professionals on the subject.

Keywords: Internet, addiction, ICT, net-users.

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1. Introduction

The advancement of Information and Communication Technologies (ICT), with the increase of electronic devices with screens, has transformed, not only communication, education and entertainment, but also individual and social behavior. Nowadays, it is common for students to complete their school assignments on laptops, with multiple windows open. Simultaneously they are chatting with friends via instant messaging, looking for information for their tasks, interacting on social networks, playing games, dating, or harassing others, among other activities (Rich et al., 2017).

The internet provides young people with a way to get rid of the frustration caused by pressure from parents, the school environment, friends and acquaintances. Also, the internet becomes an escape from responsibilities that increase with age. However, emotional distance is gradually increased and with it the communication in real life, affecting social and personality formation (Neverkovich et al., 2018).

Although the internet brings multiple benefits, there are also individuals who exhibit addictive behaviors and this is generating concern in government agencies and associations focused on physical and mental health. Addiction seems to be increasing in recent years; including different types of excessive behaviors and not just substance abuse (Kuss, Pontes, 2018).

The term addiction refers to the excessive use of a substance or extreme participation in behavior. On the other hand, clinically it can mean loss of control and deterioration in function. Research and clinical experiences suggest that extreme behaviors can cause significant problems, regardless of activity. Furthermore, as the frequency and duration of the behaviors increase, psychological distress, decreased social, financial and occupational functioning, and even physical deterioration can be generated (Petry, 2016; Sussman, 2017).

A group of so-called drug-free or behavioral addictions has emerged in recent decades. This classification includes pathological gambling, compulsive shopping, addictions to technologies (television, internet, social networks, video games), addiction to work, sex and relationships, obsession with healthy food and physical training syndrome. These types of addictions share characteristics with addictions to substances, such as desire, dependence, tolerance and withdrawal. However, some of these drug or behavioral addictions are controversial and are considered normal, though with extreme behavior (Marazziti et al., 2016; Bisen, Deshpande, 2018; Sussman, 2017).

In behavioral addictions, both impulsive and compulsive behaviors are important precursors. Impulsiveness often occurs at the onset of addiction, while compulsive behavior contributes to its permanence (Cuzen, Stein, 2014).

Today ICTs make individuals more vulnerable to different types of addictions. Using the internet for hours encourages behavioral addictions such as online games, compulsive shopping and cybersex, among others. In contrast, interventions to eliminate an addiction can also be accessed through the internet. For this reason, Suresh and Deshpande (2018) affirm that the internet contributes positively and negatively to behavioral disorders, such as behavioral addictions.

Internet addiction is difficult to identify because the use of the web offers multiple benefits. It is common to use the internet to communicate, make commercial transactions, get information, among others. In contrast, addiction to alcohol and other chemical substances does not provide benefits nor are they necessary resources for personal or professional life, and they do not promote health. Consequently, signs of internet addiction can be hidden or justified as a necessary activity (Young, 2017a).

Some addiction specialists point out that the excessive use of video games, social networks and other activities that are carried out while connected to the internet can affect the brain in the same way that the use of narcotics or alcohol does. However, they also point out that overuse of technology is generally associated with an underlying condition, such as anxiety, depression, or attention deficit disorder (Ladika, 2018; Courtwright, 2019).

In this regard, the Information Resources Management Association (IRMA) points out that addiction to technological devices, the internet, social networks and virtual communities can cause mental health problems. These include low self-esteem, feelings of inadequacy, depression, and anxiety. In turn, there are physical problems such as dry eyes, carpal tunnel syndrome, back pain, neck pain, severe headaches, irregularities in meals, and sleep disorders (IRMA, 2019; Rokkum et al., 2018).

ICT addiction has been defined or conceptualized in different ways. However, in all of them the excessive and problematic use of the internet is considered. When the internet constitutes the main activity in the daily life of an addicted individual, this causes anguish and loss of control, affecting health and personal and social well-being (Lopez-Fernandez, 2019). Moreover, Khan (2018) points out that this addictive practice should be classified as a psychological disorder.

It is necessary to distinguish between internet addiction and excessive use. Online hobbies, professional and academic commitments are generally a part of life, even if one spends too much time on them. However, to be considered an addiction, the activity must limit life by interfering with daily activities and general functioning (Kuss, Pontes, 2018; Wallace, 2014).

Many of the explanations of addiction as a disease mention the individual's loss of self-control. A primary aspect in today's society is the proliferation of hedonism and the conception that all people have the right to pleasure makes it difficult to maintain self-control. Furthermore, modern cultures, where immediate gratification is available in multiple ways through ICT, contribute to extreme behaviors (Reinarman, Granfield, 2015).

In the past 60 years, sociology has investigated addiction. Finding that addictive behaviors are often the product of psychological, economic, political, social and cultural factors. Therefore, to modify an addictive behavior, the conditions from which it arose must be changed (Hammersley, 2018). Behavioral addiction is a fact that must be faced through preventive, therapeutic and research programs.

Internet addiction is a subsequent step to abusive use, based on the frequency of use and mainly on the change in lifestyle habits. The advancement of ICT with the possibility of connection anywhere and at any time turns digital devices into powerful reinforcers that promote addiction (García, 2013).

It is therefore essential to identify internet addiction in young people as a first step in order to modify the conditions that contribute to that behavior. Preliminary to the literature review, they are established as questions: Is there internet addiction in higher education students in Sonora? Are there gender differences in levels of internet addiction?

2. Discussion

Internet addiction depends on many factors. In each specific case there is a unique combination of inherited characteristics (structure of the nervous tissue, secretion, degradation and reception of neuromodulators) and extra-environmental factors such as those related to the family, social and ethno-cultural (Tereshchenko, Kasparov, 2019).

A meta-analysis of 70 studies conducted in China that included 68,964 participants, the relationship between internet overuse, well-being, life satisfaction, positive or negative emotions, geographic location, age, and gender was investigated. The findings show that students with excessive use of the internet presented more negative emotions, manifested less well-being, less satisfaction in life and fewer positive emotions. A moderate link was found between Internet overuse and geographic location, age, and gender. On the other hand, it was determined that the relationship between excessive use of the internet with well-being and positive emotions is stronger in younger students than in university students.

Also, the negative relationship between well-being, life satisfaction and positive emotions is stronger where the samples have a greater number of women (Lei et al., 2019). The effect on cognitive performance of people with Internet use problems was studied by Ioannidis, Hook, Goudriaan, Vlies, Fineberg, Grant and Chamberlain (2019). A meta-analysis was performed with 40 studies published from 1995 to 2017, which included a total of 2,922 participants. The findings point to a significant deterioration in inhibitory control. In turn, a decrease was found in various neuropsychological domains regardless of the participant's geographical location, supporting the intercultural and biological validity of the finding. Also, a common neurobiological vulnerability in behaviors was determined for any excessive use that occurs on the internet.

In Spain, Colombia and the United States, an investigation was carried out with university students comparing the perception of young people's Internet use problems. The works that were included are within the period from 2006 to 2017. The results indicated that internet use is perceived as a growing problem. However, it has stabilized in recent years, possibly due to the normalization and integration of new technologies into daily life. Social media motivated the increase in the negative perception of internet use according to the reviewed works. On the other

hand, the use of the internet is different between women and men, the former being the ones that perceive a greater negative impact (Carbonell et al., 2018).

In a study carried out in Spanish-speaking countries, four scales were applied through the internet to 1,276 people of different ages. The results indicated a high frequency (50 %) of problems due to use and excessive immersion in ICT. This is related to behavioral disorders, emotional and social difficulties that are reflected in the activities of daily life. In addition, there are symptoms that can trigger mental health problems, as well as increase stress levels (Pedrero-Pérez et al., 2018).

In the city of Austin, in the United States, government entities evaluated the technological integration of the population. The objective was to determine how ICTs are related in the mobilization of information to achieve life goals through competence in the use of technology and dependence on them. In the investigation, four scales were applied to evaluate the constructs technological dependence, technological competence, self-efficacy in obtaining information and confidence in the sources of information. Also, the number of years using technology and sociodemographic characteristics was used as control variables.

This study has been carried out every three years since 2011. The sample consisted of 997 people over the age of 18 who agreed to participate and provided the information. The restrictions indicated that only one person per family could participate. The findings indicated that there are multiple factors involved. Some forms of dependency were found towards certain uses of technology that can negatively influence technological competence. In addition, it was found that technological dependence can decrease the positive influence of technological competence on the self-efficacy of information acquisition. Regarding confidence in online information sources, it was determined that greater competence predicts less confidence in online information, in contrast, greater confidence leads to greater dependence (Park et al., 2019).

In the Basque Country, in Spain, a scale was created to identify the risk of adolescents to addiction to the internet and social networks. 2417 adolescents between 12 and 17 years of age participated in the research. The instrument consisted of 29 items and four dimensions were formed by exploratory factor analysis. The internal consistency of the scale measured with Cronbach's alpha was .90 and the test-retest correlations ranged from $r = .76$ to $r = .88$, where the temporal stability of the test is manifested. The factors that explained 46.48 % of the variance were symptoms-addiction, social-use, geek-features and nomophobia. Also, they found positive correlations between addiction to social networks and the internet with neuroticism, extraversion, disinhibition, narcissism, social anxiety and anxious attachment style; and negative correlations with self-esteem and confident attachment (Peris et al., 2018).

To identify addiction to internet use Young (1998) developed an 8-question questionnaire adapted from the pathological gambling criteria defined by the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition (DSM-IV). The scale also included sociodemographic questions to identify characteristics of the participants. The survey was applied nationally in the United States by telephone (to those who responded to advertisements published in newspapers and to advertising in different schools) and through the internet (in support groups of internet addicts and to those who were searching for the words “Internet addiction”).

596 valid surveys were obtained in three months, of which 396 were determined to be addicted to the internet, by answering yes to five or more of the questions. The results indicated that internet addicts were new to the internet, therefore they express that it is possible that new internet users have a higher risk of developing addictive behaviors with the internet. Subsequently, Young (2017b) modified the scale and constructed a 20-item questionnaire called the Internet Addiction Test (IAT).

Internet addiction and its relationship with economic indicators was studied in nine countries involving 3,279 people. Young's scale (2017b) on internet addiction was used and each country was characterized with social and economic indicators. The results showed a positive correlation with economic well-being, social progress, and human development. On the other hand, a negative correlation was found with human well-being, health, protection and security (Blachnio et al., 2019).

An investigation was carried out in Turkey to determine the validity and the internal reliability coefficient of the Young's scale (2017b). 480 children between 12 and 17 years of age participated in the research. The results indicated that the coefficients obtained are in ranges and appropriate. Furthermore, it was found that the items were grouped into four factors. The factors

were identified as difficulty in having control, social isolation, feelings of deprivation and rejection of daily tasks (Keser et al., 2013).

In South Korea, work was carried out to understand internet addiction and its relationship with the personal characteristics of each individual, variables about school and family, and the environment. The work involved 1,628 adolescents from 56 regions of Seoul and Gyeonggi-do, representing urban and rural districts. The scales that were applied included Young's (2017b) addiction to the internet, of psychological variables, family and school factors, perceived characteristics of the internet, environmental factors (accessibility to cyber cafes and exposure to game advertisements). The results showed that 72 % of the participants had a moderate or severe internet addiction.

On the other hand, environmental factors had a greater influence than family and school factors. In turn, participants with internet addiction started using it at an earlier age, had higher levels of depression, compulsiveness, aggressiveness, less family cohesion, greater access to cyber cafes and high exposure to game advertisements. Regarding the characteristics of the internet that are associated with internet addiction, high levels were obtained in the factors of entertainment, anonymity and interpersonal relationships (Chung et al., 2019).

In the Mexican context, Young's scale (2017b) was applied to compare the degree of internet addiction among university students. The participants were 66 students from the National Polytechnic Institute in Mexico City and 58 students from the Autonomous University of the state of Nayarit. In the results, it was determined that there was a difference in the means, being more representative that of the National Polytechnic Institute (Ruiz et al., 2017).

Due to the arguments previously presented, a question is posed in the following terms: What is the level of internet addiction of university students? Thus, the objective of the study is to determine if there is internet addiction in university students and if it is possible to identify a set of latent variables that can explain the phenomenon. Therefore, the following hypotheses are defined: H_{i1} . University students manifest levels of internet addiction; H_{i2} . There is a set of latent variables underlying the explanation of internet addiction and H_{i3} . The level of internet addiction differs by gender.

Methodology

The study is of non-experimental design since manipulation of the variables and cross-sectional is not performed because the data collection is carried out in a single moment. The analysis will be exploratory, descriptive and explanatory.

Participants

The participants are university students from the Technological Institute of Sonora in Mexico, who were enrolled in the August-December term of 2019. The selection of the students was non-probabilistic. In total, there were 463 participants where 69 % were men and 31 % women. At the time of the survey application, 47 % were in the first semester, 29 % in the third, 9 % in the fifth and 15 % remaining in other semesters.

Regarding the educational programs, participants from Mechatronics, Civil, Chemistry, Environmental Sciences, Industrial, Software, Electromechanical, Biosystems, Electronics, Manufacturing, Biotechnology, and Bachelor's degrees in Economics and Finance and Public Accounting were surveyed.

Instrument

Young's Internet Addiction Test (I (1998) was used. It consists of 20 items which measure characteristics and behaviors associated with compulsive internet use. The questionnaire includes compulsiveness, evasion and dependency. The questions also evaluate problems caused by the use of the internet with personal, occupational and social functioning. The scale is Likert type with values from 1 (least extreme behavior) to 5 (most extreme behavior) for each question.

In addition, the IAT evaluates the score obtained from Young's (1998) proposal, according to the score obtained, it classifies the level of internet use: A normal level of internet use places it from 0 to 30 points, a slight level of 31 at 49 points, moderate level from 50 to 79, and severe dependency with scores from 80 to 100.

Procedure

To validate the data matrix, Cronbach's alpha index is used to measure internal consistency. For data analysis, in the case of instruments that have been designed with Likert scales – such as Young's IAT Scale (1998) – in addition to testing the hypothesis that the data matrix is an identity

matrix (Ho: $R = 1$, H1: $R \neq 1$) which means that it is not correlated (Ho: $R = 0$, Hi: $R \neq 0$), so the use of Polychoric Correlations matrices is necessary for factor analysis (Richaud, 2005; Ogasawaras, 2011). Exploratory Factor Analysis (AFE) is a method to postulate latent variables that are believed to underlie correlation patterns (Haig, 2013). On the other hand, the Pearson correlations present lower values than the Polychoric correlations.

The model obtained is more consistent with the original measurement model when the Polychoric correlation is used (Holgado-Tello et al., 2008), or at least similar behavior is guaranteed with the Polychoric correlation (Cho et al., 2009).

Other measures that support the relevance of the factorial technique are Bartlett's test of sphericity with KMO, the Chi^2 with n degrees of freedom (df) and the sig. < 0.01 , the measures of sample adequacy for each variable (MSA) and factor loads. The decision criterion is: reject HO if the Chi^2 calculated is greater than the Chi^2 in the tables, otherwise, do not reject. Finally, the analysis of variance (ANOVA) is carried out to test whether there are significant differences between the variables in relation to gender.

Data analysis

The measure of reliability and internal consistency of Young's IAT scale (1998) was $\alpha = .876$ for the 20 indicators, which, according to the theoretical criteria set forth by Hair, Anderson and Tatham (1979), the values of $\alpha > .80$ are acceptable, while George and Mallery (2003) declare $\alpha > .70$ acceptable and $\alpha > .90$ are excellent. Therefore, we can say that the internal consistency of the instrument that measures internet addiction is viable and reliable.

Table 1. Polychoric Correlation matrix

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
V1	1									
V2	0.413	1.000								
V3	0.181	0.255	1.000							
V4	0.176	0.240	0.284	1.000						
V5	0.283	0.374	0.304	0.227	1.000					
V6	0.269	0.451	0.300	0.223	0.399	1.000				
V7	0.224	0.145	0.279	0.194	0.277	0.215	1.000			
V8	0.324	0.473	0.319	0.221	0.383	0.637	0.260	1.000		
V9	0.231	0.298	0.417	0.300	0.471	0.441	0.373	0.522	1.000	
V10	0.209	0.312	0.334	0.267	0.314	0.307	0.108	0.381	0.422	1
	V11	V12	V13	V14	V15	V16	V17	V18	V19	V20
V11	1.000									
V12	0.415	1.000								
V13	0.487	0.423	1.000							
V14	0.298	0.325	0.379	1.000						
V15	0.487	0.581	0.589	0.457	1.000					
V16	0.393	0.388	0.395	0.504	0.412	1.000				
V17	0.103	0.105	0.068	0.109	0.185	0.281	1.000			
V18	0.427	0.366	0.338	0.352	0.495	0.385	0.394	1.000		
V19	0.358	0.395	0.422	0.430	0.531	0.376	0.225	0.448	1.000	
V20	0.493	0.596	0.556	0.321	0.629	0.501	0.137	0.486	0.538	1.000

= 0,002,081 Determinant

Polychoric correlations matrix values (Table 1) are acceptable in the 20 variables, showing that it is not an identity matrix, which would indicate no correlation among the study variables. Furthermore, the determinant of .0002 is close to zero, which gives evidence that the Polychoric correlation matrix is acceptable. Likewise, the KMO values of .917 are the Bartlett's test of sphericity, with a Chi^2 value of 3861.4 with $df = 190$ and $p < .05$ is considered acceptable according to Hair, Anderson & Tatham (1979). Thus, Chi^2 values give evidence to reject HO according to the criterion that establishes that HO is rejected if Chi^2 calculated (3861.4 with $df = 190$) is $> Chi^2$ from

tables (135,807 $df = 100 < .01$). This gives statistical evidence that justifies the use of the exploratory factor analysis technique with main component extraction.

The extraction of components under the criterion of eigenvalues > 1 is shown in Table 2 where the eigenvalues, the proportion of the variance, and the proportion of the accumulated variance are shown.

Table 2. Explanation based on eigenvalues

Variable	Eigenvalues	Variance ratio	Cumulative variance ratio
1	7.69829	.38491	.38491
2	1.42928	.07146	.45638
3	1.16115	.05806	.51444
4	1.04324	.05216	.56660
5	.93910	.04695	.61355

Source: own

The values are found in a range of 7.69829 (the highest) and .93910 (the lowest), the fifth factor being slightly less than the suggested criterion > 1 . 61.35 % of the total variance with respect to the Internet addiction is explained by these five factors. In addition, it is observed that the first eigenvalue is very high with respect to the others, so it is suggested to rotate the matrix orthogonally using the Varimax method, in order to identify the most significant loads ($> .5$) that allows the simplification of each component. The results are shown in Table 3.

Table 3. Explained variance based on eigenvalues

Variable	Eigenvalues	Variance ratio	Cumulative variance ratio
1	6,388	31,940	31,940
2	1,436	7,180	39,120
3	1,183	5,916	45,036
4	1,063	5,313	50,349

Source: own

After orthogonal rotation to the data matrix, we can see that there are now four factors extracted under the criterion of eigenvalue > 1 , which accounts for 50.35 % of the cumulative variance; they are those that make up the structure that underlies the explanation of the addiction of students to the internet. Table 4 describes the factors extracted with the factor weights of each of the indicators (loads $> .5$).

Table 4. Matrix of components and rotated components

Main components					Matrix of rotated components				
Indicators	1	2	3	4		1	2	3	4
X15	0.713				X15	0.725			
X9	0.691				X20	0.685			
X20	0.671				X12	0.681			
X8	0.652				X13	0.63			
X11	0.634				X10	0.623			
X16	0.62				X11	0.613			
X6	0.617				X9	0.552			
X18	0.60				X19	0.548			
	6								

X13	0.596			X14			
X12	0.593			X4			
X10	0.593			X2	0.749		
	0.58			X1	0.678		
X19	8			X8	0.579		
	0.56			X16	0.555		
X5	8			X6	0.546		
X14	0.549			X5			
X2	0.525			X7	0.784		
X3				X3	0.504		
X4				X17			0.803
X1	0.542			X18			0.504
X7		0.668					
	0.48						
X17	3		0.610				
Variance by factor of the rotated matrix				31.94 %	7.18 %	5.916 %	5.313 variance
				Total			50.35 %

Extraction method: analysis of main components

Rotation method: Varimax normalization with Kaiser

Source: own

The composition of the components or factors obtained, derived from the Varimax rotation, is as follows:

Component 1 (*X15, X20, X12, X13, X10, X11, X9, X19*). Often the student is concerned when they are offline and fantasizes about being online, leading to feeling depressed, nervous, moody, and these symptoms disappear when they reconnect to the internet. In addition, there is a feeling of fear since they believe that life without the internet is boring, adding the annoyance generated by someone interrupting while they are online.

Other indicators of this factor reveal that students use the internet to relax, when some disturbing thoughts block their mind, which also leads them to anticipate when they will reconnect to the internet. Finally, they often get defensive if someone asks them what they do online, and they prefer to spend time online than to hang out with other people. These indicators explain

Component 2: (*X2, X1, X8, X16, X6*). Spending more time online causes the student to neglect their chores, as they usually spend more time online than they had anticipated. This has caused a deterioration in the performance of their work, seriously affecting their productivity. Often the person points out that a few more minutes when they are online do not make a difference, not knowing that this has already affected their school grades.

Component 3: (*X7, X3*). Often they check their email first, rather than another activity, they even prefer the excitement of being connected to the internet to intimacy with their partner.

Component 4: (*X17, X18*). Frequently the student tries to decrease the time they remain connected to the internet and very often try to hide how long they have been online.

To test the H_1 hypothesis, the level of internet addiction differing by gender, the one-way ANOVA test (F and ρ) is performed, as well as the calculation of the Levene statistic (df_1, df_2), to test the hypothesis of equality of means and the hypothesis of equality of population variances respectively. Therefore, [Table 5](#) shows the ANOVA and the F statistic with $\rho < .05$ for each intergroup and intragroup.

Table 5. ANOVA

Variable	Root mean		F	Sig.
	Inter-groups (df=1)	Intra-groups (df=461)		
X1	0.12	1.15	0.10	0.75
X2	0.00	1.27	0.00	0.96
X3	3.43	0.99	3.45	0.06
X4	15.71	1.40	11.25	0.00
X5	2.93	1.36	2.15	0.14
X6	5.29	1.01	5.22	0.02
X7	1.83	1.45	1.27	0.26
X8	0.06	1.10	0.06	0.81
X9	3.35	0.89	3.78	0.05
X10	0.02	1.43	0.02	0.90
X11	6.95	1.33	5.22	0.02
X12	0.41	1.29	0.31	0.58
X13	0.39	0.79	0.49	0.48
X14	2.93	1.52	1.92	0.17
X15	0.25	0.92	0.27	0.60
X16	0.62	1.53	0.41	0.52
X17	2.89	1.46	1.98	0.16
X18	2.47	1.03	2.39	0.12
X19	0.73	1.07	0.68	0.41
X20	0.13	0.71	0.18	0.67

Source: own

Table 5 of the ANOVA describes the root mean values of the intergroups and intragroups with $df = 1$ and $df = 461$ respectively, as well as the values of the F statistic with its level of significance, which refers that if $p < .05$ then the hypothesis of equality of means, of l is rejected. On the contrary, if it is greater, the equality of means is accepted, and there is no significant difference between the groups.

The indicators in Table 5: X_4 , X_6 and X_{11} show high values in the F statistic and their statistical significance is less than 0.05, which leads to the assumption that, if there is a difference in the means by gender in these indicators. This is not the case for the rest of the indicators. In this idea, the variance homogeneity test is now developed to calculate the Levene statistic with $gl_1 = 1$ and $gl_2 = 461$ and the significance ($p < .5$).

Table 6. Variance homogeneity test

Indicators	Levene	df1	df2	Sig.
X1	1,070	1	461	.301
X2	1,489	1	461	.223
X3	7,317	1	461	.007
X4	4,082	1	461	.044
X5	2,909	1	461	.089
X6	.002	1	461	.969
X7	.001	1	461	.977
X8	1,813	1	461	.179
X9	6,574	1	461	.011
X10	.809	1	461	.369

X11	.819	1	461	.366
X12	.959	1	461	.328
X13	.930	1	461	.335
X14	3,023	1	461	.083
X15	.311	1	461	.577
X16	1,561	1	461	.212
X17	.276	1	461	.600
X18	1,903	1	461	.168
X19	.112	1	461	.739
X20	.201	1	461	.654

Source: own

To test the hypothesis of equality of population variances, Levene's statistic is calculated. The criterion establishes that if the critical level (sig.) is \leq than 0.05, the hypothesis of equality of variances is rejected. Contrariwise, if it is $>$, the hypothesis of equality of variances is accepted. The values obtained for X3 and X9 (\leq 0.05) suggest that the hypothesis of equality of variances should be rejected, not so in the rest of the indicators, since there seems to be equality of variances. With these data, there is evidence that shows that, in general, there is no difference by gender.

However, the scale developed by Young (1998) also establishes criteria to determine the level of addiction. Therefore, Table 7 classifies the score of each participant in the corresponding addiction level, differentiating the results by gender.

Table 7. Addiction level of university students

Variable	N	Medium	Addiction level							
			Normal		Mild		Moderate		Severe dependency	
			(0-30)		(31-49)		(50-79)		(80-100)	
Gender			#	%	#	%	#	%	#	%
Men	319	42.10	47	14.73	200	62.70	70	21.94	2	0.63
Women	144	40.41	31	21.53	89	61.81	22	15.28	2	1.39
Total	463	41.55	78	16.85	289	62.42	92	19.87	4	0.86

Table 7 shows that the largest percentage of students is located in a mild level (62.42 %), followed by the moderate level (19.87 %), while the lowest percentage gives evidence of severe dependency (.86 %).

3. Results

One of the objectives of the study was to identify the set of latent variables that explain the level of Internet addiction of the students. The research hypothesis indicates that there is a set of variables that explains the level of internet addiction of the students. The results of this empirical study provided relevant information, which allows us to present the findings and propose future lines of research that emerge from this work.

Firstly, the internal consistency and reliability of the instrument was validated, and was found acceptable. Furthermore, considering that the test used is a scale, it was necessary to use the Polychoric Correlations matrices for factor analysis (Richaud, 2005; Ogasawaras, 2011). Once the robustness of the scale was verified, the KMO was revised with a value of .917 and $\rho < .000$. Bartlett's test of sphericity with Chi^2 of 3861.4 and 190 degrees being superior to the Chi^2 of tables which has a value of 135.807 with $\rho < .01$ and 100 degrees of freedom. This statistical evidence allowed us to proceed with the exploratory factor analysis technique with component extraction.

The factor structure result reached 50.35 % of the total variance, which is explained by four factors.

The first component groups the items regarding neglecting work with 31.94 % (X15, X20, X12, X13, X10, X11, X9, X19), the second component with 7.18 % (X2, X1, X8, X16, X6), third component explains 5.92 % (X7, X3) and the fourth and last component with 5.31 % (X17, X18).

Although the exploratory factor analysis with component extraction formed four factors with 50.35 % of the total variance explained, it seems that it does not coincide with other studies that reported another structure. A case that we can compare, with the findings of Alavi, Eslami, Maracy, Najafi, Jannatifard and Rezapour (2010) who identified five factors called social problems, performance effects, lack of control, pathological use of chats and negligence in the education and occupational duties. Similar the result reported in the study by Guan, Isa, Hashim, Pillai and Singh (2012) who also reported a five-factor structure.

However, there are investigations that have found different factor structures. For example, a model with a single factor and good psychometric properties was found in the studies of Khazaal, Billieux, Thorens, Khan, Louati, Scarlatti, Theintz, Lederrey, Van Der Linden and Zullino, (2008), Pontes, Patrao and Griffiths (2014), Dhir, Chen, Nieminen (2015), Panayides and Walker (2012), Waqas, Farooq, Raza, Javed, Khan, Ghumman, Naveed, Haddad (2018).

In turn, a two-factor structure was established in the study by Barke, Nyenhuis and Kroner-Herwig (2012). In turn, Jelenchick, Becker and Moreno (2012) determined two factors, which they classified as dependency and excessive use. Also, Fernández-Villa, Molina, García-Martín, Llorca, Delgado-Rodríguez and Martín (2015) obtained two factors interpreted as emotional investment and time and performance management.

A three-dimensional structure was also reported, which was identified by Chang and Law (2008), classified as withdrawal and social problems, time management and performance, and substitute for reality. In turn, Tsimtsiou, Haidich, Kokkali, Dardavesis, Young and Arvanitidou (2013) obtained three factors, which they interpreted as emotional psychological conflicts, time management, and carelessness at work. On the other hand, Lai, Mak, Cheng, Watanabe, Nomachi, Bahar, Young, Ko, Kim and Griffiths (2015) found three factors called withdrawal and social problems, time management and performance, and a substitute for reality.

On the same idea, Mohammadsalehi, Mohammadbeigi, Jadidi, Anbari, Ghaderi and Akbari (2015) established a three-factor structure classified as disorder of personal activities, emotional and emotional disorder, and disorder of social activities. The factors described in the study by Neelapaijit, Pinyopornpanish, Simcharoen, Kuntawong, Wongpakaran and Wongpakaran (2018) were functional impairment, withdrawal symptoms, and loss of control.

Regarding the results of this empirical study where we report four factors, it seems to coincide with the structure that Kaya, Denle and Young (2016) who found a model with four factors, called mood, relationship, responsibilities and duration. Also in Lee's study, Lee, Gyeong, Yu, Song and Kim (2013) extracted four factors (overuse, dependency, retraction, and escape from reality). On the other hand, Samaha, Fawaz, Yahfoufi, Gebbawi, Abdallah, Baydoun, Ghaddar and Eid (2018) obtained a model of four named factors: lack of control, social withdrawal and emotional conflict, time management problems and behavior concealment problematic. In the work of Ndasauka, Pitafi and Kayange (2019) the four factors were identified as salience, conflict, tolerance and mood modification.

Another study that reports a different factor structure is that of Widyanto, McMurrin (2004) who obtained six factors, which they called: prominent feature, excessive use, neglect of work, anticipation, lack of control and neglect of social life.

The diversity of factor structures obtained in the different studies is an indication of the complexity of the construct, hence the importance of expanding this type of study in different populations.

Another objective of the study focused on identifying the level of internet addiction among university students. The results indicated that although it is a very small percentage that is located in the category with severe dependence, these data are very important, since they allows identifying the problem and with it, a strategy or course of action can be designed to solve it. However, the highest percentage of students with addiction traits is concentrated between the mild level (62.42 %) and the moderate level (19.87). Although these figures do not represent alarming data, it would be advisable to pay attention so that they are not increased to a severe level of addiction.

Remember that this behavioral addiction causes physical, personal and social well-being disorders (IRMA, 2019; Rokkum et al., 2018, Lopez-Fernandez, 2019; Khan, 2018). Therefore, it is opportune to generate strategies that support students so that they can use the internet without falling into a severe dependency that interferes with their daily life (Kuss, Pontes, 2018; Wallace, 2014), caused by the ease of connection to internet and the availability of digital devices (García, 2013).

In addition, the use of the internet at work or to carry out school activities considered necessary can hide the addiction (Young, 1998). Also, the immediate gratification that ICTs provide stimulates internet addiction according to Reinerman, and Granfield (2015). Faced with addictive behaviors Hammersley (2018) refers that the circumstances that caused the addiction must be changed, although it is also necessary for it to be identified as an addiction, it is because an abusive use of the resource has been detected according to García (2013).

In this study, the participants showed levels of addiction that are not worrisome according to Young's classification (1998), since the percentages that concentrate the largest number of students surveyed are in the range of mild and moderate addiction. This gives the opportunity to establish a program that prevents severe addiction in the university community with all the disorders that such behavior entails.

Regarding the objective to determine if there are gender differences in levels of internet addiction, it was found that for this university community, there are no significant differences by gender between levels of addiction. This coincides with the studies by Dai (2016), Dufour, Brunelle, Tremblay, Leclerc, Cousineau, Khazaal, Légaré, Rousseau and Berbiche (2016) and Khan, Shabbir, and Rajput (2017). In contrast, gender differences have been found in the works of Fernández-Villa, Alguacil-Ojeda, Almaraz-Gómez, Cancela-Carral, Delgado-Rodríguez, García-Martín, Jiménez-Mejías, Llorca, Molina, Ortíz-Moncada, Valero-Juan and Martín (2015), Goswami and Singh (2017), Babalola, Ekundayo, Kemmer and Ayenibiowo (2017), Kaur (2018) and Singh (2019).

4. Conclusion

Finally, we can say that Young's (1998) internet addiction scale presents high reliability and internal consistency, making it a valid test to identify the presence of internet addiction in the populations studied. On the other hand, the diversity between the dimensions obtained in multiple studies indicates that the results differ both in the number of factors and in their identification, which reveals the complexity of the construct and the diversity of statistical techniques for the interpretation of the data.

Few studies on the subject have been identified in Latin America, so it is considered important to delve into other investigations that lead us to identify similarities and contrasts between the populations of the same region or country. This, in turn, will allow establishing actions on the factors that are influencing to generate internet addiction in each population.

Finally, we can point out that, because the participants were university students, this can be beneficial, since the institution where these young people study has the power to generate strategies aimed at preventing internet addiction. As an example of this, General training courses can include activities to develop a culture of proper use of the internet, taking advantage of the resource without making excessive use of it. Implementing strategies to prevent addiction, as well as programs to recover from an internet addiction, in themselves are projects that can be developed by the students themselves with the guidance of professionals on the subject.

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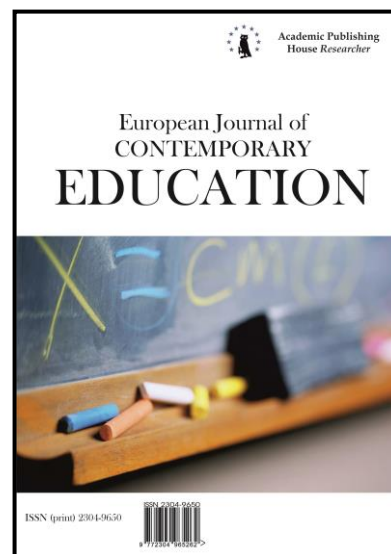
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Learning Styles in University Students: Types of Strategies, Materials, Supports, Evaluation and Performance. Case Study

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Abstract

The aim of this study is to identify different learning styles in university students in the frame of university teaching carried out through innovative proposals for work and research projects, with inverted classroom dynamics (active and cooperative) and adopting a formative assessment that focuses on both the process and the students' outcomes. This proposal is complemented by the objective of determining the influence of different learning styles on the preference for the type of performance in university teaching.

A hypothetico-deductive methodological design for exploratory and correlational purposes was followed. The sample consisted of total of 640 participants in university degree courses. The data were gathered using a questionnaire that grouped 46 items into five double-response dimensions, determined by the preference or position held by the students regarding the learning strategies, methods and techniques applied; material or resources used to carry out the teaching, as well as the integration of information and communication technologies (ICT); type of supports that were received in the process; instruments to carry out the assessment; and lastly, individual or team academic performance.

The outcomes show an x-ray of four models according to the student's learning styles: individual, cooperative, dependent and autonomous. These are identified with four clusters in the sample of students selected for the study, which are associated with practical, conventional, critical and efficient student models. The conclusions explain that there are no pure models, as there are nuances that connect them in real classroom practice, but the level of student preference helps to measure the impact and confirms the improvement in teaching through university work projects.

Keywords: learning styles, university students, work projects, innovation.

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1. Introduction

Since the Bologna Declaration (1999), higher education in general and the way in which learning is taught and promoted in university classrooms in particular have received hitherto unheard of attention. The intention to create a European Higher Education Area (EHEA) has given rise to a convergence process aimed at facilitating connection and harmonisation between the signatory countries. And, in this context, among other aspects, the knowledge promoted in universities has also been addressed, as well as how it is taught and made practical.

As stated by González and Raposo (2009), this European project coincided with the review that different countries were carrying out regarding the mission of universities in the new contemporary context generated by a society characterised by knowledge and communication. Review reports revealed the need to update higher education in order to further its functionality within a social, cultural and working environment that increasingly calls for greater knowledge transfer and utility.

Different reports, research works and experiments carried out have highlighted the excessively academic style that has traditionally characterised university studies. ([Dearing Report, 1997](#); [Attali Report, 1998](#); [Bricall Report, 2000](#)). As a reaction, to some extent an excessive shift towards the practical has been observed, as though the fundamental purpose of higher studies were the professional employment training of future university graduates.

Between these two radical poles, an approach has emerged that seeks to reconcile the bases and foundations offered by accumulated theoretical knowledge, together with a practical bent that makes it functional and useful for personal and social development. Transfer increasingly occupies more space and interest when talking about higher education's commitment to society. The traditional criticism that describes university knowledge as something excessively rhetorical and abstract finds in skills development a channel to expand and demonstrate its practical possibilities and relate it to social improvement and productive advancement. This way, the theoretical dimension is complemented by its transfer into practice, so as to enable qualified and competent employability.

However, as proposed by González Sanmamed and Raposo (2009) and in other studies ([Levine, Marcus, 2010](#)), the more teachers commit and involve themselves in the search for creative and innovative formulas, the better the development of this transformation will be. Otherwise, we will be yet again faced with administrative and bureaucratic updates that are merely cosmetic, masking routine practices. This does not mean that political authorities and managers have no responsibility. On the contrary, it is up to them to provide the means and generate regulations that facilitate it.

In this sense, practically all the universities have implemented teacher training and research programmes. Likewise, we have numerous conferences, publications and experiences that disseminate this interest in pedagogical innovation and its social commitment. We could say that the university community has been involved in its improvement to an extent never seen before.

But having said that, and so as not to fall into naive optimism, we are also aware that many of the experiments carried out go no further than episodic attempts that do not end up generating a solid and lasting change ([Porlán et al., 2018](#)). We are still a long way from making a competency-based approach successful ([López et al., 2018](#)). The research tradition needs to delve into university education to determine realistic, well-founded and generalisable possibilities ([Montalvo et al., 2018](#)). Isolated experience generates partial stories, and we need tried and tested data that orientate on the basis of solid evidence to encourage a new pedagogy capable of transforming university teaching culture.

In line with the above, we have research and theoretical speculations that aim to overcome established traditional strategies based on memorising and following instructions in order to reproduce stable and conventional knowledge, compared to other student-based alternatives ([Schweisfurth, 2015](#)), so that with the help of the teacher they are able to generate well-informed and creative productions. We find ourselves between approaches focused on the transmission of closed and useful content to pass memory tests and exams and other proposals that seek to develop higher cognitive skills, so that learning becomes relevant and transferable to various contexts. This is what Kember and Kwan (2000) designated content-focused rather than learning-focused strategies. And, in addition, Prosser and Trigwel (1999) considered teacher-centred or student-centred ([Prieto, 2008](#)). In our national scope, we also have contributions that have researched and

presented valuable outcomes that help describe and understand these two pedagogical traditions. Researchers such as Monereo and Pozo (2003) or Monroy and Hernández Pina (2014), Pozo and Pérez Echeverría (2009) or Gargallo et al. (2015) allude to teaching models, methodologies or approaches that range from the linear exposition of information with the aim of its mechanical replication to another that involves the reconstruction and transfer of knowledge by students. This in turn points us towards a learning that would range from superficial (reproduction) to in-depth (understanding) or strategic (conceptual change).

All of these contributions depend on the role of teacher and student, as well as the relevance of the teaching or learning. These issues will have a very direct impact on the quality of training and the meaningful handling of the content and skills addressed.

However, our experience in university teaching based on the development of work and research projects (Pozuelos et al., 2012; Pozuelos, García Prieto, 2018) given their innovative nature, is firmly framed in the alternative tradition, where the learning is promoted based on relevant questions that need theoretical field content as well as its practical management, which involves a significant reconstruction of knowledge by students to generate original and well-informed output.

And this practical and reflexive dimension of university teaching leads us to other questions that broaden the perspective. Although approaches and models based on the students and their learning have already been considered and are proposed as the pillars of alternative university teaching, we now need to consider to what extent they promote autonomy and collaborative work.

Currently, different documents promoting university teaching innovation cite the need to promote autonomy and collaboration (Fombona et al., 2016; Tran, 2013) as basic references for functional and sustained lifelong learning.

It has even been stated that implementing active teaching strategies is not enough (Henríquez, Aramburo, 2019). These authors insist that it is necessary to involve the subjects who learn in the development of their experiences, and this does not depend solely on approaching knowledge from a personal and isolated perspective. Contemporary knowledge, given its ubiquitous, open and constantly evolving nature, calls for exchange and collaboration among other different agents. There is talk of shared learning constructed on the basis of the search for and use of plural information in order to generate and rework existing knowledge. More than the consumption of content, reference is made to its elaboration as an effect of the vast baggage that currently exists and is available to all.

Different research works express and support a conception of learning as a situated and active process where negotiation with others acquires substantial importance. The aim is to acquire an “adaptive ability” that allows them to use the knowledge and skills developed in the educational experience in a flexible and original way (Dumont et al., 2010). From this perspective, students are required to achieve a high degree of autonomy and self-regulation that helps them learn and expand knowledge that has not yet been achieved or deal with changing and continuous situations or problems.

Efficient learning, focused on fostering higher-order skills, relies both on stimulating the independent and self-regulating mindset and on the ability to cooperate and share to create an increasingly collaborative workforce (Navarro et al., 2015).

The axis that these other two basic dimensions define to promote relevant and “adaptive” learning would be located between “dependency” and “autonomy” and, on the other, between “individualism” and “collaboration”. If we were to cross these two references, the result would be:

Table 1. Classification of learning models by student profile

Degree of decision/Degree of cooperation	Individualist	Collaborative
Dependent	Conventional Focused on reproduction.	Practical Focused on participation and practical experience.
Autonomous	Efficientist Focused on following itineraries or sequences.	Critical Focused on research

Practical. Learning is considered an effect of the participation in different areas and experiences proposed by the teacher. Content is seen as a medium that can be interpreted and discovered through the activity and is achieved spontaneously and as an effect of direct experience.

Critical. They guide their learning work on the basis of research that they carry out with other subjects, with whom they debate and refine content and knowledge that are gradually built up through an irregular process that allows them to transform their initial ideas.

This classification that has been proposed helps further our teaching work, but also, and this is the purpose of this contribution, to determine what position our students are in so as to help them advance. Moreover, it helps rework our task to promote teaching that is not only based on the student and their active learning but which is also focused on autonomy, self-regulation and collaboration, so that they can progressively manage complex knowledge that is transferable to diverse and novel situations.

Based on this approach and after reviewing different styles of university students according to their preferences for certain aspects of the teaching-learning processes (strategy, material, support, assessment and performance), the following questions that focus the research are formulated: What type of learning do the students prefer? What is the relationship between certain aspects of teaching-learning and the different student styles? What type of influence do the different learning styles have on the preference in the type of performance?

This is the panorama in which our aim is to provide a structural vision of the relationships and influences between learning styles in university students, based on their preferences for types of strategies, materials, supports, assessment and performance in university teaching.

Method

The method followed in this research is hypothetico-deductive, survey type with a longitudinal design. The work is structured on the basis of postulates that define quantitative research approaches for exploratory and correlational purposes. This is a case study as it does the rules of probabilistic selection of subjects are not followed, the subjects represent the only University of Huelva, local sample.

Participants

The sample consisted of 640 university students on various Bachelor's degrees courses (Early Childhood Education, Primary Education, Social Education and Physical Activity and Sport Sciences) from the University of Huelva, studying subjects such as Didactics and Curricular development, Attention to Diversity and Tutoring, Direction and Management of Socio-educational Centres, Pedagogy of Physical Education and Sport – in academic years 2015/2016, 2016/2017 and 2017/2018, while developing innovative alternative proposals through work and research projects. Among the participants, 90.93 % were women and 9.06 % men, in a normal distribution with respect to the high proportion of women, except in the Sciences of Physical Activity degree course, where the figures are inverted (80 % men). The average age was 23.8 years.

Objectives

The objectives set for this study can be summarised as identifying different learning styles in university students on degree courses, as well as the influence of different learning styles on the preference for the type of performance in university teaching developed through work projects.

Data gathering instrument and procedure

The students responded to the ad hoc designed “APID” questionnaire (Analysis of Proposals for Teaching Innovation) once the subject they were taking through work projects was completed. In this measuring instrument, which is organised in five dimensions (strategies, material, support, assessment and performance), a Likert-type scale (with 5 degrees from “not at all” to “totally”) was used to gauge the level of preference for the methods and techniques that had been used, by dual response. On the one hand, they rated the utility-preference, and on the other, the use made by the teacher.

This way, the questionnaire validity and descriptive and correlational analyses, etc. were determined through initial studies using the SPSS v.21 statistical software suite, whereby an acceptable reliability was obtained ($\alpha = 0.86$). These data allowed us to verify the possibilities and delimitation of learning styles, as well as validating the instrument (pending publication).

2. Discussion and results

Data analysis

To identify university student typologies, Multiple Correspondence Analysis (henceforth MCA) with the Spad v.56 program was used. This technique allowed us to explore the proximity between the variables studied, interpretively detecting associations between response modalities and, consequently, between variables. The procedures to be followed in MCA are: 1) Factorial analysis, focusing on the expression of combinations of the original variables. Each variable has a certain number of categories that allow the variable to be decomposed into as many modalities or categories expressed by the main differentiation factors.

2) Cluster analysis, allowing the hierarchical classification of the subjects based on the affinity of responses with respect to the variables studied.

In a second phase, through the modelling of structural equations, we proceeded to confirm the relationships interpreted in the MCA. The modelling program used was Amos 18.0.

Multiple correspondence analysis

Multiple correspondence analysis was carried out on a matrix of 19 variables with 87 associated response modalities. The histogram shows the five factors and the variance explained by each of them. The first three factors that explained 83.06 % of the variance were chosen for the analysis (Table 2), ensuring a minimal loss of information when considering the first two factors, as the rest seemed to provide redundant information.

Table 2. Histogram of the first five factors

NUMBER	VALUE	PERCENTAGE	ACCUMULATED PERCENTAGE	
1	0.236	57.89	57.89	*****
2	0.116	13.60	71.49	*****
3	0.106	11.57	83.06	*****
4	0.096	9.47	92.56	*****
5	0.007	7.36	100	*****

The three factors obtained in the factorial analysis of multiple correspondences are shown below. Multiple correspondence factorial analysis

Figure 1 shows the response modalities associated with factor 1 and 2 (71.49 % of variance). Both factors are projected, as they are the ones that best discriminate the groups of students according to their degree of preference regarding the effectiveness and usefulness of the strategies (shown in black in the figure), material (shown in blue), support (shown in green), assessment (shown in brown) and performance (personal performance is shown in the figure in red, and team/collective performance in grey).

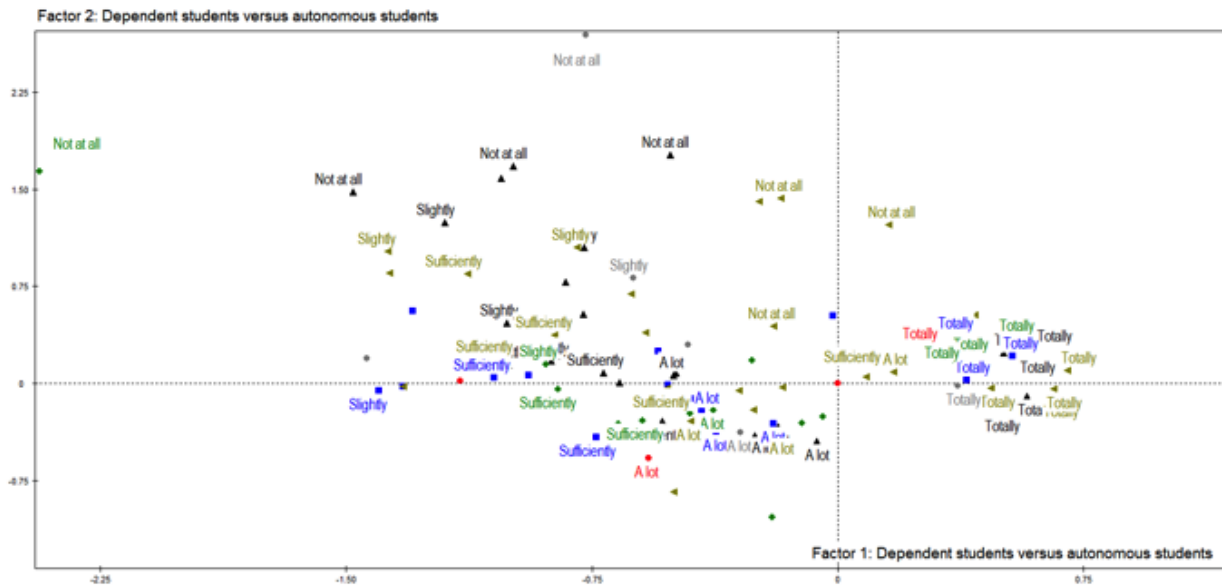


Fig. 1. Distribution of factor 1 and factor 2 response modalities

Table 3. Factor 1: Dependent students versus autonomous students

Variable label	Category label	Test-Value	Weight
Personal mind map	Sufficiently	-11,60	104,000
Rubric	Sufficiently	-10,86	127,000
Work folders	Sufficiently	-9,77	67,000
Classwork	A lot	-9,27	224,000
Personal performance	A lot	-8,92	174,000
Project guide	Sufficiently	-8,84	64,000
Teacher explanations (expositive)	Sufficiently	-8,70	86,000
Classwork	Sufficiently	-8,53	65,000
Research-documentation activities	Sufficiently	-7,78	100,000
Tutorial	Sufficiently	-7,43	125,000
Work folders	A lot	-7,12	180,000
Expositions in class	Sufficiently	-6,97	140,000
Explanations in class to groups	Sufficiently	-6,89	59,000
Explanations in class to groups	A lot	-6,80	213,000
Project guide	A lot	-6,77	170,000
Classroom notes	Sufficiently	-6,57	129,000
Research-documentation activities	Slightly	-6,49	28,000
Resources deposited in Moodle	Sufficiently	-6,36	67,000
Group work outside class	Slightly	-6,24	59,000
Personal study	Sufficiently	-6,05	107,000
Personal study	Slightly	-5,95	33,000
Rubric	Slightly	-5,90	18,000
Resources deposited in Moodle	A lot	-5,83	179,000
Group work outside class	Sufficiently	-5,50	104,000
Help via Internet	Slightly	-5,49	36,000
Personal	Sufficiently	-5,23	20,000
Classroom notes	Slightly	-5,10	28,000
Teacher explanations	A lot	-4,97	242,000

(expositive)			
MIDDLE AREA			
Exam	Totally	2,70	39,000
Help via Internet	Totally	6,91	237,000
In team or collective	Totally	9,61	331,000
Resources deposited in Moodle	Totally	10,57	379,000
Group work outside class	Totally	10,72	268,000
Personal	Totally	11,02	438,000
Expositions in class	Totally	11,43	209,000
Explanations in class to groups	Totally	11,50	354,000
Classroom notes	Totally	11,63	273,000
Tutorial	Totally	11,65	280,000
Personal study	Totally	11,89	246,000
Teacher explanations	Totally	11,91	296,000
(expositive)			
Project guide	Totally	12,56	392,000
Research-documentation activities	Totally	12,83	277,000
Work folders	Totally	14,10	376,000
Rubric	Totally	14,34	253,000
Personal mind map	Totally	14,94	285,000
Classwork	Totally	15,25	334,000

Factor 1: Dependent students versus autonomous students.

For evaluation purposes, this factor mainly consists of response modalities included in the positive section for very high values in mind maps, rubrics, expositions and presence of exams. In terms of support, Internet and tutorials garnered high scores. In material, there were notably high scores for Moodle resources and class notes. In strategies, there were high scores for classwork, explanations in class to groups, group work and personal study. In performance, team and/or personal got very high scores. In the negative area of the factorial axis, high scores were concentrated around different assessment strategies: folders, teacher explanations and rubrics. There were high scores for tutorials and expositions and low scores for help via Internet. Project guide and Moodle resources both showed high scores, while personal study and classwork had low scores, with personal performance scoring high. In short, this factor projects the subjects on the factorial plane around two dimensions. On the one hand, on the lower left of the factorial plane they are associated with a more dependent student body and on the lower right of the plane they are associated with more autonomous students.

Table 4. Factor 2: Individual students versus cooperative students

Variable label	Category label	Test-Value	Weight
Personal	A lot	-8,87	174,000
Teacher explanations (expositive)	A lot	-7,92	242,000
Rubric	A lot	-7,35	221,000
Research-documentation activities	A lot	-7,23	225,000
Group work outside class	A lot	-7,11	183,000
Personal study	A lot	-6,56	238,000
In team or collective	A lot	-6,32	193,000
Resources deposited in Moodle	A lot	-5,85	179,000
Classroom notes	A lot	-5,25	197,000
Work folders	A lot	-4,63	180,000
Help via Internet	A lot	-4,56	216,000

Tutorial	A lot	-4,47	164,000
Personal mind map	A lot	-3,64	214,000
Explanations in class to groups	A lot	-3,61	213,000
Resources deposited in Moodle	Sufficiently	-3,59	67,000
Tutorial	Sufficiently	-3,55	125,000
Personal study	Sufficiently	-3,31	107,000
Classwork	Totally	-2,56	334,000
Group work outside class	Totally	-2,17	268,000
Tutorial	Slightly	-2,17	46,000
MIDDLE AREA			
Personal study	Slightly	2,75	33,000
In team or collective	Sufficiently	2,84	79,000
Teacher explanations (expositive)	Slightly	2,86	13,000
Classwork	Not at all	3,18	4,000
Explanations in class to groups	Totally	3,22	354,000
Rubric	Not at all	3,26	7,000
Expositions in class	Slightly	3,37	23,000
Help via Internet	Totally	3,39	237,000
Exam	Totally	3,39	39,000
Personal mind map	Not at all	3,45	6,000
In team or collective	Slightly	3,49	18,000
Research-documentation activities	Not at all	4,34	6,000
Rubric	Slightly	4,38	18,000
Classroom notes	Totally	4,64	273,000
Rubric	Sufficiently	4,72	127,000
Personal mind map	Slightly	5,36	25,000
Expositions in class	Not at all	5,39	14,000
Teacher explanations (expositive)	Totally	5,55	296,000
Research-documentation activities	Slightly	6,71	28,000
Personal study	Totally	7,15	246,000
Work folders	Sufficiently	7,30	67,000
Resources deposited in Moodle	Totally	7,70	379,000
Tutorial	Totally	7,71	280,000
Group work outside class	Not at all	8,02	22,000
Exam	Not at all	8,09	220,000
Group work outside class	Slightly	8,46	59,000
Personal	Totally	8,70	438,000
In team or collective	Not at all	10,53	15,000

Factor 2: Individual students versus cooperative students.

This factor is articulated in the positive section by the presence of exams and high scores for work portfolios and class notes, support with the explanations from teachers, presence of expositive explanations and preferences for personal performance. The negative section concentrates the scores that refer to the presence of folders and mind maps, rubrics, the moderate use of class notes as material, explanations by teachers in small groups and preference for a collective performance. Consequently, this factor concentrates scores that are associated with a more individual student thinking at the top of the factorial plane, and those linked with cooperative work thinking at the bottom.

Cluster results

Once the three factors were established that synthesised the most relevant information of the interrelation of the variables analysed, the subjects were grouped according to their affinity with respect to the studied variables. The analysis identified four clusters.

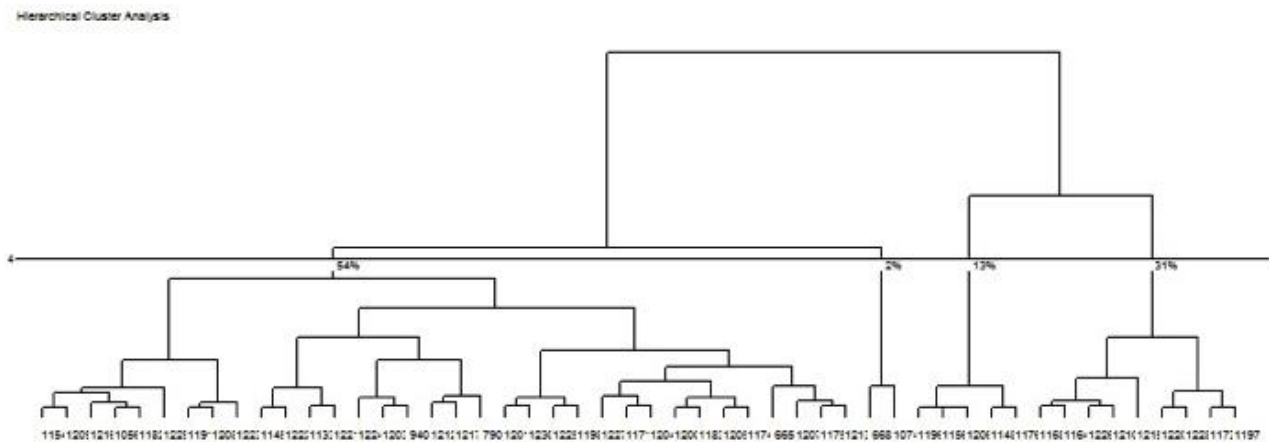


Fig. 2. Dendrogram based on response

The four groups and the percentage that each represents in the study sample can be observed through the dendrogram.

In the factorial plan (Figure 3), the two factors are represented and the clusters are projected. The use of both factors makes the discrepancy between conglomerates more visible by attending to two groups of factors of interest in the research: Individual students versus cooperative students and dependent students versus autonomous students.

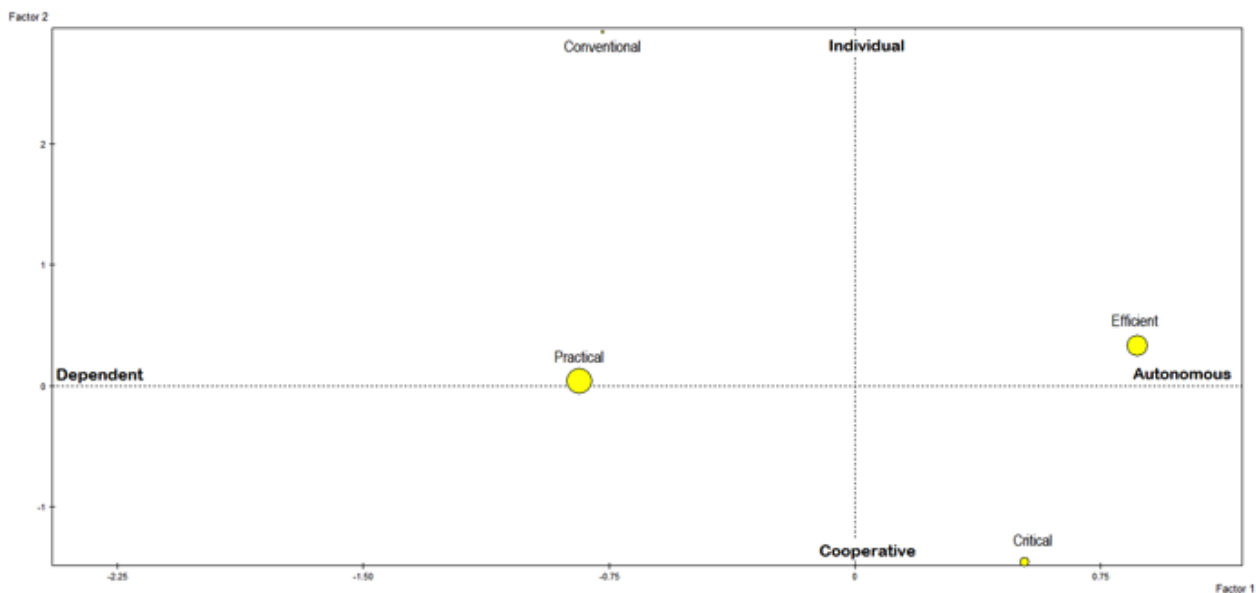


Fig. 3. Cluster factorial plans

The size of the points is proportional to the weight that corresponds to each of them (Figure 2). Thus, group 1 (Practical) consists of 295 students (46.09 %), group 2 (Conventional) of 12 students (1.88 %), group 3 (Critical) of 87 students (13.59 %) and group 4 (Efficient) of 246 (38.44 %). Each of these groups is shown in the tables in Appendix. Here, the response modalities shared by the subjects in the classified survey for each group can be viewed. What determines the importance of a response is the value of the test statistic. Important values are those whose test values are ± 2 . The description of each cluster is made considering these responses and interpreting the location of the cluster within the factorial plan.

The presence of cluster 1 – Practical – in the lower left quadrant registered the highest values in this class in terms of those variables associated with dependent student thinking with some nuance that combines the cooperative and individual. In this sense, strategies such as group work and teacher explanations stood out. In terms of use of materials and support: resources deposited in Moodle, project guide and explanations in class to groups. And for assessment: work folders, rubrics and personal mind map.

Cluster 2 – Conventional – Is the most minority group, located in the upper left quadrant of the factorial plane and associated with higher scores in transmissive strategies (classroom expositions) with some presence of dependent strategies (personal work outside of class).

Cluster 3 – Critical – Is located in the lower right quadrant of the factorial plane, and is associated with those variables that reflect a more cooperative student body (group class work, research-documentation activities, work folders, class expositions, rubric and personal mind map).

Cluster 4 – Efficient – Is located in the upper right part of the factorial plane, identified with an autonomous student body with individual nuance. In this sense, its main descriptors are: class work, personal study, teacher's explanations, project guide, class notes, class explanations, tutorials, online help, work folders and personal mind map. In this cluster there is a greater presence of variables referring to individual and autonomous student work.

Model confirmation

After identifying the main descriptors that define the four clusters, the aim is to confirm the four models extracted from the analyses of previous ones. To this end, structural equation modelling was applied using the Amos v.18 program.

The models included those descriptors extracted during the multiple correspondence analysis which best defined the groups, which is why not all the variables are present.

To establish the relationships of the different variables in the models, the initial hypothesis is that the type of strategy used determines the material, supports and assessment. Likewise, the following goodness-of-fit indices were examined for each model: Chi-square statistic (X^2), recommended values between 2-5; IFI (Incremental Fit Index), recommended value $\geq .90$; NFI (Normalised Fit Index), recommended value close to 1; CFI (Comparative Fit Index), recommended value $\geq .90$; Residual Root Mean Square Error of Approximation RMSEA; the upper limit for considering an acceptable fit according to the Kelley criterion (1935) is .0718.

Model 1 “Practical students”

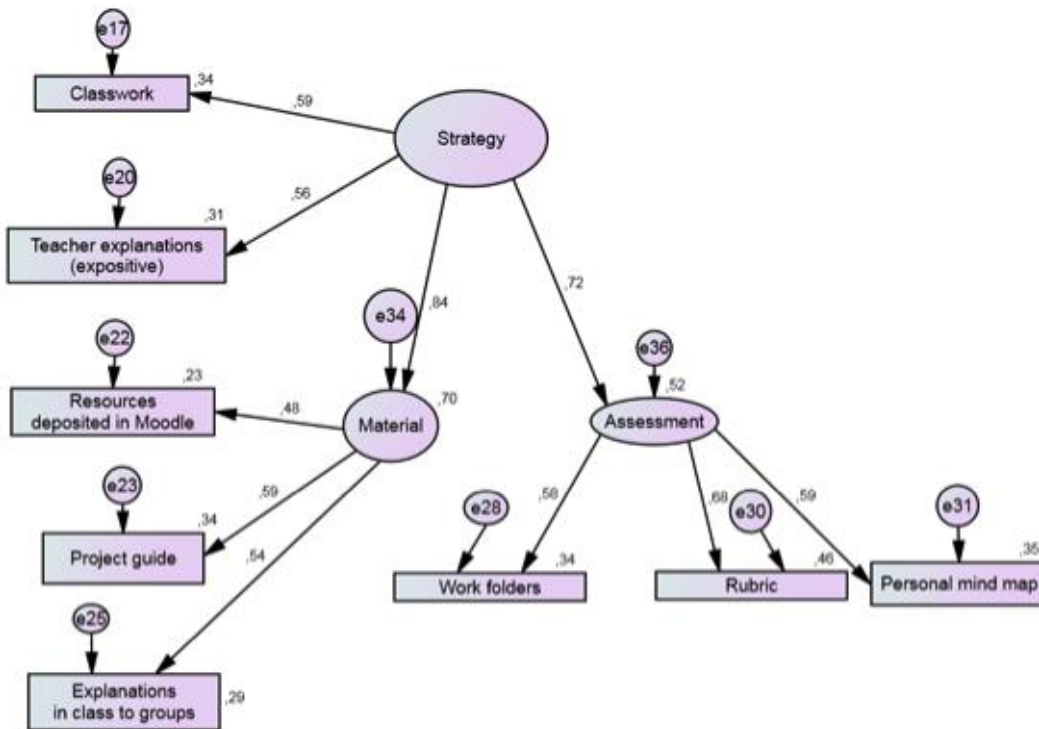


Fig. 4. Practical student model

As seen in Figure 4, this first model consists of three dimensions (Strategy, Material and Assessment). The model shows that the use of the most dependent strategies determines both the material and the kind of assessment. The high percentage of variance explained by the model in each of the variables, the strong factor loads and the goodness-of-fit indexes make it adequate: Chi-square = 67.525; Degrees of freedom = 18; CMIN/DF = 3.75; CFI = .93; RMSA = .06; IFI = .93; NFI =.91

Model 2. "Conventional students"

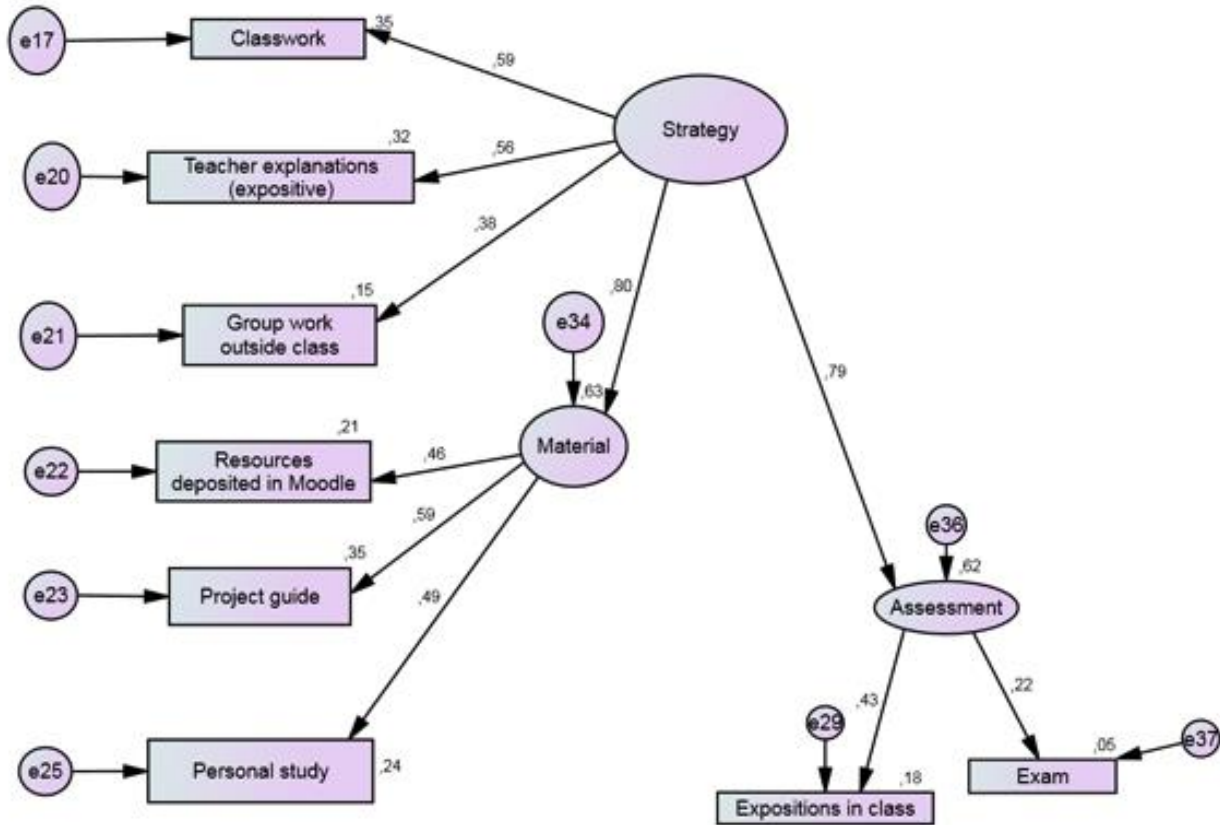


Fig. 5. Conventional student model

The conventional student model differs from the practical due to the presence of work outside the classroom in terms of strategy and a preference for personal class expositions and exams in terms of assessment. The goodness-of-fit indexes of the model make it adequate: Chi-square = 116.578; Degrees of freedom = 18; CMIN/DF = 6.47; CFI = .88; RMSA = .07; IFI = .88; NFI =.85

Model 3. "Critical students"

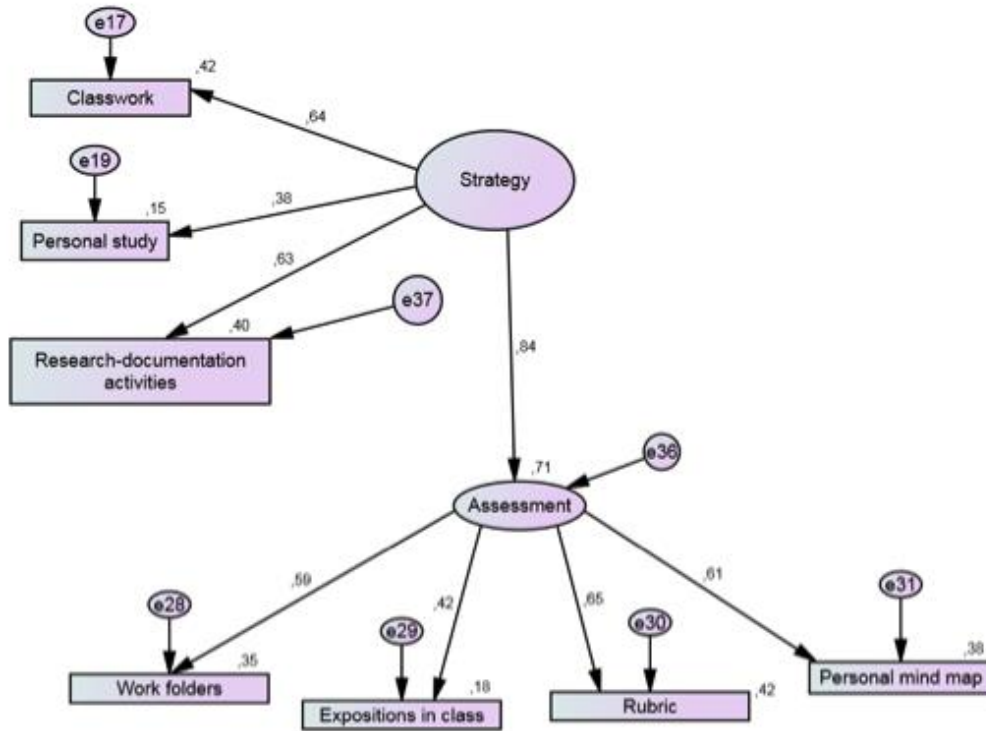


Fig. 6. Critical student model

This third model is defined by two dimensions: strategy and assessment. Strategy is specified by group work in class and personal study. In turn, assessment involves both more cooperative strategies (work folders, rubrics) and individual (expositions in class, personal mind map). It combines the personal and the shared. The model's goodness-of-fit indexes make it sufficiently adequate: Chi-square = 18.806; Degrees of freedom = 13; CMIN/DF = 1.44; CFI = .99; RMSA = .026; IFI = .99; NFI = .97.

Model 4. "Efficient students"

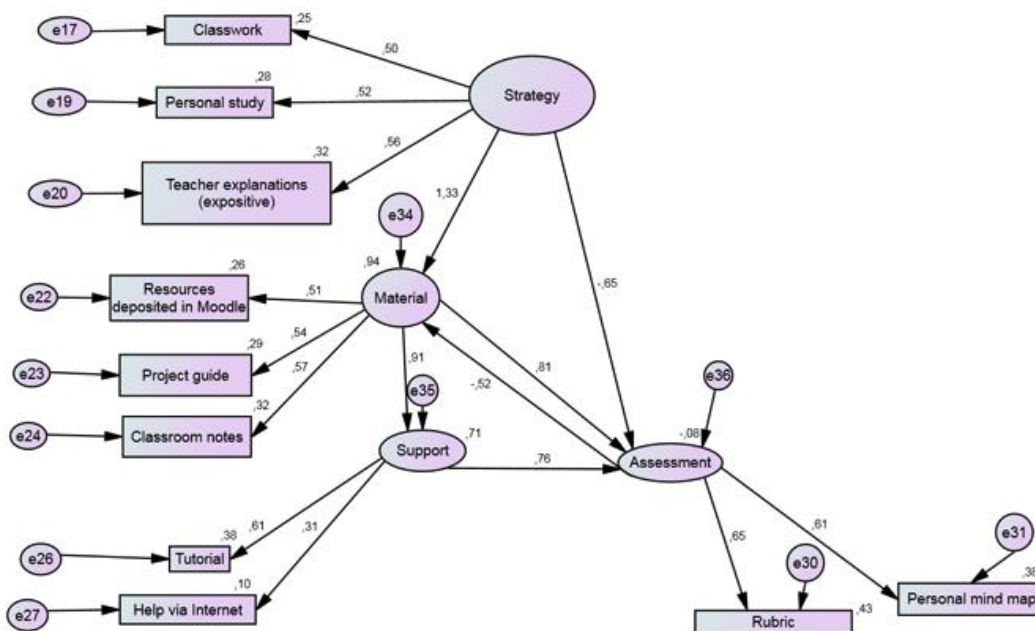


Fig. 7. Efficient student model

The efficient student model is the most complex of the four resulting models. It consists of four dimensions, as shown.

In this model, the strategies strongly determine the materials and assessment. The type of support needed by the students is determined by the material. On the other hand, a reciprocal relationship (represented in [Figure 7](#) by two arrows) between material and evaluation is observed, in such a way that the more the materials represented in the model are used, the more the use of rubrics and personal mind maps appears in the assessment strategies, and the less they are used in these strategies, the less use is made of the material. In addition, the assessment is also influenced by the support received by the students. The model fit indices are also adequate: Chi-square = 106.254; Degrees of freedom = 29; CMIN/DF = 3.66; CFI = .91; RMSA = .06; IFI = .92; NFI = .89.

A closer examination of the results reveals a series of descriptors in which all the models coincide to a greater or lesser extent:

- Teacher explanations. Although autonomous work and creative initiatives are valued and implemented, the acknowledgement and valuation that is granted to the information and explanations derived from the teacher's exposition over any other medium, resource or content source is verified. This aspect is consistent with transmissive models, strongly anchored in university academic tradition.

- Likewise, rubrics or assessment templates are designed to provide independence and encourage collaboration, but they entail the risk of induction. They can be managed as a tool for "risk avoidance" against the flight from creativity and spontaneity, becoming a template that synthesises the teacher's perspective – and their assessment levels – in terms of the "correct answer", which instead of promoting autonomy may end up inducing a certain response and way of expressing knowledge. Although, paradoxically, the aim is to promote self-regulation, collaborative work and development of the singular interpretation of the contents.

- Class notes and teacher explanation: Although the intention is to promote student autonomy, it is observed that students tend to reassure themselves, and to do so will use scenarios and resources that literally replicate "the truth" expounded by the teacher. For this purpose, the usual annotations (notes) that literally compile the teacher's contributions, susceptible to reproduction, are highlighted. This is the descriptor that best defines the model for conventional and efficient students.

- Personal study and performance. Work projects promote cooperative work, but, as we have seen, where students pay the most attention and afford credibility is in individual and guided tasks. The collaborative aspect mainly becomes interesting in the work group or team, but scarcely in collective interactions, and this "insularity" or "collaboration between like-minded" is another risk observed on a recurring basis.

- Resources deposited in Moodle: These are resources elaborated, expounded and selected by the teacher. They contain the knowledge that needs to be disclosed, and little relevance is given to the personal search for information which, among other things, may not coincide with the view of the "academic authority". Moreover, an impression of security is given by the fact that the material is selected by the teacher and includes tasks from other courses which, in terms of the model, function as a guide and convey the sensation of security. In short, this way "the students adapt and deliver productions that coincide with what the teacher expects to find".

These coincidences highlight the solidity of direct instruction, in other words, the literal transmission of content through sequences and processes that are deemed necessary to achieve a given learning ([Kirschner et al., 2006](#)). It is the teacher who systematically proposes the expositions and experiences, alternating the participation of the students this way, always under the teacher's guidance and direction. Similarly, the teacher administers the resources and supports, progressively withdrawing them in order to favour "controlled" autonomy. This general framework of direct instruction cannot be confused with the so-called "traditional teaching" of a verbalistic, passive nature hinging only around the teacher's dissertation. In direct instruction, students carry out practical activities, but always closely supervised by the teacher ([Montanero, 2019](#)). This is, as we see, at the base of active teaching, albeit at its embryonic or initial level.

3. Conclusion

In view of the results obtained, four clusters have been identified in the sample of students selected for the study, associated with Practical, Conventional, Critical and Efficient student models. The most representative cluster would be between the dependent and the cooperative, which corresponds to the Practical model, whose most typical features are related to a tendency to value learning as an effect of active participation in a sequence of activities proposed by the teacher. Moreover, from this perspective, knowledge emerges spontaneously through the experiences developed. Likewise, the relationships between equals and direct and close contact with a teacher who motivates and guides throughout the teaching sequence are significantly valued. Hence, the materials proposed and guidelines received appear as basic pillars of teaching. Seen from this position, assessment corresponds more to creative and shared production than to a uniform or repetitive response, but without losing sight of the fact that it corresponds to the received guidelines.

To a great extent, as we have seen, collaborative work has progressed in such a way that learning means an experience in common, with the aim of creating meanings and providing answers to complex questions. However, it is still far from the required self-learning that facilitates self-regulated access to the different sources of information in order to progress beyond predefined guidelines and integrate into the extensive knowledge map now drawn by telematic networks and which make the more different training spaces accessible.

But having said this, it can also be said that, based on the data obtained, we cannot talk about pure models, although in theory they are admitted and useful for understanding and analysing practices. When referring to reality, the gradient of nuances is greater than the precise and sharp definitions. The models that appear in the results are indicative representations, but not exhaustive, as they are more about setting trends than proposing closed and definitive patterns.

Likewise, if other samples were considered, another outcome could be reached (they are tentative for this study; if another one were carried out, a different image could be configured). The proposals that appear serve as indicators that help us make decisions to guide ourselves towards positions that promote a training process characterised by active participation, collaborative work and involvement in personnel with a sufficiently high degree of autonomy to be able to self-regulate and make use of knowledge in new and changing situations.

Similarly, we are witness to the publication of practical experiences or theoretical statements, but there is still little research that offers contrasted data to correct and advance towards a model characterised by collaborative involvement and the development of autonomy in learning. In other words, progressing towards a perspective focused on student learning, organised on a self-regulated basis that ensures training capable of transferring knowledge to different and dynamic situations (Hernández, 2012; Sue, 2014). Other studies such as the one by Gargallo-López et al. (2017) also evaluated the impact that this model based on the practical and participatory experience of the students had on the development of a learning style oriented towards mobilising conceptual change and its functional use in diverse contexts.

With this contribution, the intention is not to make a robust and definitive statement. Instead, the aim is to present contrasted information to help further progress; thus, at the same time as achievements are shown, other shadows and spaces appear that are not as optimistic as might be mistakenly assumed at a superficial glance.

This work has carried out the field study, obtaining and analysing it to correct the excess of idealisms in order to reveal the progress made, sometimes more moderate than would be desirable, and the challenges still pending. We could say that we are not facing resounding changes and we are still far from the proposals described in the theoretical and normative statements. Nevertheless, the changes in university education are starting to become a reality and for their consolidation to prosper, further research is needed that shows real and necessary possibilities from the empirical field.

From this perspective, research stands out as a fundamental element for the understanding and transformation of teaching. Theoretical lucubration and practical narrative serve us well, but until we have contrasted empirical data, they are only tentative frames of reference. Research based on practice reveals evidence backed by revised facts and information, which allows for further progress. This does not mean that the present study shows a radical transformation of innovative

practices in the university, but at least it provides indications closely linked to the real situations, which thus serve as spaces through which to travel, explore and expand.

This analysis that we have presented reveals our shortcomings, insofar as it points to a model which, owing to superficiality, occasionally conceals more than it teaches. For example, we believe that we are promoting autonomous and cooperative work, and yet it is not clear that this is the case.

Among the limitations detected in the study, since the rules of probabilistic selection of subjects are not followed, the subjects represent the only University of Huelva –local situation-. Another is that the sample was heterogeneous by gender, which could help reduce the reliability. In this sense, it implies restrictions when generalizing the results.

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Appendix

**Characterisation by categories of groups
of
CUT "b" OF THE TREE INTO
4 CLUSTERS
Group: CLUSTER 1/4
(Count: 295 – Percentage: 46.09)**

Variable label	Characteristic categories	% of category in group	% of category in set	% of group in category	Test-value
Personal mind map. Student preference	Sufficiently	29,83	16,25	84,62	8,76
Classwork. Student preference	A lot	50,85	35,00	66,96	7,73
Work folders. Student preference	A lot	42,71	28,13	70,00	7,55
Research-documentation activities. Preferencia estu	Sufficiently	27,12	15,63	80,00	7,44
Rubric. Student preference	Sufficiently	32,20	19,84	74,80	7,23
Classwork. Student preference	Sufficiently	18,98	10,16	86,15	6,94
Tutorial. Student preference	Sufficiently	30,85	19,53	72,80	6,64
Classroom notes. Student preference	Sufficiently	31,53	20,16	72,09	6,58
Personal performance. Student preference	A lot	38,98	27,19	66,09	6,13
Expositions in class. Student preference	Sufficiently	32,20	21,88	67,86	5,77
Work folders. Student preference	Sufficiently	17,97	10,47	79,10	5,70
Project guide. Student preference	Sufficiently	17,29	10,00	79,69	5,66
Teacher explanations (expositive). Preferencia estudia	Sufficiently	21,36	13,44	73,26	5,36
Group work outside class. Student preference	Sufficiently	24,75	16,25	70,19	5,31
Classroom notes. Student preference	Slightly	8,81	4,38	92,86	5,16
Research-documentation activities. Preferencia estu	Slightly	8,81	4,38	92,86	5,16
Personal study. Student preference.	Slightly	9,83	5,16	87,88	4,95
Personal study. Student preference	Sufficiently	24,75	16,72	68,22	4,95
Project guide. Student preference	A lot	35,93	26,56	62,35	4,88

Teacher explanations (expositive). Preferencia estudia	A lot	47,46	37,81	57,85	4,58
Help via Internet. Student preference	Slightly	10,17	5,63	83,33	4,56
Personal mind map. Student preference	A lot	42,71	33,44	58,88	4,52
Explanations in class to groups. Student preference	Sufficiently	14,92	9,22	74,58	4,52
Resources deposited in Moodle. Student preference	A lot	36,61	27,97	60,34	4,42
Explanations in class to groups. Student preference	A lot	42,03	33,28	58,22	4,26
In team or collective. Student preference	A lot	38,64	30,16	59,07	4,24
Personal mind map. Student preference	Slightly	7,46	3,91	88,00	4,24
Rubric. Student preference	Slightly	5,76	2,81	94,44	4,17
Research-documentation activities. Preferencia estu	A lot	43,73	35,16	57,33	4,12
Personal performance. Student preference.	Sufficiently	6,10	3,13	90,00	3,93
Rubric. Student preference	A lot	42,37	34,53	56,56	3,78
Group work outside class. Student preference	Slightly	13,90	9,22	69,49	3,66
Resources deposited in Moodle. Student preference	Sufficiently	15,25	10,47	67,16	3,54
Exam. Student preference	Not at all	41,69	34,38	55,91	3,52
In team or collective. Student preference	Sufficiently	16,95	12,34	63,29	3,16
Exam. Student preference	Slightly	20,68	15,63	61,00	3,15
In team or collective. Student preference	Slightly	5,08	2,81	83,33	3,04
Personal study. Student preference	Not at all	4,07	2,19	85,71	2,80
Teacher explanations (expositive). Preferencia estudia	Slightly	3,73	2,03	84,62	2,59
Tutorial. Student preference	Slightly	10,17	7,19	65,22	2,55
Tutorial. Student preference	Not at all	5,08	3,13	75,00	2,43
Help via Internet. Student preference	Totally	28,14	37,03	35,02	-4,25
In team or collective. Student preference	Totally	36,95	51,72	32,93	-6,87
Group work outside class. Student preference	Totally	26,78	41,88	29,48	-7,15
Resources deposited in Moodle. Student preference	Totally	43,39	59,22	33,77	-7,49

Explanations in class to groups. Student preference	Totally	38,98	55,31	32,49	-7,65
Personal performance. Student preference	Totally	52,88	68,44	35,62	-7,80
Project guide. Student preference	Totally	43,39	61,25	32,65	-8,56
Tutorial. Student preference	Totally	25,08	43,75	26,43	-8,84
Teacher explanations (expositive). Preferencia estudia	Totally	26,44	46,25	26,35	-9,34
Expositions in class. Student preference	Totally	14,24	32,66	20,10	-9,35
Personal study. Student preference	Totally	18,98	38,44	22,76	-9,46
Classroom notes. Student preference	Totally	22,37	42,66	24,18	-9,68
Rubric. Student preference	Totally	16,95	39,53	19,76	-11,00
Work folders. Student preference	Totally	34,24	58,75	26,86	-11,76
Research-documentation activities. Preferencia estu	Totally	17,63	43,28	18,77	-12,36
Classwork. Student preference	Totally	25,08	52,19	22,16	-12,89
Personal mind map. Student preference	Totally	17,29	44,53	17,89	-13,12

**Group: CLUSTER 2/4
(Count: 12 – Percentage: 1.88)**

Variable label	Characteristic categories	% of category in group	% of category in set	% of group in category	Test-value
In team or collective. Student preference	Not at all	100,00	2,34	80,00	9,81
Rubric. Student preference	Sufficiently	100,00	19,84	9,45	5,85
Group work outside class. Student preference	Slightly	66,67	9,22	13,56	4,71
Explanations in class to groups. Student preference	A lot	100,00	33,28	5,63	4,67
Exam. Student preference	Not at all	100,00	34,38	5,45	4,59
Classwork. Student preference	A lot	100,00	35,00	5,36	4,54
Work folders. Student preference	Sufficiently	66,67	10,47	11,94	4,50
Research-documentation activities. Preferencia estu	Totally	100,00	43,28	4,33	3,96
Group work outside class. Student preference	Not at all	33,33	3,44	18,18	3,33

Expositions in class. Student preference	Slightly	33,33	3,59	17,39	3,28
Resources deposited in Moodle. Student preference	Totally	100,00	59,22	3,17	2,92
Teacher explanations (expositive). Preferencia estudia	Sufficiently	50,00	13,44	6,98	2,83
Project guide. Student preference	A lot	66,67	26,56	4,71	2,66

**Group: CLUSTER 3/4
(Count: 87 – Percentage: 13.59)**

Variable label	Characteristic categories	% of category in group	% of category in set	% of group in category	Test-value
Expositions in class. Student preference	Totally	55,17	32,66	22,97	4,56
Work folders. Student preference	Totally	80,46	58,75	18,62	4,47
Classwork. Student preference	Totally	70,11	52,19	18,26	3,53
Personal mind map. Student preference	Totally	62,07	44,53	18,95	3,42
Personal study. Student preference	A lot	49,43	37,19	18,07	2,40
Classroom notes. Student preference	Sufficiently	10,34	20,16	6,98	-2,43
Group work outside class. Student preference	Slightly	2,30	9,22	3,39	-2,45
Classwork. Student preference	Sufficiently	2,30	10,16	3,08	-2,72
Exam. Student preference	Totally	0,00	6,09	0,00	-2,77
Personal mind map. Student preference	Sufficiently	5,75	16,25	4,81	-2,94
Teacher explanations (expositive). Preferencia estudia	Sufficiently	3,45	13,44	3,49	-3,10
Expositions in class. Student preference	Sufficiently	8,05	21,88	5,00	-3,49
Work folders. Student preference	Sufficiently	0,00	10,47	0,00	-4,02
Exam. Student preference	A lot	0,00	11,88	0,00	-4,36
Exam. Student preference	Slightly	1,15	15,63	1,00	-4,59
Exam. Student preference	Sufficiently	0,00	17,66	0,00	-5,60
Exam. Student preference	Not at all	1,15	34,38	0,45	-8,13

Group: CLUSTER 4/4
(Count: 246 – Percentage: 38.44)

Variable label	Characteristic categories	% of category in group	% of category in set	% of group in category	Test-value
Classwork. Student preference	Totally	80,89	52,19	59,58	11,72
Rubric. Student preference	Totally	67,07	39,53	65,22	11,26
Personal mind map. Student preference	Totally	72,36	44,53	62,46	11,26
Research-documentation activities. Preferencia estu	Totally	67,89	43,28	60,29	9,92
Personal study. Student preference	Totally	62,20	38,44	62,20	9,70
Tutorial. Student preference	Totally	67,48	43,75	59,29	9,55
Work folders. Student preference	Totally	81,71	58,75	53,46	9,51
Teacher explanations (expositive). Preferencia estudia	Totally	69,11	46,25	57,43	9,17
Explanations in class to groups. Student preference	Totally	76,42	55,31	53,11	8,57
Classroom notes. Student preference	Totally	63,82	42,66	57,51	8,51
Personal performance. Student preference	Totally	86,99	68,44	48,86	8,22
Project guide. Student preference	Totally	80,89	61,25	50,77	8,19
In team or collective. Student preference	Totally	70,33	51,72	52,27	7,44
Resources deposited in Moodle. Student preference	Totally	76,02	59,22	49,34	6,87
Group work outside class. Student preference	Totally	58,94	41,88	54,10	6,84
Expositions in class. Student preference	Totally	48,37	32,66	56,94	6,58
Help via Internet. Student preference	Totally	50,41	37,03	52,32	5,43
Exam. Student preference	Totally	11,38	6,09	71,79	4,19
Exam. Student preference	A lot	16,26	11,88	52,63	2,56
Exam. Student preference	Sufficiently	22,76	17,66	49,56	2,55
Expositions in class. Student preference	A lot	32,93	39,06	32,40	-2,44
Personal mind map. Student preference	Slightly	1,22	3,91	12,00	-2,72
In team or collective. Student preference	Sufficiently	7,72	12,34	24,05	-2,75

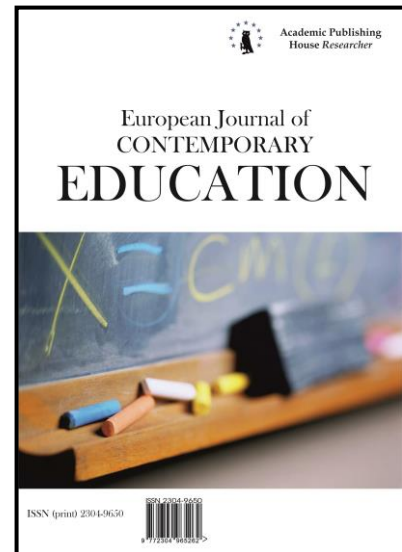
In team or collective. Student preference	Slightly	0,41	2,81	5,56	-2,92
Rubric. Student preference	Slightly	0,41	2,81	5,56	-2,92
Expositions in class. Student preference	Slightly	0,81	3,59	8,70	-2,99
Expositions in class. Student preference	Sufficiently	15,45	21,88	27,14	-3,06
Classroom notes. Student preference	A lot	23,58	30,78	29,44	-3,06
Personal performance. Student preference	Sufficiently	0,41	3,13	5,00	-3,19
In team or collective. Student preference	Not at all	0,00	2,34	0,00	-3,23
Rubric. Student preference	A lot	26,42	34,53	29,41	-3,35
Research-documentation activities. Preferencia estu	Slightly	0,81	4,38	7,14	-3,60
Personal study. Student preference	Slightly	1,22	5,16	9,09	-3,66
In team or collective. Student preference	A lot	21,54	30,16	27,46	-3,71
Resources deposited in Moodle. Student preference	A lot	19,51	27,97	26,82	-3,73
Research-documentation activities. Preferencia estu	A lot	26,02	35,16	28,44	-3,78
Personal study. Student preference	A lot	27,64	37,19	28,57	-3,90
Explanations in class to groups. Student preference	Sufficiently	3,66	9,22	15,25	-3,91
Group work outside class. Student preference	Sufficiently	8,94	16,25	21,15	-3,97
Help via Internet. Student preference	Slightly	1,22	5,63	8,33	-3,98
Classroom notes. Student preference	Slightly	0,41	4,38	3,57	-4,14
Group work outside class. Student preference	Slightly	3,25	9,22	13,56	-4,23
Resources deposited in Moodle. Student preference	Sufficiently	4,07	10,47	14,93	-4,28
Personal study. Student preference	Sufficiently	8,54	16,72	19,63	-4,43
Classroom notes. Student preference	Sufficiently	10,98	20,16	20,93	-4,62
Teacher explanations (expositive). Preferencia estudia	Sufficiently	5,69	13,44	16,28	-4,64
Project guide. Student preference	Sufficiently	3,25	10,00	12,50	-4,66

Personal mind map. Student preference	A lot	21,95	33,44	25,23	-4,86
Classwork. Student preference	Sufficiently	2,85	10,16	10,77	-5,07
Project guide. Student preference	A lot	14,63	26,56	21,18	-5,46
Teacher explanations (expositive). Preferencia estudia	A lot	24,39	37,81	24,79	-5,53
Work folders. Student preference	Sufficiently	2,44	10,47	8,96	-5,57
Explanations in class to groups. Student preference	A lot	19,51	33,28	22,54	-5,88
Work folders. Student preference	A lot	15,04	28,13	20,56	-5,89
Research-documentation activities. Preferencia estu	Sufficiently	4,47	15,63	11,00	-6,48
Personal performance. Student preference	A lot	11,79	27,19	16,67	-7,11
Personal mind map. Student preference	Sufficiently	2,85	16,25	6,73	-7,88
Tutorial. Student preference	Sufficiently	4,47	19,53	8,80	-8,12
Classwork. Student preference	A lot	15,85	35,00	17,41	-8,20
Rubric. Student preference	Sufficiently	3,66	19,84	7,09	-8,77



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Characteristics of the Project-Based Teamwork in the Case of Developing a Smart Application in a Digital Educational Environment

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Abstract

The study is aimed at solving a problem generated by the necessity to change the organizational forms of digital learning to prepare graduates who meet the requirements of today's labor market; who are equipped with teamwork skills and skills of project-management under uncertainty which are especially relevant nowadays.

The purpose of the study is to provide a theoretical foundation for and experimentally verify the effectiveness of involving students in project teamwork on designing smart applications by means of modern digital technologies; project teamwork activities allow developing the skills and abilities characteristic of a strong research culture necessary for making future discoveries in science and technology.

The research methods are the analysis and generalization of psychological and pedagogical literature, of development strategies and education theories; mathematical methods of statistics, psychodiagnostics and survey methods. The pedagogical experiment is illustrated by the example of assessing the development of teamwork skills, project management skills, and programming skills which form the basis for professional self-realization of graduates.

The study results. The study specifies the concepts of the ability to work in a team and smart application in the context of training professionals for digital economy. The didactic potential of project team work in the sphere of self-realization of graduates is described. The authors reveal the characteristics, principles, and stages of team work on the project aimed at designing a smart application. They offer their recommendations regarding the process of planning and organizing team activities, specifying the skills and abilities necessary to help a person succeed in today's digital society and to get a profession which is in demand on the labor market.

The authors draw a conclusion that project teamwork meets the requirements of digital education and contributes to successful professional self-realization of university graduates if it is well designed, accurately planned, and monitored by the educator to the extent necessary.

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1. Introduction

1.1. Significance of the Research

The significance of the study is explained by the following:

1. The modern society has entered a new era – an era of transformation, which implies the creation of a digital space that can adapt to information and social technologies, meet the requirements of mobility and sustainability, and face the challenges of the future economy.

2. The ability to work with others, both individuals and groups of people (Shulgina et al., 2018), is one of the most demanded skills and competencies which employers expect to see in their future employees; which is necessary to introduce innovations (Kolesnikova, Doneckij, 2016), be competitive (Perelet, 2019), and develop high-tech production. Teamwork skills, the ability to working on large-scale cross-industry projects under uncertainty are a prerequisite and a priority for the “new-era” economy (Kuzminov, 2019).

3. The introduction of digital technologies in all spheres results in the introduction and use of intelligent systems in everyday life, technology, medicine, environmental protection: smart watches, smart utensils, smart lights, etc.

4. Taking the above into consideration, the primary focus of the Digital School project should be the development of team and project-based training. One more guiding principle should also be a more active use of mobile applications and digital technologies.

Nevertheless, despite the high didactic potential of the use of digital technologies in digital education which has been described by (Dezhina, Klyucharyov, 2018; Makarova et al., 2019), most teachers still use ready-made mobile apps (Soboleva, Fedotenko, 2019) which they mainly use to increase motivation, interactivity, and visualization (Terzidou et al., 2018). Teachers are not active enough in involving students in developing their own mobile apps to solve real-life problems (Soboleva, Perevozchikova, 2019). They give the following reasons for the existing situation: lack of time, lack of necessary knowledge and training, lack of skills of programming in appropriate environments (Cherniavskikh et al., 2019), inconsistency in the level of students' algorithmic thinking culture and complexity of a particular problem (Kocakoyun, 2017). The kind of training based on project team work has the resources to resolve these difficulties (Burgess et al., 2019).

Thus, there is an objective necessity to study the characteristics of organizing teamwork on a project aimed at developing a smart application to train skills that are now in demand on the labor market and necessary for successful professional self-realization of graduates.

1.2. Aims and Objectives of the Study

The aim of the study is determined by the necessity to involve students in project teamwork on designing smart applications by means of modern digital technologies. It helps graduates to meet the requirements of the labor market and master essential teamwork skills and skills of project management under uncertainty.

The objectives of the study:

– to specify the concepts of the ability to work in a team and smart application in the context of training professionals for digital economy;

– to demonstrate the didactic potential of project team work for self-realization of graduates;

– to describe the characteristics, principles, and stages of project team work on designing a smart application;

– to formulate recommendations regarding the process of planning and organizing team activities, specifying the skills and abilities necessary for a person to succeed in today's digital society and get a profession which is in demand on the labor market;

– to demonstrate experimentally that the suggested modifications are effective in upgrading the training process, in the development of skills and abilities that determine a high level of research culture and are necessary to introduce innovations in science and technology.

2. Discussion

2.1. Review of Russian Pedagogical Literature

The Strategy of the Information Society Development in the Russian Federation for 2014–2020 and up to 2025 in perspective (Strategiya razvitiya..., 2017) specifies the priorities of the digital economy taking into account the global trends of increasing competition, globalization, and automation. To implement these in practice, Atlas of the Future Jobs (Gohberg et al., 2019) describes key competencies for each economic sector. In particular, it is indicated that due to digital transformation there will be a reduction in professions where a person is required to perform routine monotonous actions (sorter, storekeeper, accountant, salesperson). Employers will prefer employees who can work in teams, or in collaboration with other individuals on multi-disciplinary projects. Ganseuer, Neretina, Korokoshko (Gansuar et al., 2015) consider that each team member should be able to act as both an executor and a leader. The project results should meet the challenges of the future, i.e. to offer a *smart* solution under conditions of uncertainty. Training of a new type of professionals having the necessary skills requires from digital education the introduction of innovative pedagogical ideas at all levels starting from pre-school education to further education courses. Karakozov and Ryzhova recognize the need for digital school changes in the content, organizational forms, methods, and teaching aids and provide well-grounded arguments (Karakozov, Ryzhova, 2019). The scholars study in detail the didactic potential of high-tech tools and changes in the way the participants of the digital educational environment interact.

Rogach, Frolova, Ryabova and Vetrova (Rogach et al., 2019) carried out the analysis of the labor market requirements for secondary school leavers; they also compared the expectations and requirements of employers and the students' competencies. The study provides specific cases illustrating the employers' interest in effective cooperation with educational institutions in the field of training professionals who can meet the requirements of the digital economy. The study also describes the problems that impede self-realization and prevent students from acquiring in-demand professional skills of the future. These problems are poor communication skills, inflated self-esteem, high salary expectations, unwillingness to work in a team, lack of responsiveness and responsibility.

The concept of a *team* is studied from different perspectives, more often as a sociological phenomenon as the features of a team are revealed in comparison with a group or body of people. From the point of view of management, scholars are interested in such notions as working in a team, teamwork principles, increasing the efficiency of a team. The psycho-pedagogical range of studies is also quite diverse, so we will narrow down on those which explore team training in relation to acquisition of in-demand professional or universal skills.

In its general sense, the concept of a team is defined as a group of people who can complement and replace each other while working to achieve the desired goal (Savva et al., 2018). Sidelnikova expands this definition stating that a team is a collective entity, and the main characteristic of a team is its ability to act as a whole in relation to setting goals, defining values and standards for action (Sidelnikova, 2018).

Considering teamwork as the basis for formation of the required skills, we should turn to the ideas formulated by Malysheva (Malysheva, 2017). The scholar characterizes the team activity as a set of skills including fast adaptation in a new team; performing activities at the same pace as others; an ability to build a constructive dialogue; being able to prove one's views to the team members in a convincing way; being able to admit to being wrong and accept a different way of thinking; being able to change roles depending on the goal; being able to constrain one's own claims and ambitions; readiness to help other team members; emotion management skills.

The digital economy prioritizes the trends of globalization, automation and competitiveness, so employers expect from graduates not just to be able to work in a team, but to act under uncertainty, to constantly self-develop, to be able to switch from one kind of activity to another, sometimes in a related sector. It determines the current understanding of teamwork skills as universal skills that include certain personality traits and professional competencies (Filatova, 2018).

Malysheva (Malysheva, 2017) offers a review of pedagogical technologies aimed at training skills required for working in a team, in a group of people or with other individuals. The results presented in her study are also taken into account as they confirm that the ability to work in a team on a cross-disciplinary research project is a universal competence necessary for future professionals.

To justify the fact that cross-disciplinary project work is effective for training for in-demand jobs of the future, it should be noted that digital economy follows the principle of division of labor. The activity within this system does not depend on the behavior of individuals; instead, it guides them in a certain way.

Sidelnikova (Sidelnikova, 2018) states that teamwork skills and communication skills are the competencies highly sought by employers. In this regard, she considers it necessary to use different group work training techniques, including moderation. The author points out that didactic and verified use of such forms of training will increase the attractiveness of teamwork for students and improve the quality of training contributing to their successful integration into the labour market.

Savva, Gasanenko and Shakhmayeva (Savva et al., 2018) studying the phenomenon of a team from the perspective of the didactic process define a team as a group of students corresponding to the following characteristics: maximum activity and responsibility in achieving a shared goal, being aware of the need for interaction and cooperation, comradery and flexibility, creative attitude to collaborative activities, integration of individual ideas and experience, making appropriate decisions in specific educational and professional tasks and situations. The study does not only list the essential characteristics of a team, but investigates this phenomenon from the perspective of professional activities. The researchers point out the necessity for the members of a team to possess cross-disciplinary knowledge and skills. To develop teamwork skills, educators should be able to organize special support activities including cognitive, target, value, and process components.

Ganseuer, Neretina, Korokoshko (Gansuar et al., 2015) generalize the experience in the field of project-oriented training and organization of teamwork activities among university students. They indicate that the global trends of globalization, automation, and competitiveness require qualitative changes in the education system of Russia regarding training of highly qualified specialists who meet employers' expectations. According to the scholars, modern university graduates are not ready for innovations in science and technology, as there is discrepancy between the knowledge they get at university and the required skills. As one of possible solutions, the experts suggest using the educational technology called "Learning by Doing" in the context of project-oriented training.

These ideas resonate with the opinion of Dul'zon (Dul'zon, 2013) who believes that any knowledge gained in the course of project and research activities should become a starting point for solving new problems.

Reshetnyak, Tarelin (Reshetnyak, Tarelin, 2013) describe their experience in organizing practice-oriented activities for students as a way to improve the quality of training. The scholars organize design studios and define them as an integrated component of the didactic process of cross-disciplinary nature in university education.

The conclusions made by Semenykhina and Rudenko (Semenykhina, Rudenko, 2018) are also of significance for the purposes of this study. According to them, improving the quality of teaching programming is another way to modernize the education system and meet the challenges of the future and the requirements of the digital economy. Their study highlights a wide range of problems related to teaching programming and suggests ways to solve them. We see the value of their research in the fact that they give reasons why the ability to program is so important describing it as a kind of activity that improves intellectual training, develops the ability to concentrate on solving a task, facilitates algorithmic thinking and the ability to act according to a certain algorithm. Semenykhina, Rudenko summarize many years of teaching experience and conclude that including practice-oriented tasks of social and cognitive significance for students; verbal and non-verbal, external and internal means; communication attacks; stimulating tasks; gamification; teamwork, independent work and reflection activities can significantly increase the effectiveness of teaching programming as the basis for training in-demand qualified professionals.

Soboleva, Perevozchikova (Soboleva, Perevozchikova, 2019) analyze the changes generated by the introduction of new digital technologies in the educational process. They show that a new digital tool does not guarantee any improvement in the quality of education. It is necessary to teach educators to use high-tech tools which should be used not only to increase interest and motivation, but also as a tool for acquiring new knowledge and competencies. Soboleva, Fedotenko (Soboleva, Fedotenko, 2019) specify the concepts of *mobile learning* and *mobile-based education apps*, explore the potential of mobile services as effective tools of the digital educational environment.

They also describe their own mobile application, which, in their opinion, corresponds to the requirements for a digital educational resource to the fullest extend.

Thus, the Russian literature review has shown that team work on a cross-disciplinary project allows us to take into account the fact that the economy of the future is oriented to economic system based on the division of labor. This activity does not depend on the behavior of individuals; instead, it guides them in a certain way. The use of digital technologies in the educational process should not be limited only to the use of ready-made applications, but it should contain programming components. The tasks connected with developing their own solutions should be based on a particular practical problem which is of value to both team members and future employers.

2.2. Review of Foreign Literature

Tocháček, Lapeš, Fuglík ([Tocháček et al., 2016](#)) consider that the need for innovation in science and technology determines the need for researchers who can integrate knowledge from different disciplines. The educational environment has all the possibilities to meet the challenges of the future. Teamwork/collaborative learning is one of the ways to achieve this aim. Parappilly, Schmidt, Ritter ([Parappilly et al., 2015](#)) describe the characteristics of team-based learning as an educational strategy identifying the following stages of collaborative activities: preparation activities, diagnostic testing and application activities.

Michaelsen, Richards ([Michaelsen, Richards, 2005](#)) formulate key factors for effective implementation of team-based learning: appropriate allocation of students to small groups on the basis of their academic performance and intellectual development; accountability for the result of the whole group and each member; the presence of a well-trained facilitator and provision of immediate feedback.

Hilliard, Kear, Donelan, Heaney ([Hilliard et al., 2020](#)) study the psychological aspect of collaborative learning activities: the problem of isolation, selfishness of modern adolescents (Z generation). Due to their deep immersion into the virtual world, the children of the digital society lose communication skills and fail to get socialization experience in collaborative activities. The new forms of training should take into account the potential of digital technologies (online learning), but at the same time they should equip students with the skills of working in a team/group and with other individuals.

Noguez, Neri ([Noguez, Neri, 2019](#)) describe a research-based learning (RBL) model for engineering students which is based on team-based research activities. The model includes 4 phases: a diagnosis of initial RBL competencies, an introductory workshop on research methodology by the teacher, developing the research project in teams and presentation of the results. The presentation is of key importance. It is made orally and takes the form of a group discussion guided by the instructor and illustrated with infographics and statistical calculations.

Lerchenfeldt, Mi, Eng ([Lerchenfeldt et al., 2019](#)) investigated the importance of communication with colleagues in the process of developing professional competencies. Their study proved that feedback and advice given by another team member contributes to one's professional development.

Cherniavskikh, Borisov and others ([Cherniavskikh et al., 2019](#)) consider that project-based training contributes to the development of analytical, creative thinking; independent acquisition of necessary knowledge from various sources; theoretical thinking based on knowledge of facts and laws of science; teamwork skills. Doorman et al. (2019) conclude that to elicit collaboration skills students should be involved in problem-solving activities based on the use a context that is meaningful for students and meets their needs and interests.

The study by Montrieux, Vanderlinde, Schellens, De Marez ([Montrieux et al., 2015](#)) shows that mobile technologies open up new ways to motivate and develop cognitive interest, have an impact on teaching methods making teachers rethink didactical practices. The use of mobile applications allows eliciting feedback, providing access to multimedia data, providing learning tips, organizing productive discussions. In addition, there is a large number of software tools available to develop applications which students can use to create their own mobile portfolios for both training and further professional development.

The study by Fabic, Mitrovic, Neshatian ([Fabic et al., 2017](#)) shows that mobile tutors are effective for learning. It is also suggested that university students can use Java (in addition to Python, AppInventor, Scratch, C++ tutors) to develop their own applications. The study by

Kocakoyun (Kocakoyun, 2017) gives reasons why a highly qualified specialist should be able to use Java and Eclipse tools to develop mobile applications. The scholar provides detailed information on how to develop and test a mobile application and describes the steps of creating a project from scratch. At the same time, it is noted that there is a wide range of problems associated with teaching programming, but some of the ways to solve them are suggested. We see the value of this study in the fact that it proves the importance of the programming skills in intellectual education; they contribute to the development of the ability to concentrate on solving a task, algorithmic thinking and the ability to act according to an algorithm.

To conclude, there is some disagreement in understanding the phenomena of teamwork and project management, however, most foreign researchers recognize the didactic potential of these training methods in providing educational-instructional support. Mobile application programming practices used in a collaborative environment provide additional resources for decision-making in a digital community. It is also revealed that there is a need for educators to master new competencies for organizing teamwork activities in the context of global digital transformation.

The above circumstances determine the significance of this research.

3. Materials and methods

3.1. Theoretical and empirical methods

Theoretical methods (review of psychological, pedagogical, scientific and technical literature) were used to specify the concepts of teamwork skills and smart application taking into account the need for changes in the sphere of training specialists for the digital economy; to describe the principles and components of teamwork on a project on a mobile application.

The didactic potential of project-based teamwork for graduates' self-realization was revealed through the analysis of the design programs developed by subject teachers, cross-disciplinary projects, and the experience of organizing collaborative and teamwork activities.

The analysis of the practices of incorporating mobile technologies into the digital educational environment was based on praximetric methods; it provided the description and assessment of the methods, means, and forms of organization and control.

The expert assessment method allowed us to comprehensively analyze the results of teamwork activities in a project on developing an application (Shihov, Shihova, 2015). The participants, the tutor, and the prospective employers (customers) played a role of experts. A criteria-based matrix was developed to assess the competencies in question: project management skills, teamwork skills, programming skills, cross-discipline communication skills.

The empirical methods (observation, analysis of the project results) were used to obtain the feedback concerning the knowledge acquired and competencies trained. These methods made it possible to obtain information about the changes in reflection, motivation, involvement in a problem situation, the students' degree of involvement in the learning activities, development of research skills and independent work which are important skills for successful professional self-realization.

The statistical significance of the qualitative changes was verified by means of G test and using the Pearson's chi-square test.

3.2. The base of the research

The pedagogical experiment was used to organize students' teamwork activities in the projects on development of smart applications by means of mobile technologies and assess the development of skills and abilities that characterize a high level of information culture and prepare students for a successful professional career. 50 students were involved in the experiment. They are students of the Faculty of Informatics, Mathematics and Physics of the Vyatka State University, Russia.

3.3. Stages of the research

The study had three stages.

At the preparatory stage, it was specified what and by what criteria would be assessed. The tutor made an initial list of experts (project owners). The primary survey and evaluation of educational results of students for experimental and control groups was conducted. Training in both groups was conducted on the same equipment, by the same teacher. The team of experts was also one for both groups. A list of skills most relevant to the needs of the digital society was created (teamwork, cross-sector collaboration, project management, programming), and the appropriate

tasks were designed. As a result, a criteria-based assessment matrix was obtained. At the same time, a test was drawn up; it included 10 tasks, each rated 2 points. Thus, the maximum number of points for each competency was 20.

The second stage was devoted to methodological activities; the tutor explained to the participants the rules and criteria of the experiment; the students were divided into teams; the topics of projects were specified. The list of external experts was also elaborated at this stage.

The third stage of the study is experimental learning and updating the main ideas of teamwork training in relation to the requirements of the digital economy and the development of key cross-professional competencies. The learning process and the results of the students' research projects are continuously monitored, which allows improving the suggested methodological ideas. The research findings have been published in scientific journals and presented and discussed in the form of reports at the conferences of various levels.

4. Results

4.1. Specifying the main concepts

Working with people. The following forms of classroom interaction were used when developing mobile applications:

Student – Student. The team working on an application is characterized by the distribution of roles between a pair of students: one student assumes the role of a designer engaged in the development and improvement of the device, and the other one is responsible for creating the model behavior management program. At the first stage, the students discuss the expected results, agree on design features: which blocks, graphic design, algorithmic designs, screens, sensors of Android devices (accelerometer, GPS, databases, etc.) should be used. Further they work independently without close interaction and mutual assistance. At the last stage, they evaluate the application as a result of work of both team members. Close interaction is required at this stage again; it involves discussion, error finding and correction in the design of the model and/or program, improving the efficiency of the model or its technical characteristics, expanding functional capabilities, etc.

Teacher – Student. In class, the teacher acts as a tutor supervising and guiding the work of students in accordance with the task. The teacher should inspire the students' interest, foster their research activities, suggest ways of improving the model, for example, by demonstrating how the application may function under different conditions.

Student – Computer. Learning activities involve the ability to program, i.e., to control the model's behavior. In case of the absence of expensive equipment, a student can do homework using special programs that allow creating programs not for a real device, but for the cloud, emulator, virtual device and evaluating the outcome in real time. This enables the students to learn the basics of programming even at home, without having an opportunity to program in the required environment. Working at the computer, the student studies the materials provided by the teacher (video lecture, synopsis, presentation), answers the questions (for example, doing an online test), and performs practical tasks in a software environment.

Group – Pair of students. This kind interaction takes place during presentation of the project by the team (most often it is presented by a pair of students). The rest of the students and the tutor ask questions. This way of interaction prepares students to participate in contests and olympiads training the skill of public speaking. The students defend their projects presenting the developed applications and demonstrating their capabilities. They also discuss the results in the form of a press conference during which students exchange opinions, try to prove their point of view, and conduct discussions.

In this study, teamwork training is understood as an educational strategy aimed at developing teamwork and communication skills. This form of training should be preceded by surveying and analyzing both individual students and the group of students as a whole. Team work on a project means that there is mandatory task distribution between team members; each participant solves/performs specific subtasks; the result of the team work, however, is a whole; everyone in the team is responsible for the project; there is a motivation scheme and unity. We consider understanding of the practical value of the project and sharing the goal and the method of project implementation by all team members as key conditions for effective team work on the project. Students should understand why the task is solved by means of teamwork project-

based activities, why this kind of activity is useful for them, what result they are to get in the course of teamwork activity. Our understanding of the ability to work in a team, or a group and with other individuals also means that the tutor and the students should understand how team work is going to be organized: what principles will be taken into account when forming the teams, the algorithm of activity, the form of presentation of the results, assessment rules and criteria.

A mobile application is understood as a component installed on a mobile device under a specific platform that controls the user interface and the logic of the device.

A smart solution is the solution of the educational environment that meets the priorities of the digital transformation of the society. The development of a smart application implies the use of the didactic potential of the modern digital technologies in respect of providing science and technology with innovative tools. A smart application can support a healthy lifestyle, manage costs, provide comfort, automate routine processes, minimize danger and risks, i.e., improve the quality of life in the digital society.

4.2. Project-based teamwork on developing a smart application

As it is mentioned above, the students were asked to design a cross-disciplinary project for developing a smart mobile application in the course of their on-the-job training program. The choice of implementation tools remained with the students. The following project tasks were given:

1. A smart project called *City Monuments*. The project idea: there is a list of monuments with pictures and GPS coordinates. The user selects from the list the monuments which are of interest to him, ticks them and offers the app to build a virtual route. After the selected monuments and their history are studied and visited, the application offers the user a set of questions about these attractions. Then the application issues a certificate (for example, Beginner, First Class City Expert) based on the results of the virtual tour.

2. A smart virtual assistant providing career guidance in respect to in-demand future jobs. The project idea is to develop the information model to guide a student in choosing a career; it is designed on the basis of the Atlas of New Professions and available psychological and pedagogical tools for identifying the student's cognitive style, intellectual style, the style of cognitive attitude to the world.

The stages of the team project:

1. Identifying the problem. This stage takes place in the first classes; the problems are identified in the course of discussion of the real tasks with the students. The teams are formed (taking into account the students' choice and preferences). One task can be performed by more than one team (working independently or competing with one another).

2. Setting the goal and objectives. In accordance with the goal, the image of the future model is selected; its structure and content are discussed, the set of functions is specified. The result of this stage is the Requirement Specification, which is drawn on behalf of the Customer and reflects the main requirements for the features of the smart application. Further, the Requirement Specification should be submitted in paper (electronic) form to the experts and the tutor for assessment. In addition, each team should write a review of the Requirement Specification of some other team (the reviewers are appointed at random) and estimate its compliance with the requirements, analyze errors and inconsistencies, whether it is complete, and assess professional expertise. The Tutor does the same identifying the most common errors and shortcomings, and these are subsequently discussed with the teams.

3. Developing a Solution. Students choose a design method in accordance with the requirements for the framework, design and functions described in the specification. The result of this stage is the Technical Project, which is drawn up on behalf of the App Developer (the team of students) taking into account the requirements of the Customer stated in the Requirement Specification. The Technical Project (in paper or electronic form) is submitted to the Tutor for assessment.

4. Creating a demo version. The teams install the chosen programming environment and create a test version of their smart solution using available tools. They select the settings, modify the design, etc. It often turns out that the standard libraries and modules do not have enough capabilities to implement a particular function; in this case the teams have to create their own modules/libraries. The next step is content development and development of a unique copyright sign. The stage ends with presentation of the Project. The teams give a demonstration of their mobile solution (using PowerPoint presentation, infographics, an oral report). The application

itself may not be functional yet at this time. It is assessed how the smart solution may eventually look and function. In other words, it is the project that is assessed, not the real mobile application.

5. Maintenance and implementation stage. The participants modify their application and fill it with the necessary content taking into account the comments made during the Presentation of the Project. Sometimes, the concept itself and/or the programming environment are changed for various reasons. The final version of the smart solution is put into the public domain for all teams and external experts. Since the projects are implemented as part of their on-the-job training program, all teams must do it at the same time which is agreed upon in advance (the date and time).

The tutor and all the teams do not just visually evaluate each other's applications, but also check their functionality and performance on a compulsory basis (they get registered, ask questions in the feedback forms, post reviews, etc.). In this case, the teams act as internal experts. External experts (prospective employers) do the same optionally, if so desired, guided by their own professional interests. At the end of the training program, the external experts fill in the assessment tables assessing specific or all participating teams. The final outcome of the Project is evaluated at this stage.

6. Application operation. If it is a real project, it can be delivered to the Customer for further use after all the above steps. However, it is necessary to organize reflection activities after implementing the Project. Thus, all the teams write a review (in free form) at the end of their work (but before the results are announced) of what, in their opinion, they have succeeded in and what they have failed to implement (taking into account the Requirement Specification/Technical Project) and why. If the team has changed the programming environment, it is necessary to indicate the reasons. If the Customer's problem/the training task has not been solved to the full extent, or, the final Project has excessive functionality that is not required by the Customer, it is necessary to state why and at what stage this happened, and also try to indicate possible ways to resolve these contradictions (*"if we had started the Project again, we would have done so and so ..."*). The last lesson is devoted to the discussion of general and particular problems that the teams have faced, the technical difficulties, the ways to overcome them, development prospects and/or prospects connected with implementation of educational projects, exchange of information about useful resources, etc.

It should be noted that some students continue to work on the application even after the on-the-job training program is over: some of them are offered a job connected with the project and they develop the product. The improved and completed mobile service is often presented and defended as the Bachelor's thesis. Anyway, participation in the Project provides sound practical experience, a basis for the development of professional and universal competencies.

The expected meta-subject/regulative learning outcomes are the ability to independently set the learning objectives; the ability to choose from the available options and independently seek for resources to solve the problem/achieve the goal; the ability to describe your experience adapting it to be transferred to other people in the form of a technology for solving specific practical problems; together with the teacher and team members to determine the criteria for the planned result and the evaluation criteria for the educational activities; the ability to observe and analyze one's own educational and cognitive activities and the activities of other students in the process of peer checking; the ability to compare planned and obtained results and draw conclusions.

The suggested project-based team work on the development of a smart application also involves meta-subject/cognitive actions performed by the students: they learn to identify and name the causes of the event or phenomenon specifying the possible/most probable causes, to predict possible consequences, to independently carry out the cause-and-effect analysis; to build a model/scheme in accordance with the problem data and/or find the way to solve the problem; to work out a plan or algorithm of action, to correct or restore a previously unknown algorithm on the basis of given information about the object where the algorithm is applied.

In regard to the communicative component of teamwork activities, it should be noted that it develops the following skills:

–organizing educational cooperation and collaborative activities with the teacher and peers; working individually and in a group: making a joint decision and resolving conflicts on the basis of coordination of opinions and interests;

- stating, reasoning and defending one’s opinion;
- accepting and understanding the point of view of your partner, being able to identify in his speech: the opinion (point of view), evidence (arguments), facts; hypotheses, axioms, theories;
- defending one’s point of view in a right and reasonable way, being able to submit objections in the discussion, to paraphrase one’s thoughts (mastering the mechanism of equivalent replacement);
- identifying possible roles in collaborative activities, playing a certain role in collaborative activities;
- submitting a detailed plan of one’s own activities orally or in writing;
- observing the standards for public speaking, the order and procedure in monologues and discussions in accordance with the communicative task;
- being able to use computer technology (including selection of appropriate software and hardware tools and services relevant to the task) to solve information and communication training problems.

4.3. Experimental estimate

4.3.1. The ascertaining stage of the experiment

The main goal of the experiment was to verify the effectiveness of team work on a cross-disciplinary project aimed at developing skills that are in demand on the labor market and necessary for successful professional self-realization. It was decided at the preparatory stage that the project product itself (smart application) as well as the development process would be evaluated too. A list of skills was compiled (teamwork skills, cross-sector communication skills, project management skills, programming skills), which was most relevant to the needs of the digital society market, and appropriate tasks were drawn up.

After that the criteria were set according to which the tutor, external experts (customers, prospective employers), and participants would conduct an assessment of the team project. A test was carried out before the start of the experiment; it consisted of 10 tasks, each given 2 points by the external experts. For example, to diagnose the skills of the students to work in a team or with other individuals, they were given tasks to develop a dialogue program model or develop a game strategy and select characters. Here is an example of the task: *Professor Dumbledore has to draw up the results of Hogwarts Cup. Four faculties (Houses) participate in the Cup in total: 1. Gryffindor, 2. Slytherin, 3. Ravenclaw, 4. Hufflepuff. The Professor has to choose the House with the highest and least points. Professor Dumbledore must inform Professor McGonagall of the number of the winning House, so that the House is awarded with the Cup. He must also inform Mr. Filch, caretaker of Hogwarts, of the number of the House with the least points, so that Mr. Filch prepares sweets for this House. You should develop an appropriate model.*

The experiment involved 50 students, of which the experimental (26 people) and control (24 people) groups were formed. All subjects are senior students of the faculty of computer science, mathematics, and physics. The average age of students was 21 years. The learning was conducted in the same classrooms, on the same equipment (software, mobile platforms).

4.3.2. Forming stage of the experiment

The tutor carried out methodological work during the forming stage informing the students about the criteria for assessing the project. The teams were formed by the tutor and external experts, but the preferences of students were taken into account. The topics of team projects were formulated together with students taking into account their needs and professional interests either on the basis of a specific problem situation described the customer, or on the basis of a training task. The projects were implemented as part of a three-week on-the-job training program. The expert assessment method (external experts, tutor, students themselves) was used to process and interpret the results of the team work activities aimed at developing a smart solution.

The ability to work in a team was evaluated on the basis of a 5-point scoring scale according to the following criteria: rhythm of work of each member of the team and of the team as a whole, constructive nature of disputes and discussions; argumentation of ideas and decisions in the process of discussion; error correction by each member of the team and the team as a whole; distribution of powers; emotion management, the ability to subordinate their ambitions to the common goal.

Programming activities were evaluated on a scale from 0 to 5 according to the following

criteria: software selection; efficiency compliance of the result with the set goal; sustainability, originality, ease of solution; technical design.

The project activities were evaluated on a scale from 0 to 5 according to the following criteria: functionality, replicability of the project, applicability, producibility; visual expression, aesthetic qualities, attractiveness; novelty, creative approach, originality, uniqueness; effectiveness, efficiency, practicability, ease of use, availability; relevance, up-to-dateness, room for improvement.

Cross-sector collaboration was evaluated on a scale from 0 to 5 according to the following criteria: content, completeness of the material; correct wording of concepts and definitions; application of scientific laws, notions and concepts; use of formulas, models; range of economic sectors where the application can be used.

If the project got more than 17 points according to the results of expert assessment it was given an excellent mark; the projects rated in the range from 9 to 17 were given a good mark. The projects were marked as satisfactory if the experts assessed them from 5 to 8. Other projects were rated as “unsatisfactory”.

4.3.3. Control stage of the experiment

The test was carried out again at the control stage of the experiment. It also contained 10 tasks designed according to the principles described above. The tutor took into account the difficulties that the participants faced when formulating the tasks in the final test. For example, to determine the redundant functionality of the application, to indicate the minimum required team composition for the project, to decide which digital technology to use, etc.

Here is an example of the task: *There is an order to design a mobile application which helps the user choose a theater and a performance in a particular city. The developer started to describe the functionality of the application, but stopped work for some reasons. Continue the description of the required functionality highlighting the necessary minimum and application development options.*

1. The application contains a list of city theaters.
2. The application can switch to the selected theater, provide its address, location, the news; a list of the theater productions and a list of actors upon request.
3. The application should display the theatre guide for the current month (or months in accordance with the information on the site) ...

The results of the assessment of the required competencies by the external experts and the tutor before and after project-based teamwork activities are presented in [Figure 1](#).

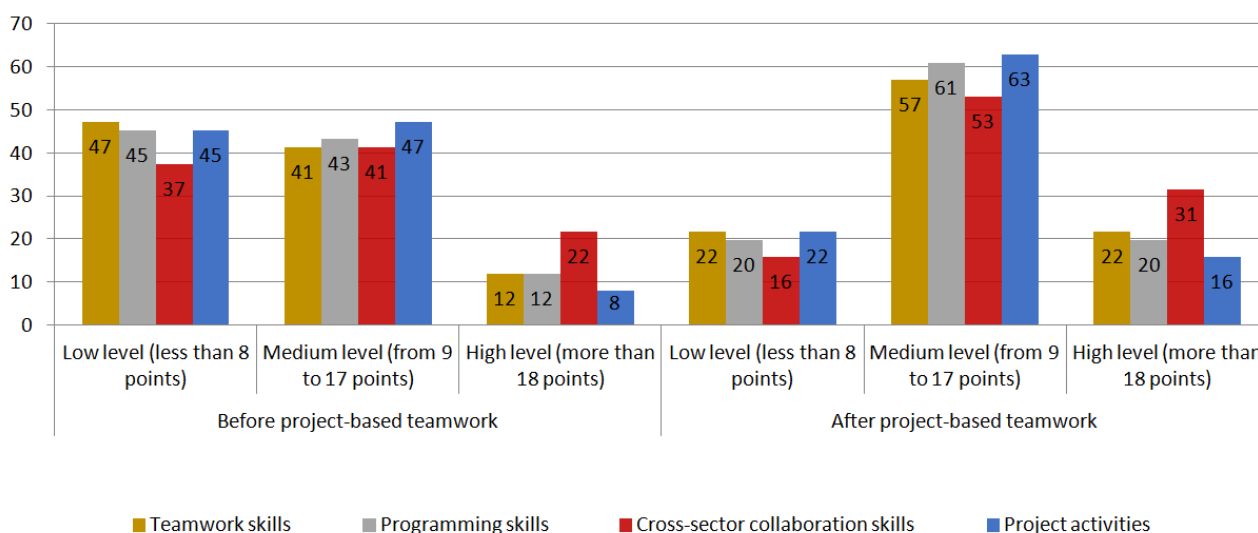


Fig. 1. Dynamics of changes in the level of competencies

The analysis of the obtained results allows us to conclude that the least difficulties, both before team work on the project (37 % of the participants show a low level of proficiency), and afterwards (16 %) were caused by cross-sector collaboration. As for the ability to work in a team/a

group or with other individuals, this indicator had the lowest values before teamwork activities (37 % of students show a low level). In our opinion, this is explained by the fact that the formation of these competencies is a long and complex process which should have a systematic and fundamental nature. However, after the experiment, there was a significant improvement in this universal competence (only 22 % of the students had a low level). Thus, the conclusions made by other scholars are confirmed: training students to participate in collaborative activities requires from the educator serious methodological work.

The medium level demonstrated the highest growth in values for all indicators.

G test was used to assess the effectiveness of the suggested form of training. It allows evaluating random/non-random nature of the changes that take place. The method assumes tracking the shift that reflects the changes in the results of the same student after and before being engaged in project-based teamwork. The values are presented in Table 1 taking into account the sign. According to the table, we have 1 “zero” (discarded), 24 “positive” (typical), 1 negative (atypical) shifts. The methodology takes into account only positive and negative shifts, the zero ones being excluded. The calculation was made using special statistical tables.

Table 1. Assessment Results

Shift	-1	0	1	2	3	4	5	6	8	11
Number of shifts	1	1	6	5	4	3	2	2	1	1

We shall formulate the hypothesis:

Ho: the shift in increasing the level of skill formation after the project-based team work on the development of smart applications is random.

H1: the shift in increasing the level of skill formation after the project-based team work on the development of smart applications is not random.

Next, we analyzed the values in the table of G signs and the data of online calculations (Ostapenko, 2010). We see that for $n = 24$ (according to the number of typical shifts), the calculated $G_{emp} = 1$ and the critical statistical value given in the tables the following is fair:

$$G_{cr} = \begin{cases} 7, & \text{when } p = 0.05 \\ 5, & \text{when } p = 0.01 \end{cases}$$

As $G_{emp} < G_{cr}$, the hypothesis drifts towards H1 hypothesis, so the shift in increasing the level of skill formation after the project-based team work on the development of smart applications can be considered not random.

The results of the control testing before and after the experiment are given in Table 2 and Table 3 respectively.

Table 2. The results of the test before the experiment

Groups	Mark				
	5	4	3	2	
The experimental group	0	4	14	8	26
The control group	1	3	13	7	24
	1	7	27	15	50

Table 3. The results of the test after the experiment

Groups	Mark				
	5	4	3	2	
The experimental group	8	10	6	2	26
The control group	3	4	12	5	24
	11	14	18	7	50

Let us accept the following hypotheses. H_0 : the level of development of skills in demand in the labor market in the experimental group is statistically equal to the level of skills and abilities of students in the control group. H_1 : the level of development of skills of students in the experimental group is higher than the level of students in the control group.

We calculate the value of the statistic of the criterion before ($\chi^2_{emp 1}$) and after ($\chi^2_{emp 2}$) the experiment, using the online resource <http://medstatistic.ru/calculators/calchit.html> (Ostapenko, 2010). A significance level is $\alpha = 0,05$. In this case $c = 4$, which means that the number of degrees of freedom is $v = c - 1 = 3$. According to the distribution tables χ^2 for $v = 3$ and $\alpha = 0,05$, the critical value of the statistic is 7,82. Thus, we obtain: $\chi^2_{emp 1} < \chi^2_{cr}$ ($1,49 < 7,82$), a $\chi^2_{emp 2} > \chi^2_{cr}$ ($8,55 > 7,82$). According to the decision rule, this means that the hypothesis H_0 is true before the experiment, and the hypothesis H_1 is true after the experiment.

5. Discussion

The sample was not probabilistic, since the initial stage of the experiment took into account the results of a survey of students, previous educational achievements, and the opinions of a team of experts. The training was conducted in the same classrooms, by the same teacher. The expert assessment method was used to process the results of team work on the project. The teamwork tutor had to select external experts, develop a criteria-based matrix for assessing the projects, choose a method for processing the results in order to obtain feedback on the formed competencies. It was decided to visualize the data about the competencies in the form of a diagram to demonstrate the dynamics.

The experts also determined the average values for each indicator. The calculations showed that the average value of the control measure calculated before and after the team activity on the project was higher at the end of the experiment by 1.1 (the indicator increased from 2.9 to 4.0). At the same time, the final control tasks were more complex than the initial tasks.

The participants of each team worked in the process of the project development in the following way: all the team members worked together during the discussion of the problem situation, reflection activities and preparation for the defense of the project; participants worked individually in accordance with the technical requirements doing programming and individual tasks during the project implementation, programming and the implementation of independent tasks. The competencies necessary for participating in the project include: basic knowledge and skills of writing the program code according to the algorithm, programming in the environment; receiving and processing information; the ability to connect external libraries in programming environments; the ability to carry on multiple operation tests aimed at studying and improving specific characteristics of the created application.

The set of skills and abilities that are developed through the involvement of students into collaborative activities includes: the ability to generate ideas; the ability to listen to and to hear the other person; the ability to defend one's point of view; the ability to search for information in free sources and to structure it; the ability to carry out independent research activities aimed at designing a new application or improving the characteristics of the old one; ability to combine, modify and improve ideas; teamwork skills; the ability to formulate your thoughts in writing; the ability to position oneself in the field of professional tasks; the ability to assess the necessary amount of professional knowledge and skills necessary to solve a particular problem; the ability to assess the aesthetic qualities of a particular solution and its compliance with the public morals; reflection skills and the ability to evaluate the result of one's own activities; basic public speaking skills.

In general, the pedagogical experiment has shown that involving students in teamwork on a cross-disciplinary project to develop smart applications can improve the quality of training in relation to the competencies most demanded by today's society, economy, and education. However, to organize teamwork on a cross-disciplinary project requires from the teacher a lot of preparatory and organizational effort. As for methodological tips, we recommend that the tutor should use the projector to submit the task description for the teams; the project assessment criteria can be given in the form of a criteria matrix. One can also use infographics and show how the teams are located in the classroom schematically. It is recommended to prepare handouts for the participants: manuals, a list of questions, a list of information resources, assignments, etc.

6. Conclusion

The analysis of the results of the students' cognitive activity allows us to insist that teamwork activities facilitate deep meaningful learning. The practice of developing smart applications in the form of teamwork shows the main didactic advantage of the suggested method which is the fact that it makes it possible to solve really serious problems and practice-oriented tasks and to develop in-demand professional skills. The main condition is that teamwork should be carefully planned and designed and supported by the tutor to the extent necessary.

It is of importance that project-based team work should contain an element of reflection. Therefore, meta-subject/regulative learning outcomes are the most significant ones:

–the ability to independently determine the learning goals, to set and formulate new tasks, to expand motives and interests of one's own cognitive activities;

–the ability to choose among available options and independently seek the means/resources to solve the problem/to achieve the goal;

–the ability to describe your experience in the form of technology making it proper to transfer to other people for solving practical problems in a particular sphere;

–the ability to work out, together with the teacher and peers, the criteria for the planned results and the criteria for evaluating educational activities;

–the ability to set your actions against the goal and, if necessary, correct the mistakes;

–the ability to observe and analyze one's own educational and cognitive activities and the activities of other students in the process of cross-check;

–the ability to correlate real and planned results of collaborative activities and draw conclusions;

–the ability to define the reasons for success or failure and find the ways out of the situation of failure.

The findings of the study make it possible to formulate the following recommendations to help teachers unlock the educational potential of teamwork projects:

1. The tutor should decide at the planning stage what will be assessed: the Project itself, the process of creating the product, or all these things as a whole.

2. The task for the team should be quite complex and multidimensional, allow different solutions requiring different skills and actions; it should create conditions for different members of the team to show their worth.

3. Teamwork assessment procedure should be designed prior to its implementation. All participants must know the assessment criteria before they start to solve the problem.

4. The project can be assessed by the tutor, experts and the students themselves.

5. Evaluation should not be a goal in itself. It's not obligatory to give a mark. The priority in organizing teamwork activities should be given to getting feedback on the knowledge obtained and the competencies trained.

The projects designed in the process of teamwork are smart solutions developed in a digital educational environment and aimed at providing science and industry with innovative competitive resources to meet the challenges of the future.

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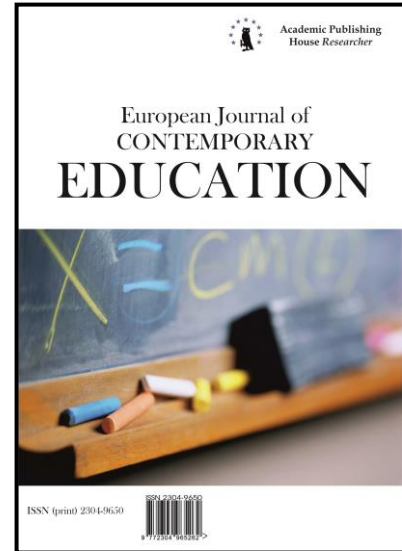
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Native Kalmyk Language and Creative Musical Abilities of Adolescents in Folk Musical Art: Features of Connection

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Abstract

The present study takes an unconventional look at the challenges of bilingualism. High school students' level of the native Kalmyk language is viewed in connection to creative musical abilities (instrumental, vocal, choreographic) in the field of Kalmyk folk musical art. The vector of research is determined by the revitalization of the native language mostly lost due to J. Stalin's repressions.

The research was carried out in three stages. First, the ethnopsychological questionnaire (the features of the «Self-concept» of a high school student's personality) developed by the authors were used together with other psychodiagnostic tools. Then, the subjects' performance was divided into four groups: from comprehensive versatility to latency and absence of creative abilities. At the third stage, an attempt was made to determine the connection between the level of the native Kalmyk language and the level of creative abilities in folk musical art. The statistical calculations were made using the Matt-Whitney non-parametric test.

The obtained applied results give reason to view the Kalmyk language as an effective resource for educational, intellectual and ethnocultural development of the younger generation of the Republic of Kalmykia.

As a result, the authors have identified a large potential for the development of creative musical abilities in adolescents (one in three showed a low level of the native Kalmyk language). This makes it possible to ultimately utilize the innovative resources of school-based language training using the national musical culture to unlock the creative potential of high school students.

The study has identified a stable trend: there is a connection between the level of the native Kalmyk language and the level of a person's creative musical abilities in the field of folk musical art in the context of their ethnocultural identification. Other possible lines of research within the aforementioned area have been named considering the significant dominance of the right

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hemisphere of the brain, the polylinguistic focus of education, etc. The research strategy and the obtained results can also be used in other regions of the Russian Federation considering the multicultural composition of the population.

Keywords: adolescence, artistic musical abilities, bilingualism, ethnocultural identification, Kalmyk folk musical art, music education, native Kalmyk language.

1. Introduction

The Republic of Kalmykia is a unique experimental space as it is a federal subject of the Russian Federation and the only region in the European part of Russia where the local population (the Kalmyks) is of Eastern origin. The demographic composition of the republic is polyethnic (over 30 nationalities) and multiconfessional (Buddhists, Christians, Muslims). These characteristics make it possible to view Kalmykia as an extraordinary experimental space and determine the choice of the interdisciplinary research approach with its possibility to provide the broad scientific and cultural context for the interpretation of empirical data.

The emphasis on the creative development of schoolchildren through the focus on the ethnocultural component of the educational environment is determined by the need to revive the Kalmyk national cultural traditions which were mostly lost due to political and social turmoil of the past, predominantly as a result of J. Stalin's repressions (forced acculturation with the elements of assimilation – operation «Ulusy», 1943–1944). As a result, after the rehabilitation of the repressed peoples in 1957, the ethnocultural upbringing of the young generation was in a difficult position that required the revival of the nearly lost native language, culture, traditions and customs. During the first decades after the adoption of the Constitution of the Republic of Kalmykia (the Steppe Code dated 5 Apr. 1994), the willingness of the younger generation to revive the national culture became apparent, as they sometimes became their parents' tutors. This situation marks the implementation of the new stage of the program for the national revival of the native Kalmyk language, the development of the national culture, customs, traditions and beliefs.

As there are two equal state languages in the steppe region, the Russian and the Kalmyk, the bilingual wealth creates additional favorable conditions for the development of adolescents' creative abilities. The key role in this process is played by the education system that includes national and regional programs. In Russia, it is considered one of the innovative and promising systems.

In this context, the work on identifying and supporting gifted children, their creative abilities and activities becomes more meaningful. Setting and solving such tasks is quite logical and reasonable: the young generation will have to not only take an active part in further innovative changes in various sociocultural areas but also take responsibility for the results. In view of this, there is an urgent need to develop a creative person of a new type who can think creatively and find unconventional original solutions to current and prospective strategic tasks.

The following organizations contribute to the solution of these tasks: the P. O. Chonkushov College of Arts, the Elista Pedagogical College named after Kh.B. Kanukov, the B. Basangov National Drama Theatre, the Republican Russian Theatre of Drama and Comedy, the National Orchestra, the National Symphonic Orchestra, A.O. Tsebekov State Choir, the Kalmyk State Song and Dance Ensemble «Tyulpan», the Kalmyk State Dance Theatre «Oiraty», the Folk Dance Ensemble «Dzhangar», the Folk Song and Dance Ensemble «Bumbin orn» of the Kalmyk State University, E. Mandzhiev Children's Exemplary Performance Ensemble «Gerel», Children's Choir «Kolokolchik», as well as republican and regional festivals including those broadcast on the Kalmyk television. However, in general, their activities are complementary to general education.

The system of school education currently includes federal, regional and local components and the ratio between them is 50:30:20 % respectively. Music education is enshrined as a compulsory component. At first glance, this is the way to implement state-wide educational standards, like everywhere in the country. However, the analysis of their particular content makes it possible to identify the regional uniqueness and the local features of the Republic of Kalmykia. First of all, schoolchildren study the jewel of the Kalmyk folklore – the literary-musical epos «Dzhangar», as well as other works of Kalmyk folk art. Students of national specialized classes learn «Clear Script» created by the great Oirat scholar and educator Zaya Pandita, organize local and republican competitions of throat singing, performance contests for playing national instruments and Kalmyk dancing.

The majority of the population in the Republic of Kalmykia lives in villages and small towns. In this context, secondary general education schools, including advanced secondary schools (gymnasiums), serve as ethnocultural centers. On their basis, using the potential of the school-based additional education (clubs and teams) and extracurricular activities (events and elective courses united in a single space), together with clubs and community centers with the active participation of high school students, festivals, academic and musical competitions, youth talent shows are held and national celebrations are organized in the spirit of centuries-old traditions and customs of the Kalmyk people. This approach enables the systematic development of the ethnocultural personality in the young generation, including by actively involving the means of musical culture which are an integral part of the general educational and ethnocultural strategy adopted on a regional level and successfully implemented in the Republic of Kalmykia.

The transformations of the 1990s in Russia unlocked great potential for the national cultural revival, the development of the concept of the national-regional education system and its varied implementation in the Republic of Kalmykia. This process yielded positive results but proved complicated and controversial. It turned out that it was easier to revive national traditions, customs and rituals, introduce the rich, multigenre folklore and literature than learn the native Kalmyk language from scratch in the modern conditions. That is why learning a national language at school in the absence of a language environment at home can be compared to learning a foreign language.

At the same time, one must admit that the introduction to the Kalmyk folk singing and musical art additionally activates a person's speaking abilities. However, the issue of finding a balance between the national linguistic competence and its manifestation in the Kalmyk folk musical art remains relevant. Within the study, an attempt has been made to scientifically establish whether learning the native national language significantly helps schoolchildren to develop creative musical abilities (instrumental, vocal, choreographic) in the field of Kalmyk folk musical art.

2. Materials and methods

A set of the following diagnostic means was utilized in the study: polling (the questionnaire was developed by E.A. Sokalskii to include the ethnopsychological characteristics of the participants); testing (the Eysenck Personality Inventory adapted by A.G. Shmelev) (Ishov, 2004); the creative test of the A. Maslow Self-Actualization Scale (Aleschina et al., 1987); the short Torrance Test of Creative Thinking (shapes task) adapted by E.I. Shcheblanova and I.S. Averina (Kratkiy test..., 1995); the projective method (unfinished sentences adapted to obtain information about family).

The procedures of statistical verification were used for quantitative processing. The utilized statistical analysis methods included the Mann-Whitney and the φ^* Fisher criteria. The Mann-Whitney non-parametric criterion was used to establish the statistical significance of the differences between the groups of respondents divided according to the level of the native Kalmyk language (high – low, high – medium, medium – low) compared to the level of creative musical abilities in high school students in the area of folk musical art.

The distribution of several traits in the population was close to normal. The φ^* Fisher criterion was chosen, first, due to its sensitivity in the context of the significance of comparing the assessed parameters and, second, considering the planned expansion of the sample up to 1,000 respondents and the statistical processing of the data using almost the only criterion suitable for an expanded sample.

The population of the participants amounted to 530 students in years 10-11 of three prestigious and three general education institutions; boys and girls were almost equally represented. The sample was fully reflective of the general characteristics of high school students in the Republic of Kalmykia.

The purpose of the study was to establish the connection between the high school students' level of the native Kalmyk language and the level of creative musical abilities in the field of folk musical art. The article is focused only on the few significant and insufficiently studied aspects of the broad academic inquiry concerning the creative abilities of adolescents (Chernikova, Sokalskiy, 2018).

The description and analysis of the results are provided particularly for the sample consisting of 291 students in years 10-11 based on the integrated ethnopsychological questionnaire created by us. The questionnaire was developed based on several statements from a high school student's «Self-concept»: the assessment of self-awareness features, the level of the native language, the

manifestation of creative abilities in the areas of folk instrumental, vocal and choreographic art. The participants were given the five-point scale to grade the results.

3. Discussion

As the point of view in the study is unconventional – the nature of the connection between the national language knowledge and the level of musical abilities in adolescents in the field of Kalmyk folk art – the scientific search was carried out by the two-step theoretical and methodological justification. The first step was based on the main ideas and notions on the nature and the mechanism of musical abilities (L.L. Bochkarev, D.B. Kabalevskii, B.M. Teplov and others). The second step was developed through the concepts that described the role, functions and meaning of the native language in a person's ethnocultural identification (P.Ts. Bitkeev, N.Ts. Bitkeev, B.A. Bicheev, G.N. Volkov, B.B. Dyakieva, A.Sh. Kichikov, O.D. Mukaeva, A.B. Pankin and others).

In the process of the study, the key provisions of several biogenetic, biosocial and social concepts aimed at the formation and development of creative musical abilities were considered. The term «musicality» was adopted as a basic concept in this context. Most researchers interpret musicality as a combination of abilities and emotional aspects of the personality, manifested in musical activity (Bochkarev, 1983). The alternative point of view considers musicality as a set of separate, unconnected manifestations of artistic abilities that are combined into five large groups: 1. Musical sensations and perception. 2. Musical action. 3. Musical memory and musical imagination. 4. Musical intelligence. 5. Musical feeling (Loganova, 2001).

Long before alternative interpretations and the terminological discussion, B.M. Teplov (Teplov, 1996) considered emotional responsiveness to music to be the main indicator of musicality and believed the main abilities to be those related to the perception and reproduction of pitch and rhythmic movement, i.e. the ear for music and the sense of rhythm. The scholar identified two components in the ear for music – perceptive and reproductive. The additional components of the set of musicality included timbre, dynamic, harmonic and absolute hearing.

Although the question of the structure of musicality is still open, the importance of musicality can hardly be overestimated not only in relation to aesthetic and moral education but also to the development of the psychological culture of the individual. The essence of musical culture was considered by D.B. Kabalevskii as the ability to perceive and realize music as a living figurative art, born of life and inextricably connected to it. This statement by the composer-pedagogue contains the phenomenology of a person's ethnocultural identification. At present, the integrative processes of globalization are actively invading the musical upbringing and education of young students, hindering ethnocultural identification. In D.B. Kabalevskii's concept, the task of forming a child's musical culture is successfully solved when the schoolchildren themselves are active creators in the world of musical creativity and the teacher directs their activity. L.L. Bochkarev proved that musicality strengthens a person's emotional-volitional tone and helps them master a form of active emotional-creative attitude to the world which is very important for psychological development.

The review of the Kalmyk academic literature indicates that abilities and creative potential are most comprehensively explored in the pedagogical and ethnopedagogical context (G.V. Artaeva, B.E. Belyaeva, O.G. Krasnokutskaya, N.G. Krasnorutskaya, I.V. Kyunkrikova, M.Z. Elderova and others). At the same time, the authors focus their attention on the prerequisites and the process of artistic creativity of participants in preschool, primary school and adolescent ages. Special attention should be paid to the academic works that systematize the creative experience of students – future teachers of handicrafts. The original study by I.T. Baldashinova and E.A. Pipko (Pipko, 2007) addressed to future physical education teachers is unique content-wise. In this context, the works by Z.S. Badmaeva (Badmaeva, 1997) and A.B. Imkenova (Imkenova, 1999) are exceptions as they deal with the matters of ethnopsychology of the Kalmyks. The works by G.Sh. Khulkhachieva (Khulkhachieva, 2006) and T.N. Dzhambinova (Dzhambinov, 2004) are also closely connected to the topic of the present study.

G.Sh. Khulkhachieva proved (2006) that «the process of ethnopedagogical training of future primary school teachers in national classes based on the traditions of the Kalmyk musical folklore will be efficient if:

- it is based on the integration of historical traditions of training teachers for public schools and music education, systemic, culturological, personality-oriented approaches;
- the pedagogical value of the Kalmyk musical folklore, its educational potential in the music education of schoolchildren is revealed;
- the readiness of the future teacher for ethnopedagogical activity by means of the Kalmyk musical folklore is understood as professional and personal education and the sum of the need-based and motivational, cognitive, activity-related and creative and emotional-axiological components».

The academician G.N. Volkov emphasized the importance of the native language in the context of bilingualism for learning folklore, including musical, for the development of an individual's creativity. The word is the most universal, decisive factor in folk pedagogy, especially when it means the word of the native language and native speech. The scholar argued that the traditional national direction in education is the mastering the culture of native speech and, therefore, the awareness and acceptance of one's national identity occurs through comprehension of the native language (Volkov, 1993).

In modern conditions, the phenomenon of bilingualism, that is, the knowledge of two languages – native and Russian – to a sufficient extent for communication is mainly present in Kalmyk families (Gavranek, 1972). Advanced knowledge and ability to speak two or more languages makes one more likely to freely operate concepts, carry out the cross-linguistic and cross-cultural transfer of meanings from one culture to another, which brings elements of novelty to speech, and improve over time. According to the research results, bilingualism is one of the main elements of generating creative ability to develop creativity and the creative potential of a modern civilized person. This was shown, in particular, by N.L. Vigel's results (Vigel, 2014) on the materials of the comparative analysis of language processes in monolinguals and bilinguals, by D.S. Medvedeva (Medvedeva, 2017) using the example of the development of verbal and thinking activity in bilingual primary school students and by R.D. Sandzhaeva (Sandzhaeva, 2001) on a sample of Buryat schoolchildren and students with the significant dominance of the right hemisphere of the brain.

4. Results

The influence of the native Kalmyk language level in high school students on the development of creative musical abilities was studied based on the Ketchenerovskaya, Yashkul'skaya and Troitskaya rural multidisciplinary gymnasiums, as well as the Yashkul'skaya and Arshan-Zelmenskaya secondary general education schools. This choice was not accidental: the scope of the research included the regions of the republic where the representatives of one of the titular nations – the Kalmyks – are territorially concentrated and where a favorable linguistic environment has been preserved. All students from years 10-11 were studied which amounted to 291 people.

In the first stage, the ethnopsychological questionnaire developed by us was used together with other psychodiagnostic tools. The questionnaire reflected several statements based on a high school student's «Self-concept»: the assessment of self-awareness features, the level of the native language, the manifestation of creative abilities in the areas of folk instrumental, vocal and choreographic art. The participants were given a five-point self-assessment scale of answers to grade the results. The scale had the following markers: 5 – very high, 4 – high, 3 – medium, 2 – low, 1 – very low level. When processing the empirical material, we united the participants' self-assessment data on the Kalmyk language knowledge into three logical blocks: 5 and 4 points – high level, 3 points – medium level, 2 and 1 points – low level. As a result, 36.7 % of participants assessed their level of the Kalmyk language as high, 30.1 % as medium and 33.2 % as low. These results partly confirmed the conclusions of several researchers that the results of systematic learning of the native (Kalmyk) literary language are comparable with the results of learning a foreign language at school. A comparison of high figures with other indicators showed a large potential for improving the quality of students' knowledge of the native Kalmyk language: the low and medium levels were present in two-thirds of the sample.

In the second stage of the study, the subjects' performance was divided into four groups of creative ability manifestation according to the criteria «versatility»/»one-sidedness». The first group («comprehensive versatility») included participants who had abilities simultaneously in

several fields of Kalmyk folk musical art: instrumental (dombra, yochin), vocal, choreographic if performance culture was present. The second group («versatility») included participants with less versatile creative abilities in the field of Kalmyk folk musical art: only vocal and choreographic. The third group («one-sidedness») included high school students with either vocal, choreographic or instrumental (dombra, yochin) abilities in the field of Kalmyk folk musical art. The fourth group («low/absent creative abilities») consisted of participants who were not engaged in musical art based on Kalmyk folklore traditions.

In the third stage, an attempt was made to determine the connection between the level of the native Kalmyk language and the level of creative abilities in the field folk musical art. The statistical calculations (the software IBM SPSS Statistics 26.0) were made using the Mann-Whitney non-parametric test – the measurements were taken in the range scale.

The first group of the compared indicators to determine the nature of the statistical connection included quantitative data of the participants' self-assessment of their Kalmyk language level (high, medium, low).

The first group of the compared indicators consisted of the expert assessments assigned to each participant according to the criterial indicators of creative ability manifestation. This approach made it possible to divide the participants into four groups: «comprehensive versatility», «versatility», «one-sidedness» and «low/absent creative abilities».

The Mann-Whitney test was used to identify the differences between pairs of groups of bilinguals with different levels of the native Kalmyk language (high – low, high – medium, medium – low) according to the level of creative musical abilities in the field of folk musical art (Tables 1–3).

Table 1. The calculation data of the Mann-Whitney test to identify the differences between the groups with high and medium levels of the native Kalmyk language compared to the level of creative musical abilities in the field of folk musical art

Groups	Mean rank	V empirical	Significance level
High level (N=105)	108.66	3,186.00	0.000
Medium level (N=86)	80.55		

The differences between the groups with the high and medium levels of the native Kalmyk language were identified (Table 1). A higher level of creative musical abilities in the field of folk musical art was identified in high school students with a high level of the native Kalmyk language compared to the medium level.

Table 2. The calculation data of the Mann-Whitney test to identify the differences between the groups with high and low levels of the native Kalmyk language compared to the level of creative musical abilities in the field of folk musical art

Groups	Mean rank	V empirical	Significance level
High level (N=105)	131.81	2,224.5	0.000
Low level (N=100)	72.75		

The differences between the groups with the high and low levels of the native Kalmyk language were identified in the level of creative musical abilities in the field of folk musical art (Table 2). A higher level of creative musical abilities in the field of folk musical art was identified in high school students with a high level of the native Kalmyk language.

Table 3. The calculation data of the Mann-Whitney test to identify the differences between the groups with medium and low levels of the native Kalmyk language compared to the level of creative musical abilities in the field of folk musical art

Groups	Mean rank	V empirical	Significance level
Medium level (N=86)	109.90	2,890.0	0.000
Low level (N=100)	79.40		

The statistical analysis indicated, as it is obvious from [Table 3](#), that a higher level of creative musical abilities was typical for the high school students with the medium level of the native Kalmyk language compared to those with the low level of the native Kalmyk language.

Among the bilingual participants, the high school students with a high level of the native Kalmyk language showed a higher level of creative musical abilities.

As a result, the calculations using the Mann-Whitney non-parametric test showed the connection between the level of the native Kalmyk language and the level of creative musical abilities in the field of folk musical art in the studied population.

In terms of detailed percentages, various manifestations of creative indicators («comprehensive versatility», «versatility», «one-sidedness», «low/absent creative abilities») clearly demonstrated their connection with the level of the native (Kalmyk) literary language. The quantitative indicators of the first group («comprehensive versatility») among the three categories of respondents definitively indicated that a high level of the Kalmyk language largely determined the presence of ethnoculturally connotated creative abilities in Kalmyk students. The indicator «comprehensive versatility» in the category of participants with a high level of the Kalmyk native language amounted to 14.6 % of the entire studied dataset. For high school students with a medium level, this indicator was two times lower (7.6 %), with a low level – two and a half times lower (5.9 %). Similar results were observed during the analytical comparison of the indicators of the second group («versatility») between the three categories of participants, depending on the level of the native Kalmyk language. Among the participants with a high level of the native Kalmyk language, 11.1 % showed a versatile interest in musical folk art. This indicator was lower (8.0 %) for the people with an average level of language proficiency and for the students with a low level, it was completely absent.

The empirical results were reversed when we examined the group of weak manifestation of participants' creative abilities named «one-sidedness» in its connection with the level of the native Kalmyk language. In the group of participants with a high level of the Kalmyk native language, this indicator was the lowest – 7.2 %. For the high school students with medium and low levels of knowledge of the native Kalmyk language, this indicator was 9.0 % and 14.8 %, respectively. At the same time, their prevailing type of creative ability was dancing which does not require mandatory knowledge of the Kalmyk language. When considering the parameter («low/absent creative abilities»), the same situation was observed: participants with a high level of knowledge of the native Kalmyk language made up 3.8 % of the entire sample, with an average level – 5.5 %; with a low level – 12.5 %.

The obtained statistical results fully answer the main research question. The study revealed a strong connection between the level of knowledge of the native Kalmyk language and the level of the person's creative musical abilities in the field of folk musical art. At the historical stage of the full-scale revival of ethnical heritage, the young educated generation masters the means of not only comprehending folk sources but also gaining a full ethnocultural identity as the fundamental personal culture among citizens of a multinational state.

According to the results of the study, the organizers of school education in Kalmykia got a substantial reason to consider the Kalmyk language as a resource for the national-cultural and educational development of the population, drawing up state-level means to intensify its learning. The large potential revealed in this aspect – the low level of the Kalmyk language in 33.2 % students (one in three participants) – makes it possible to use innovative resources of school language training in future, relying on the national musical culture to unlock the creative potential of high school students.

5. Limitations

The described theoretical and methodological developments, the applied diagnostic tools based on the selected research base can be efficiently used to study the personality of students in years 9–11 of general educational institutions of various types with a multinational student base.

6. Conclusion

The indicated problem is far from exhausted and requires the continuation of research. In view of this, the words of the academician G.N. Volkov remain relevant: the socialization of younger members of society in the context of natural bilingualism will be more efficient if pedagogues consider as much as possible the cultural potential of the native language combined with the capabilities of the Russian language as a means of intercultural communication. This is particularly important for those ethnic groups that, for various reasons, were put on the brink of losing their identity (Volkov et al., 2004).

G.N. Volkov's fundamental statements are axiomatic: «bilingualism and multilingualism significantly enrich the brain of both a child and an adult. Students can learn other languages, especially since practice indicates that learning a third language on the basis of two, the fourth on the basis of three, etc. is easier» (Volkov et al., 2004: 9).

The most difficult task is to create a multiculturally satiated educational environment in the Republic of Kalmykia where the native Kalmyk language will function along with the Russian language and will be enshrined in the law as a state language. In view of this, another insufficiently studied field of research activity is revealed – the determination of the influence of the high level of the native Kalmyk language on learning Russian and other languages (foreign, languages of peoples of Russia) at school.

The new law «On education in the Russian Federation» (dated 29.12.2012 N 273-FZ as amended on 25.11.2013) makes significant contributions to the investigation of the issue. For instance, particular importance is given to identifying and supporting the creative abilities of students. The emphasis is moved to the system of additional education, as well as to academic contests and other intellectual and (or) creative competitions, physical education and sports events aimed at identifying and developing students' mental and creative abilities, interest in scientific (research) activities, including comparative linguistics. When identifying artistic and musical abilities, it is efficient to aim for their combination and development in close connection with physical health and ensuring life safety. The law indirectly reflects the theoretical and practice-oriented conclusion that only a teacher as a creative person can prepare and educate creative schoolchildren.

Therefore, further investigation of the problem requires continuation on a larger scale in the Republic of Kalmykia, considering the interdisciplinary and integrative approaches, biogenetic (inheritance of abilities), psychophysiological (functional asymmetry of the cerebral hemispheres), social (enriched space of additional education) and other factors.

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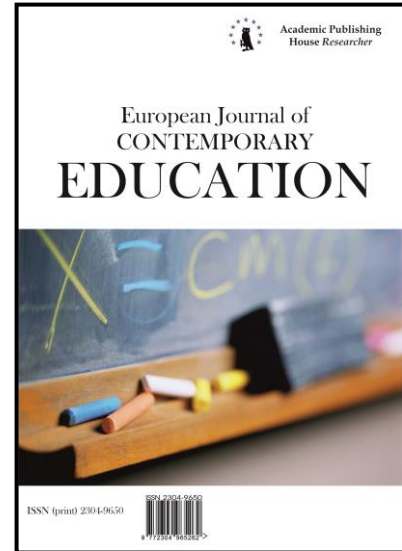
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The Relationship between Play Repertoire and Inhibitory Control in Preschool Children

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Abstract

Numerous studies argue that inhibitory control could be successfully enhanced in play activities during preschool age. Previous studies showed that fantasy significantly associated with inhibitory control and cognitive flexibility. It was also shown that inhibitory control is related to symbolic play (imagination of absent objects, attributing imaginary properties to objects, accepting the role). The primary aim of the current study was to investigate the association between children's play repertoire and inhibitory control in preschool age. Two research questions were addressed in this study. First, we hypothesized that reducing play activity to one favourite play and character could be associated with poorer inhibitory control, probably due to decreasing variability of roles, actions, possible choices. Second, we hypothesized that play duration correlates with the level of children's inhibitory control performance: the more time is devoted to role-play, the higher the level of inhibitory control would be. Participants were 228 children aged 6-7 years. Child's play preferences and play duration were examined with a parental questionnaire. Results indicate that children who had a favourite play were significantly more impulsive while dealing with the tasks which required inhibitory control. A similar result was obtained in the analysis of how having a favourite character relates to the inhibition process: a group of children who had favourite characters showed significantly lower score of inhibition control than groups of children who had no favourite characters or had multiple ones. This study did not show any significant differentiation among groups of children with different play duration per day. These findings contribute in several ways to our understanding of the relevance of play in terms of inhibitory control development.

Keywords: inhibition, inhibitory control, impulsiveness, play, scenario play, role play, inner speech, preschool age.

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1. Introduction

There is a growing body of literature that recognizes the importance of inhibitory control in preschool age. Inhibitory control is an ability to inhibit spontaneous actions and thoughts in order to execute goal-directed actions (Dowsett, Livesey, 2000; Sira, Mateer, 2014; Zelazo et al., 2000). Previous research has suggested that inhibitory control plays an important role in the development of intelligence (Lee et al., 2015), mathematics ability and approximate number system (Fuhs, Mcneil, 2013) successful adaptation to classroom rules and positive peer social interaction (Troller-Renfree et al., 2019; Utendale et al., 2011). Furthermore, deficits in inhibitory control tend to co-occur with poor emotion regulation and anxiety (Troller-Renfree et al., 2019; Carlson, Wang, 2007; Paulus et al., 2014).

Inhibitory control (Durstun et al., 2002; Zelazo, Carlson, 2012) and play activities (Bodrova et al., 2013; Carlson et al., 2014; Diamond, 2012; Pietto et al., 2018; Whitebread, 2012) develops rapidly in the preschool period. Vygotsky emphasized that play could be an effective instrument for internalizing cultural tools required for goal-directed behaviour (Vygotsky, 1967). As Vygotsky states, in a play situation rules are alienated and set as a role so that a child observes his or her behavior and controls it through the role as some kind of a mirror and therefore learns to be consciously aware of his or her actions and to ignore distractions (Vygotsky, 1967). In addition, play allows to create an exciting learning situation (Rozhina, Baklashova, 2018), involves peer-interaction where children begin to take into account the wishes and actions of others, to control their behavior and to implement joint plans. In this regard, playful activities are traditionally seen as important for the development of executive functioning (Vygotsky, 1967).

Previous studies, e.g., the study carried out by Perucci and colleagues showed that fantasy (e.g., imaginary friends, an imaginary game, etc.) significantly associated with inhibitory control and another component of executive function such as cognitive flexibility (Pierucci, 2014). The results indicate the importance of fantasy for the development of self-regulation. Similar results were obtained in a study conducted by Kelly and Hammond (Kelly, Hammond, 2011). It was shown that inhibitory control is significantly related to symbolic play (imagination of absent objects, attributing imaginary properties to objects, accepting the role). However, a small sample of the study does not allow to make confident conclusions about this relationship.

A series of experiments were conducted to evaluate the use of the game as a condition for the development of executive functions, including control. A study by Carlson and colleagues examined the impact of the role taken by a child on the success of executive function tasks (White, Carlson, 2016). The assessment was performed under three experimental conditions: (a) typical, (b) when the child imagined himself to be another child ("Where does John think this card belongs?"), and (c) when the child performed tasks as an imaginary character ("Now you are Batman! Where will Batman put this card?"). Analyses revealed that performing a third person's task significantly improves the accuracy of the tasks performed. At the same time, the role of imaginary character was more successful compared to the third person's role. The results suggest that taking on the role of another person or imaginary character has a positive impact on the executive functioning in preschool age and are probably may be an important development factor of it.

Consideration of the possible mechanism of influence of play on inhibitory control and other components of executive functions can be carried out from the point of view of cultural-historical approach. According to Vygotsky one of the fundamental features of children's consciousness is the unity of affective and intellectual processes (Vygotsky, 1967). Play activity provides emotional involvement while at the same time setting a rule-dependent situation. On the one hand, due to the changing narrative, roles and rules play provides a highly variable context which allows a child to determine his or her actions intentionally and arbitrarily (Howard et al., 2017). In play children learn to plan, self-monitor and evaluate their own actions: are they appropriate to the play situation, rules or play-role? (Smirnova, 2019). On the other hand, as play activity requires following certain rules it provides necessary conditions for the development of the executive functions and specifically inhibitory control (Dowsett, Livesey, 2000; Bodrova et al., 2013; Shahar, Avital, 2020).

Numerous studies argue that inhibitory control can be successfully enhanced in play activities (Carlson et al., 2014; Howard et al., 2017; Diamond et al., 2007; Nicolopoulou et al., 2015; Kelly et al., 2011). However, developmental impact of play may vary depending on several parameters. Previous results point towards the existence of a significant correlation between duration of playing at home and the ability to deny impulses in favor of intentional actions (Cemore, Herwig, 2005; Elias, Berk, 2002). Some studies also show that the effect of play increases

if there's a sophisticated play scenario (Elias, Berk, 2002; Nader-Grosbois, Vieillevoye, 2012), supposedly since the play requires psychological distancing through stepping into various roles (White, Carlson, 2016). Thus, the assumption can be made that long-duration role-playing promises the most significant impact on inhibitory control development.

The primary aim of the current study was to investigate the association between children's children's play repertoire and inhibitory control development in preschool age. Two research questions were addressed in this study. First, we hypothesized that reducing play activity to one favourite play and character could be associated with poorer inhibitory control, probably due to decreasing variability of roles, actions, possible choices. Second, we hypothesized that play duration correlates with the level of children's inhibitory control performance: the more time is devoted to role-play, the higher the level of inhibitory control would be.

2. Materials and methods

A random sample of participants was recruited from classrooms located in Moscow. Participants were 228 typically developing children (58 % boys) and their parents. The age of children was 6-7 years ($M = 79,27$ months, $SD = 8,21$). All parents provided informed consent for their children participation in the current study. The research was conducted in 2019.

Individual psychological assessments were conducted in a quiet, bright room in a kindergarten by experienced research psychologists. Each diagnostic session took about 15-20 minutes. Child's play preferences and play duration were examined with a parental questionnaire. The study was approved with the Ethical Committee of the Russian Psychological Society (the approval No: 2018/27).

Inhibitory control

The subtest Inhibition of NEPSY-II was used to assess the ability to inhibit automatic responses (Korkman et al., 2007). A child looks at a series of black and white shapes (circles/squares, and arrows) and names either the shape or the direction. First, child is asked to name the shape or the direction (Naming part). In the second part of the task a child is asked to name the shape or direction conversely: specifically, to name circles when presented with squares and to name squares when presented with circles (Inhibition part). For each part three parameters are considered: uncorrected errors, self-corrected errors, time. The benefit of the Inhibition task is that inhibitory control is being assessed in terms of two different variables (reaction time and accuracy). Uncorrected errors score is the number of instances when a child names a figure incorrectly while performing the task. Self-corrected errors score is the number of instances when a child names figure incorrectly, having the mistake noticed and corrected right away. Time is counted in seconds and allows to estimate the processing speed.

Play preferences

The questionnaire proposed to children's parents focused on the specifics of children's play preferences and play duration was administered. The following questions were asked:

- Does your child have any favourite play? (Parents had to choose one of three answers: «Yes»; «No, my child prefers (has) various plays»);
- Does your child have any favourite characters? (Parents had to choose one of two answers: «Yes»; «No»);
- How much time does your child spend playing every day? (Parents had to choose one of six answers: "0-30 min"; "From 0.5 to 1 hour"; "From 1 to 1.5 hours"; "From 1.5 to 2 hours"; "Over 2 hours"; " My child does not have time for playing").

Bivariate correlation analysis was conducted to show the relations between the inhibitory control measures and demographic variables investigated in this study. The tests used for comparison of means: Mann–Whitney U-test and Kruskal–Wallis H-test, depending on difference the of SD in each comparative group and the number of comparative groups. All values for quantitative variables in each group were expressed as means and SD. Statistical analysis was performed using SPSS version 19.0 (IBM, SPSS Software, Armonk, New York, USA). Differences were deemed significant when $p < 0.05$.

3. Discussion and results

Most parents had higher education (79.2 %) or college education (12.2 %), a small number of parents had secondary and incomplete higher education (7 %), a few parents had a scientific degree

(1.6 %). The majority of parents described their families as belonging to the middle-income social class (79.9 %), some to the low-income and insufficient well-to-do social class (16.4 %), and a small number of parents to the high-income social class (3.6 %). The number of children in the families participating in the study was as follows: one child (41.1 %), two children (40.7 %), three children and more (18.2 %). **Table 1** shows an overview of descriptive statistics for the demographic variables and the Inhibition task measures of all participants. Bivariate correlation analysis was conducted to show the relations between the inhibitory control measures and such demographic variables investigated in this study (see **Table 1**).

Table 1. Demographic variables, and Inhibition task measures: Correlations and descriptive statistics (N = 228)

	M	SD	1	2	3	4	5	6
1. Age	79.27	8.21	–					
2. Siblings	1.77	.74	-.053	–				
3. Mother's education	3.65	.82	-.104	-.180**	–			
4. Family income	2.83	0.55	.013	.011	.230**	–		
5. Uncorrected Errors	3.50	6.79	.055	.039	-.159*	.073	–	
6. Self-corrected Errors	2.20	1.91	.031	-.004	.123	.047	-.175**	–
7. Time	64.4	18.83	.035	.162*	-.025	.068	.062	.220**

¹ Mother's education: 1 = secondary and incomplete higher education, 2 = college education, 3 = higher education, 4 = scientific degree. ²Family income: 1 = insufficient class, 2 = low-income class, 3 = middle-income class, 4 = high-income class. * p < 0,05 (2-tailed); ** p < 0,01 (2-tailed).

Child's age, gender and family income were not significantly correlated with child's inhibitory control measures. By contrast, having siblings was significantly and positively correlated with processing time in the Inhibition task. Mother's education level was significantly and negatively correlated with the amount of Uncorrected Errors.

Table 2 outlines descriptive statistics for inhibitory control measures among groups of children who have different play preferences and duration of play.

Table 2. Descriptive statistics for inhibitory control measures (subtest Inhibition, NEPSY-II)

Groups	Uncorrected errors	Self-corrected errors	Time (in seconds)
<i>Does your child have any favorite play?</i>			
«Yes» (N = 108)	3,88±7,28	2,41±1,97	65,56±19,78
«No» (N = 110)	3,45±6,71	1,88±1,76	62,83±19,28
<i>Does your child have any favorite characters?</i>			
«Yes» (N = 93)	3,91±6,83	2,75 ±2,03	68,33 ±21,51
«No» (N = 131)	3,44±7,04	1,78 ±1,75	61,23 ±16,02
<i>How much time does your child spend playing every day?</i>			
0-90 min per day (N = 80)	3,69±7,07	2,09±1,82	66,06±21,91
90-120 min per day (N = 71)	4,07±7,15	2,45±1,89	63,52±18,39
> 120 min per day (N = 77)	3,08±6,50	2,09±2,05	63,49±16,50

¹ Data were presented with SD.

Responses were distributed evenly between two groups: children who had a favourite play and those who didn't. Mann-Whitney tests showed significant differences in amount of Self-corrected Errors between these groups ($U = 5044,50$; $p = 0,05$). Children who had a favourite play had bigger amount of self-corrected errors ($M = 2,41$, $SD = 1,97$) in dealing with the Inhibition task, than children who had no favourite play ($M = 1,88$, $SD = 1,765$). This result may indicate that children who have a favourite play are able to recognize mistakes having already given an incorrect answer. In this case the self-monitoring of one's performance is occurring on an external level, not on internal one. This result indicates that children who had a favourite play demonstrated significantly more impulsive behavior, nevertheless they had the ability to recognize their own mistakes due to external speech.

Parents' responses allow us to divide the sample into two parts: children who have a favourite character and children who don't. Mann-Whitney tests showed significant differences between groups in amount of Self-corrected errors ($U = 4341,50$; $p < 0,001$) and Inhibition Time ($U = 4905,50$; $p < 0,013$) depending on whether a child did or did not have a favourite character. Children who do not have the favourite character did significantly less amount of self-corrected errors and showed higher processing speed than children who preferred a single favourite character.

Analyses didn't reveal any significant differences in Uncorrected errors time ($U = 2884,50$, $p = 0.470$), Self-corrected errors ($U = 3009,50$, $p = 0.800$) or processing speed between groups with different amount of daily playing time ($U = 2925,500$, $p = 0.587$).

The goal of this study was to investigate children's inhibitory control development in preschool period and to clarify its possible associations with child's preferences in playing. Drawing on Vygotsky's theory we suggested that play could be an effective tool for the inhibitory control development due to the fact that play engages a child emotionally so that he or her is inclined to submit to the rules and constraints imposed by the play roles (Vygotsky, 1967). We then theorized that children with more diverse play experience (playing various plays and taking on various roles) would show better results in the inhibitory control performance.

As anticipated, children who had a single favourite play had significantly higher amount of self-corrected errors than those who had no favourite play. This result indicates that children who had a favourite play were significantly more impulsive while dealing with the tasks which required inhibitory control. They recognized mistakes after having already given an incorrect answer significantly more often than children who had no favourite play and varied their plays. Our assumption is that this result might indicate that self-monitoring of one's actions could occur both on external and internal levels depending on the extent of internal speech development. The ability to register an error before saying it out loud requires inner speech skills to be developed enough. Children who prefer a single play are possibly more impulsive while dealing with tasks demanding inhibitory control due to the lack of experience adapting to the variability of play rules which could have enhanced their internal speech skills. It's thus possible that the diversity of plays a child engages in is one of the factors influencing the development of the inhibitory control. These findings support other studies in this area linking inner speech development with the back-ward inhibition effect (Emerson, Miyake, 2003; Mayr, Keele, 2000). Back-ward inhibition effect suggests that dealing with changing tasks is more challenging for a child, as he or she has to inhibit the processing of the previous task. Authors make an assumption that the inhibition of the reaction to the previous task happens faster and easier for those children who have previous experience managing changing tasks. This accords with our results showing that children who prefer a single favourite play turn out to be less successful at tasks which require inhibitory control than those who have the experience dealing with different play rules.

A similar result was obtained in the analysis of how having a favourite character relates to the inhibition process. A group of children who had favourite characters showed significantly lower score of inhibition control than groups of children who had no favourite characters or had multiple ones. These findings are consistent with the results of White and Carlson (2016) study which demonstrated that 5 years old children showed better results at executive development-oriented tasks if they were distancing themselves from the egocentric perspective and dealing with the task as a play character would do (White, Carlson, 2016). It is reasonable to expect that changing play characters might contribute to the inhibitory control development since in play children learn to control their actions according to various roles. Each role dictates rules and a range of possible

ways of action, and therefore a child is required to recognize, remember and implement these rules in order to stay within the role. Recent research suggest that children are capable of better inhibitory control performance in role-playing than in real life (Jewkes et al., 2007; Pierucci et al., 2014; Thibodeau et al., 2016; Whitebread et al., 2017). It means that an impulsive child may restrain his or her own reactions more effectively in a play situation limited by play rules than in real-life situation (Whitebread et al., 2017).

Contrary to the expectations, this study did not show any significant differentiation among groups of children with different play duration per day. This suggests that the content of a play bears greater significance than its duration: if the child spends a lot of time playing, but changes the roles and thus the rules rarely, his or her ability to inhibit spontaneous reactions will not necessarily be progressing substantially. The findings of the current study do not support the previous results which point towards the existence of a significant correlation between play duration (at home) and the ability to deny one's impulses in favour of intentional actions (Cemore, Herwig, 2005; Elias, Berk, 2002).

Additionally, current study revealed that having a sibling was significantly associated with lower processing speed of doing the inhibitory control test, what corresponds to previous study results (Rolan et al., 2018). In contrast to earlier findings, however, no evidence of inhibitory control differs among children by variables such as socio-economic status was detected (Natalia, 2018).

4. Conclusion

The aim of the current study was to investigate the association between children's preferences in play and inhibitory control development in preschool age. We hypothesized that reducing play activity to one favourite play and to one favourite character could be associated with poorer inhibitory control. We also hypothesized that play duration correlates with the level of children's inhibitory control performance. The study revealed that children whose play preferences were limited by one play or one character have shown significantly poorer inhibitory control, than children who had more diverse preferences. The hypothesis that there is correlation between play duration and inhibitory control hasn't been confirmed. In this study there was no significant statistical evidence that the amount of daily time spent playing correlates with child's inhibitory control performance.

There were at least two limitations of this study. First, as we were unable to observe children's play directly, we had to use data obtained from the parents concerning play duration and children's preferences in plays and roles. Second, in terms of this study we focused on the analysis of particular aspects of playing while at home. Thus, the preferences in playing while attending preschool during the day weren't taken into account in this study even though that's where children have the opportunity to play with peers which could significantly increase variety of their plays. Meanwhile one should not underestimate the contribution of home environment as a home remains the place where a child has enough time to play freely because of the dense day schedule at preschools. Observations show that children have time for unstructured play or the « choice time» for 30 minutes or less a day (Miller et al., 2009; Nicolopoulou, 2010).

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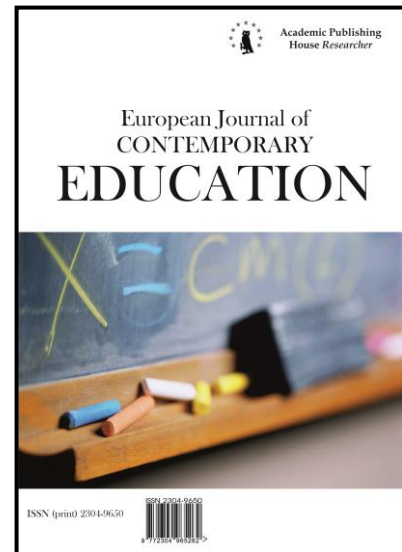
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The History of Education

The Institution of Honorary Supervisors in the System of Public Education of the Russian Empire in the First Half of the 19th Century (The Case of the Kharkov Educational District): Duties, Career, Social Status, and Education Level. Part 1

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Abstract

This paper offers an insight into some of the key practices associated with the operation of the institution of honorary supervisors in the system of public education of the Russian Empire in the first half of the 19th century. Only a member of the noble estate could be an honorary supervisor. These functionaries were an important part of the empire's public education system. They oversaw the work of uyezd (district) schools and provided them with financial assistance. Honorary supervisors were not salaried but could be awarded a high title and receive a major state award for their efforts, which could significantly raise their social status.

Honorary supervisors had a wide purview over the operation of the schools they oversaw. They took part in resolving facilities issues and attended examinations and monthly teacher meetings. These functionaries could also petition senior management for the remuneration or punishment of particular school functionaries. Conversely, honorary supervisors with a negligent attitude toward their duties could legitimately face dismissal by the university administration.

Keywords: Russian Empire, Ministry of Public Education, honorary supervisor, uyezd school, Kharkov Educational District, functionary, nobility.

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1. Introduction

The institution of trusteeship in the secondary and higher education sectors has had quite a rich history, and its practices have been quite beneficial, throughout the world. Over time, this experience has transformed into phenomena such as boards of trustees and endowment funds, which are in place at many (normally quite successful) community colleges or universities around the world, providing them with financial and administrative support and influencing their strategy for development at that. On one hand, these entities can help implement a school's autonomy. On the other hand, in the event of insufficient financial support from the state or a worsening economic situation overall, they can provide a reserve that will help the facility keep running.

Not all countries have had the institution of trusteeship in place, and to this day the practice is either being ignored altogether or is being used very poorly in most developing and even many developed countries. That said, the practice has had quite a rich history. For instance, trusteeship of various educational institutions was quite a common practice in the Russian Empire in the 19th – early 20th centuries. What is more, it existed as an element of the state's education policy. However, subsequent to the fall of the empire and the coming of Soviet power these practices were discontinued entirely. The educational process and the education sphere as a whole were placed in complete dependence on the needs of the Communist regime.

From that time until recently, the traditions of trusteeship were almost entirely lost in this part of the world. Today, the education sectors in many of the former Soviet states are undertaking some kind of an effort to revive the elements of trusteeship. This includes various employer councils, parents' committees in secondary educational institutions, endowment funds, and other entities.

The implementation of positive practices for the development of higher and secondary educational institutions through reviving the institution of trusteeship, or at least some of its elements, can be a significant component in the state's education policy. Exploring the way this institution operated in the past and its efficiency in different periods will, without question, help take account of most of its strengths and weaknesses and use that information in implementing the state's policy with as much benefit for the education system as possible.

This work will examine the operation of the institution of trusteeship in the Russian Empire through the example of honorary supervisors of uyezds schools within the Kharkov Educational District in the first half of the 19th century.

2. Materials and methods

In putting this work together, the authors made use of the following three major groups of information materials:

- research devoted to various aspects of the history of the education system in the Russian Empire in the period under examination that covers issues related to the activity of honorary supervisors of uyezds schools as well;

- official published materials – general government and intradepartmental regulatory documents provided in 'Complete Laws of the Russian Empire' (PSZ-1; PSZ-2) and the official mouthpiece of the Department of Education 'Zhurnal Ministerstva Narodnogo Prosveshcheniya' (ZhMNP, 1849; ZhMNP, 1852), as well as the reference book on functionaries in the Russian Empire 'Mesyatseslov' (1815–1834) (Mesyaceslov, 1815-1834);

- handwritten archival materials, some of which are being introduced into scholarly nomenclature for the first time ever. These documents were discovered in the State Archive of Kharkov Oblast in the holding of Kharkov University (GAKhO. F.667).

Kharkov University's holding contains a large number of materials that can shed light on many of the aspects of the development of the public education system in various regions of the Russian Empire in the first half of the 19th century, including the operation of the institution of honorary supervisors. This is explained by the fact that Kharkov University was at the heart of the Kharkov Educational District, which had long been the empire's largest educational district and at different times incorporated the following regions: the Astrakhan (1824–1833), Volhynian and Podolia (1831-1832), Ekaterinoslav (until 1833), Poltava (until 1839), Taurida, Kherson, and Chernigov (until 1832), Kiev (1818–1832), and Oryol (until 1824 and from 1833 to 1877) governorates, the Bessarabia, Georgian, and Imereti oblasts (1824–1831), Caucasus Oblast (1824–1846), the lands of the Don and Black Sea Cossacks (until 1846), and Odessa Gradonachalstvo (since 1830).

The paper's methodological basis is grounded in the principles of historicism and objectivism, which are aimed at providing a non-biased view of past events and phenomena through the prism of their development and dialectic interaction. Since the work is centered upon individuals brought together by a set of social-professional duties (honorary supervisors), the authors made use of the principle of anthropocentrism as well.

3. Discussion

There is a large body of research covering the system of public education in the Russian Empire as a whole, which includes the history of its particular elements, the statutory regulation of its operation, and the characteristics of the educational process within it. These thematic areas became popular back in the 19th century, and have continued to be of interest to this day. Honorary supervisors of schools have rarely been the subject of special research. That said, researchers *have* actually looked into certain aspects of their activity in the context of the operation of particular educational institutions in the Russian Empire. This, doubtless, is testimony that honorary supervisors were a significant part of the nation's provincial public education system.

In recent years, topics such as trusteeship in the education sector of the Russian Empire and honorary supervisors as a key part of that institution have become the subject of increasing interest to researchers. That said, most of the research in this thematic field has been conducted by Russian scholars (although there are some exceptions too). For instance, in the context of investigating provincial teaching in the Russian Empire in the mid-19th century scholar L. Artamonova has devoted some attention to honorary supervisors as well ([Artamonova, 2012](#); [Artamonova, 2015](#)). Researcher V. Mylko has explored the duties of honorary supervisors as part of his research into the history of uyezd schools that operated in the first half of the 19th century in the Ukrainian governorates ([Mylko, 2015](#)). This aspect has been researched in some detail by E. Safina too ([Safina, 2016](#)).

The actual institution of trustees and honorary supervisors has been researched by Yu. Smirnov ([Smirnov, 2017](#)), S. Galiullina ([Galiullina, 2012a](#); [Galiullina, 2012b](#); [Galiullina, 2015](#)), Yu. Gracheva ([Gracheva, 2019](#)), and some others. One of the authors of the present paper, too, has touched in some of his research upon certain characteristics of the service of honorary supervisors in uyezd schools (specifically, those in the Chernigov and Poltava governorates) ([Degtyarev, 2015a](#)). The author has also explored the role of this group of educational officials in a series of papers covering various aspects of the history of education in particular regions of the Russian Empire ([Degtyarev, 2015b](#); [Degtyarev, Magsumov, 2016a](#); [Degtyarev, 2016b](#); [Degtyarev, 2018](#)).

The lack of research into the subject under study is also attested by the fact that the majority of scholars researching the institution of honorary supervisors have predominantly used archival documentary sources. The key reason behind this is a shortage of research publications that one could draw upon in researching the subject.

4. Results

The Charter for Educational Institutions ordained that all uyezd schools have a full-time supervisor on staff. Consequently, every school had a full-time supervisor of its own, and these functionaries were salaried. They had a broad scope of duties and responsibilities: selecting homes and buildings to house the school, administering oversight over the school's funds, assets, and documentation, and even doing some teaching.

The post of honorary supervisor was introduced in the Russian Empire on the initiative of the Minister of Public Education at the same time the nation's uyezd schools emerged. It was instituted on August 26, 1811 via an imperial edict ([PSZ-1. T.31. №24754: 830](#)). It was up to the Minister of Public Education to appoint one to the post of honorary supervisor.

The post of honorary supervisor could be held only by a member of the local nobility. The edict stipulated that these functionaries would not be salaried by the state. For this reason, the post would have to be held by a well-off squire with a steady income, as honorary supervisors were expected to take a financial part in the development of the educational institution in their charge. Starting in 1819, the law allowed for the post of honorary supervisor to be held by retired functionaries from among the nobility ([Pavlovskij, 1906: 123](#)). The Charter for Gymnasia and Uyezd and Parish Schools, issued in 1828, stipulated that honorary supervisors were to be appointed from among "well-respected nobles and functionaries residing in the uyezd or at least

the governorate” (PSZ-2. T.3. №2502: 1103). The 1848 School Charter repeated all of the provisions of the 1828 Charter concerning the duties and obligations of honorary supervisors (Ustav, 1848: 22-24).

Starting in 1834, the post of honorary supervisor ceased to be elective. Decisions regarding the filling of this post were now made by the university administration based on the findings from inquiries of the marshal of the nobility on the candidate’s moral qualities. With that said, as before, the decision would have to be ratified by the Minister of Public Education (Pavlovskij, 1906: 123).

The first criterion for appointing a person to the post was their stable financial status. To be appointed to the post of honorary supervisor, one would need to make a one-time monetary contribution to the school’s budget, as well as agree to pay a certain amount of money into it yearly. A candidate personally determined the amount they were prepared to put up, and, if that amount was fine with the minister, the person would be appointed to the post. Normally, the annual contribution was over 100 rubles. For example, when a willingness to be appointed to the honorary supervisor of the Pyriatyn Uyezd School (Poltava Governorate) was expressed by local squire A. Markovich, who pledged to pay 100 rubles into the school’s budget yearly, the size of the contribution was apparently found to be too small by the university administration. The nobleman was suggested increasing the size of his contribution, and, upon his consent to do so, he was appointed to the post. In another example, the honorary supervisor of the Zenkov Uyezd School in the same governorate, E. Brazol', made a one-time contribution of 500 rubles and pledged to pay into the budget 300 rubles yearly. Lastly, supervisor I. Kapnist’s one-time contribution to the Khorol Uyezd School was 200 rubles, and his yearly payment was 300 rubles (Pavlovskij, 1906: 123). Failure to make payment on time could result in the dismissal of the supervisor.

Honorary supervisors not only donated their own funds towards the school’s upkeep but also sought to attract funding from other sources – from the local nobility, petty bourgeoisie, merchants, etc. In other words, in the broadest sense it was their obligation to seek out funding for keeping the school in optimal condition (PSZ-2. T.3. №2502: 1110).

The edict ‘On Placing Honorary Supervisors in Charge of Uyezd Schools above Full-Time Supervisors’ (1811) established honorary supervisors as the patrons of the schools, conferring upon them the duty of administering oversight over the facilities and custody of their funding (PSZ-1. T.31. №24754: 830). As already mentioned, this kind of patronage was grounded in regular donations. In the course of time, these functionaries came to be called honorary trustees, which much better reflected the content of the duties vested in them.

Honorary supervisors were considered as being in state service through the Ministry of Public Education, which provided them with the opportunity to gain a title in the Table of Ranks, as well as be eligible for various rewards from the government (e.g., orders, certificates of commendation, and gifts). Back in 1812, the Trustee of the Kharkov Educational District, Count S. Potocki, proposed the use of awards to recognize the work of supervisors, and the idea was eventually put into effect at the highest government level (Bagalej, 1904: 1025). This was one of the key reasons behind the post’s high popularity among the nobility. In 1828, the honorary supervisor of the Krolevets Uyezd School (Chernigov Governorate), I. Bardakov, asked to be relieved of his duties as supervisor and for his 35-year spotless service record to be recognized with a decoration. At that time, he was already 62 and had been promoted to the rank of collegiate councilor (Class 6 in the Table of Ranks). However, in this particular case, due to lack of service as a company officer, the supervisor’s request to be decorated was turned down (GAKhO. F.667. Op.287. D.173: 4). On December 10, 1849, the honorary trustee of the Belaya Tserkov Gymnasium, staff-rittmeister M. Sudienko, was awarded an Order of St. Anna, Class 2 (decorated with an imperial crown). The honorary trustee of the Kiev gymnasia, collegiate assessor D. Zlotnitsky was awarded an Order of St. Anna, Class 3 (ZhMNP, 1849: 101-102). Cases where honorary trustees were decorated in this way were not singular. An edict issued in 1816 established a set of moral benefits for honorary supervisors (these benefits could be applied to other benefactors of the schools as well), which included placing one’s name in the school book and hanging one’s portrait on the wall inside the school (Sysoeva, 1998: 19).

A supervisor could not leave his service or enter a different one without the knowledge of the school administration, and had to inform it of his plans to take a vacation or travel outside the governorate. Pursuant to the 1828 Charter, honorary supervisors of uyezd schools could not combine their post with other elective posts, except for the posts of gubernia or uyezd marshals of

the nobility (PSZ-2. T.3. №2502: 1109). Essentially, there normally was never a problem finding candidates for the position. The example of the honorary supervisors of the uyezd schools in the Chernigov and Poltava governorates, appointed in January of 1812, is testimony that it was quite customary back then for honorary supervisors to combine several elective positions – more specifically, that of supervisor and that of marshal of the nobility. As an example, out of the nine supervisors in Poltava Governorate, whom it was possible to obtain data on, three concurrently were an uyezd marshal of the nobility (Pavlovskij, 1906: XV, XXXI, XXXV). Based on the archival data, there were a total of 13 honorary supervisors in Chernigov Governorate as at the start of 1812. That said, the authors managed to locate only seven service records relating to these functionaries. Three of them held the post of uyezd marshal of the nobility (nearly 43 %) (GAKhO. F.667. Op. 283. D.116). While it cannot be claimed that this information is perfectly accurate (with data not available on all the honorary supervisors), it does attest that to the post of supervisor they normally appointed an ambitious person who was well known and influential in the uyezd.

Depending on the post held, civil functionaries in the Russian Empire wore a certain type of uniform. Honorary supervisors could wear the same uniform as the Director of Gubernia Schools.

It was mandatory to publish the news of a person being appointed to the post of honorary supervisor in the official mouthpiece of the Department of Education ‘Zhurnal Ministerstva Narodnogo Prosveshcheniya’. This normally was a short notice, something like the following: “A new appointment is final in the Kharkov Educational District. The marshal of the Lebedyn nobility, titular councilor A. Losev, has been appointed the honorary supervisor of the Lebedyn Uyezd School, a post he will hold in addition to his current position” (ZhMNP, 1852: 41). The notice also provided the date the functionary officially took office.

Essentially, the administrations of the uyezd schools, including full-time supervisors, had dual subordination. They were subordinate to the honorary supervisor and the Director of Gubernia Schools (who normally was the Director of the Gubernia Gymnasium as well). For general issues relating to the operation of the uyezd schools, the honorary supervisor worked with the Director of Gubernia Schools as two equal echelons of authority.

The duties and responsibilities of honorary supervisors were described in detail in Clauses 122 through 129 of the afore-mentioned Charter for Gymnasia and Uyezd and Parish Schools (1828). Pursuant to this document, these functionaries were to attend monthly teacher meetings (if they were not away for a legitimate reason at the time). While honorary supervisors did not chair those meetings, they were seen as the most significant participants in them. It was recommended that they visit and inspect all of the uyezd’s educational institutions as often as possible, and it was mandatory for them to do so at least once a year. With that said, it was to be made sure that one and the same school would not be inspected by the honorary supervisor at the same time it would be by the full-time supervisor.

Should the honorary supervisor spot any flaws in the operation of a parish school during an inspection, they would have to inform the school’s full-time supervisor of that, who would then have to take measures to resolve the issue. Similarly, should any shortcomings and abuses be spotted in an uyezd school, the honorary supervisor would point that out to the school’s full-time supervisor. Should the latter fail to react to the former’s observations dutifully, the Director of Gubernia Schools would then too be informed of the problem (PSZ-2. T.3. №2502: 1110).

Honorary supervisors could also petition senior management (e.g., the Trustee of the Educational District or the University School Committee) for the remuneration or punishment of particular school functionaries. At the end of each school year, honorary supervisors teamed up with full-time supervisors to take part in administering exams in all grades. Successful students were allowed to move to the next grade, whilst failures would have to repeat the grade failed (PSZ-2. T.3. №2502: 1105-1106, 1109-1110).

Honorary supervisors took part in resolving the school’s facilities issues as well. For instance, whenever a need arose for costly school building repairs or renovation works, all decision making on the matter was done by members of the local authorities and the honorary supervisor.

An honorary supervisor with a negligent attitude toward their duties could face dismissal by the administration. Here is an example. In 1828, Kharkov University dispatched professor-in-ordinary V. Komlishinsky to check the condition of certain schools in Sloboda Ukraine Governorate. One of the schools, the Starobelsk Uyezd School, was found to be in poor condition. One of the main causes behind that was that “its honorary supervisor, I. Cherenkov, had made very

little effort to ensure the school was in proper condition". The facility's material shape was so poor that the university administration had to ask the Treasury Chamber for 500 rubles a year worth of funding for the school's needs. Mr. Cherenkov was dismissed from his post as Honorary Supervisor (Bagalej, 1904: 1034).

Honorary supervisors enjoyed a very high social status. Their high standing is also attested by the amount of support provided to them by the local nobility. As an example, when they appointed nobleman I. Brzhesky the honorary supervisor of the Aleksandriya Uyezd School (Kherson Governorate), the local nobility donated to the school 1,745 rubles, provided for its use a noble home worth 3,000 rubles, provided an additional 500 rubles for its upkeep, and pledged to provide an extra 600 rubles going forward. In addition, on the day of the grand opening of the above educational institution the nobility donated an additional 400 rubles. Mr. Brzhesky personally pledged 1,000 rubles of his own money to help organize the school's work, purchased 200 rubles worth of books and textbooks for poor students, and pledged to provide an extra 100 rubles a year for the school's needs. Unfortunately, as indicated by the findings from a series of inspections of the Aleksandriya Uyezd School conducted afterwards, in the course of time the local nobility discontinued its financial support to the facility, which would have a negative effect on its overall condition (Bagalej, 1904: 1030, 1033).

5. Conclusion

In the Russian Empire, the post of honorary supervisor used to be sought after by many members of the nobility, as it served as an easy way to receive a title that would earn them high social status. In essence, it is by way of their donations to a school that many acquired titles and status for themselves. Honorary supervisors whose donations were large enough could even be put forward for an award by senior management.

However, many of those who held the post of honorary supervisor were genuinely keen on helping develop the system of education in their uyezd or governorate. Many were well-educated individuals. Cases where members of the nobility did not see getting a title or an award as the primary reason to be an honorary supervisor and for many years performed their job duties in an altruistic manner were not singular.

The second part of this study will investigate the dynamics of change in the number of honorary supervisors of schools within the Kharkov Educational District in the first third of the 19th century. This research should help draw as objective conclusions as possible as to the position's popularity among nobles and functionaries back then. The authors will also examine through specific examples the effect serving as an honorary supervisor could have on one's career and social status at the time.

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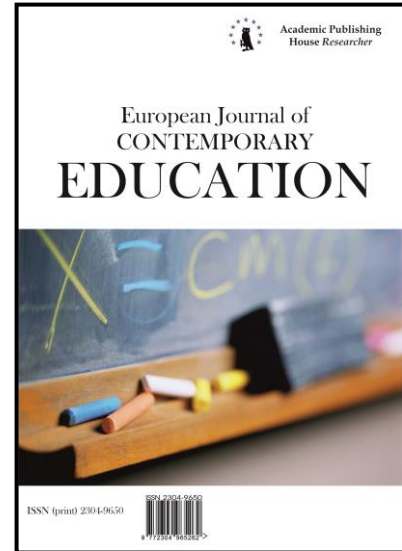
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The System of Public Education in Kars Oblast in the Period 1878–1917. Part 2

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Abstract

This work explores the system of public education in Kars Oblast in the period 1878–1917. The present part of the work covers the period 1908–1917, which spans the timeframe from the commencement of preparatory activities on the introduction of compulsory primary education to the start of the February Revolution.

The key sources used in putting this work together are the annual Reports on Educational Institutions in the Caucasus Educational District, which provide data on the region's schools run by the Ministry of Public Education, and the Reports of the Chief Procurator of the Holy Synod, which contain information on the region's parochial schools. Of major importance are also the records of the Ministry of Public Education stored in the Russian State Historical Archive (Saint Petersburg, Russia).

The authors' conclusion is that Kars Oblast's system of public education was characterized by a number of distinctive features. Creating the system of public education from scratch subsequent to the incorporation of the formerly Turkish-controlled areas into the Russian Empire required convincing the locals of the need to have their children attend Russian secular schools. A key role in making primary education accessible was played by the implementation of the project on the introduction of compulsory primary education. In the period from 1908 to 1914, the number of ministerial primary schools in the region rose from 66 to 202. This helped increase the number of students in the region from 4,000 to 12,000. In addition to this, a large amount of work in the area

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of public education was also conducted by the Russian Orthodox Church, which ran over 60 primary schools in the region.

By the start of World War I, schools in Kars Oblast were attended by nearly 100 % of all Russian boys in the region, with similar figures posted by the region's Greek and Armenian boys and much lower ones exhibited by its girl population. However, on the war's eve, the region's female education system was making such headway that the school system seemed capable of reaching all of its Christian population by as early as the period 1916-1917, which, of course, was achievable on condition that the pace carried on.

Keywords: Kars Oblast, system of public education, period 1908–1917, Ministry of Public Education, implementation of the project on the introduction of compulsory education.

1. Introduction

As mentioned earlier, Kars Oblast was incorporated into the Russian Empire as a result of the Russo-Turkish War of 1877-78. The region was situated in the southwestern part of Transcaucasia. In the north and east, it bordered on Kutais, Tiflis, and Erivan Governorates, which were part of the Russian Empire, and in the south it bordered on Turkey. The region's administrative center was the city of Kars. The oblast had an area of 18,646.6 km². In the early 20th century, its population surpassed 300,000 people. This part of the work will explore the process of the development of the system of public education in Kars Oblast in the period 1908–1917, which spans the timeframe from the commencement of preparatory activities on the introduction of compulsory primary education to the start of the February Revolution. The work's first part examined the process of the making of the region's system of public education in the period from 1880 to 1908 ([Magsumov et al., 2020](#)).

2. Materials and methods

The key sources used in putting this work together are the annual Reports on Educational Institutions in the Caucasus Educational District, which provide data on the region's schools run by the Ministry of Public Education, and the Reports of the Chief Procurator of the Holy Synod, which contain information on the region's parochial schools. Of major importance are also the records of the Ministry of Public Education stored in the Russian State Historical Archive (Saint Petersburg, Russia).

The work made an extensive use of the statistical method. The authors drew upon a diverse body of statistics that is based on reporting documentation, which covers the following: typology of educational institutions, numbers of schools, size of library stock, and numbers of students (by ethnicity, faith, estate, and gender). The use of this method helped identify some of the key distinct characteristics of the development of Kars Oblast's system of public education in the period 1908–1917.

3. Discussion

Up to now, the system of public education in Kars Oblast in the period 1878–1917 has not been the subject of independent research. What is more, the topic has not been touched upon in research publications even incidentally. That being said, there does exist a body of summarizing research covering other regions of the Caucasus. The system of public education in the Caucasus, with Kars Oblast once part of the Caucasus Educational District, has been examined in close detail by scholars O.V. Natolochnaya, T.A. Magsumov, V.S. Molchanova, and N.A. Shevchenko ([Natolochnaya et al., 2018](#); [Magsumov et al., 2018](#); [Molchanova et al., 2019](#); [Molchanova et al., 2019a](#); [Molchanova et al., 2020](#); [Shevchenko et al., 2016](#)).

In recent years, researchers have expressed keen interest in the study of the systems of public education in various governorates within the Russian Empire. For instance, a team of researchers led by A.A. Cherkasov has explored the system of public education in Vologda Governorate ([Cherkasov et al., 2019](#); [Cherkasov et al., 2019a](#); [Cherkasov et al., 2019b](#); [Cherkasov et al., 2019c](#)). Elsewhere, A.Yu. Peretyatko has investigated the system of public education in the Don region ([Peretyatko, Zulfugarzade, 2017](#); [Peretyatko, Zulfugarzade, 2017a](#); [Peretyatko, Zulfugarzade, 2019](#); [Peretyatko, Zulfugarzade, 2019a](#)), O.V. Natolochnaya – in Vilna Governorate ([Natolochnaya et al., 2019](#); [Natolochnaya et al., 2019a](#)), and T.A. Magsumov ([Magsumov et al., 2018](#)) – in Vyatka Governorate.

4. Results

The network of educational institutions in the Caucasus was divided into the systems of secondary education, lower education, and primary education. The system of secondary education included male gymnasia and progymnasia, real schools, female gymnasia and progymnasia, and teacher's institutes and seminaries. The system of lower education was represented by urban schools, mountain schools, Mariinsky schools, and industrial schools. The system of primary education comprised private and primary schools (Otchet, 1900: 606). That, however, did not rule out the possibility of private schools in the region being at the level of gymnasia or lower educational institutions.

Secondary education

Secondary education in Kars Oblast was an issue of prime significance. By 1908, the region had only one real school for boys and one female progymnasium for girls. The purpose of these educational institutions was to provide the locals with secondary education so that they would not have to travel or relocate to neighboring regions in order to receive it. Prior to World War I, no other secondary educational institutions had been established in the region.

On September 1, 1909, the Kars Female Progymnasium was reorganized into the Kars Female Gymnasium (Otchet, 1910: 148).

Table 1 illustrates the dynamics of change in the number of students in Kars Oblast's secondary educational institutions in the period 1908–1914.

Table 1. Numbers of Kars Oblast's Secondary Educational Institutions and Students in Them in the Period 1908–1914 (Otchet, 1909: 78, 125; Otchet, 1910: 77, 78, 128; Otchet, 1911: 114, 244; Otchet, 1912: 80, 162; Otchet, 1913: 68, 151; Otchet, 1914: 68, 177; Otchet, 1915: 125, 262)

Year	Number of educational institutions				Real school	Number of students		
	Gymnasia		Progymnasia			Boys	Girls	Total
	Male	Female	Male	Female				
1908	-	-	-	1	1	244	226	470
1909	-	1	-	-	1	268	262	530
1910	-	1	-	-	1	300	291	591
1911	-	1	-	-	1	313	282	595
1912	-	1	-	-	1	364	307	671
1913	-	1	-	-	1	370	330	700
1914	-	1	-	-	1	317	262	579

As evidenced in Table 1, in the period 1908–1914 the number of students in the region's secondary educational institutions kept rising. This was testimony to a growing interest on the part of Kars Oblast's residents in pursuing a full secondary education.

Table 2 provides data on the region's student body at the time in terms of ethnicity.

Table 2. Distribution of Students in Kars Oblast's Secondary Educational Institutions by Ethnicity in the Period 1908–1914 (Otchet, 1909: 114, 183; Otchet, 1910: 114; Otchet, 1911: 114, 244; Otchet, 1912: 114, 214; Otchet, 1913: 110, 192; Otchet, 1914: 110, 256; Otchet, 1915: 170, 386)

Year	Russians	Georgians	Armenians	Tatars	Mountaineers	Other ethnicities	Total
1908	136	28	226	8	-	72	470
1909	108	-	126	-	9	25	268*

* The table contains no data on the female gymnasium.

1910	167	33	272	13	2	104	591
1911	184	22	273	16	3	97	595
1912	229	29	286	18	2	107	671
1913	210	33	331	16	3	107	700
1914	154	37	278	10	3	100	579

Just like in the period preceding 1908, the bulk of the student body in the region’s secondary educational institutions was comprised of Armenians. It is worth remembering that Armenians were the largest ethnic group within Kars Oblast’s population, followed by ethnic Russians, and then by Greeks. By the start of the World War I period, the region’s Tatars and mountaineers did not eventually happen to make up a large portion of its student body.

Table 3 illustrates the distribution of students in Kars Oblast’s secondary educational institutions at the time by faith.

Table 3. Distribution of Students Kars Oblast’s Secondary Educational Institutions by Faith in the Period 1908–1914 (Otchet, 1909: 80, 131; Otchet, 1911: 80, 192; Otchet, 1912: 80, 162; Otchet, 1913: 68, 151; Otchet, 1914: 68, 177; Otchet, 1915: 125, 262)

Year	Orthodox Christians	Catholics	Armenian Gregorian Christians	Protestants	Jews	Muslims	Total
1908	223	27	207	4	1	8	470
1909	253	28	232	6	2	9	530
1910	299	38	231	7	2	14	591
1911	275	39	258	5	2	16	595
1912	345	28	270	7	3	18	671
1913	339	23	308	12	2	16	700
1914	280	22	243	23	1	10	579

As evidenced in Table 3, the largest group was Orthodox Christians, followed closely by Armenian Gregorian Christians, and then by Catholics.

Table 4 gives an idea of the student body in Kars Oblast’s secondary educational institutions at the time in terms of estate.

Table 4. Distribution of Students in Kars Oblast’s Secondary Educational Institutions by Estate in the Period 1908–1914 (Otchet, 1909: 81, 131; Otchet, 1910: 81, 128; Otchet, 1911: 81, 192; Otchet, 1912: 81, 162; Otchet, 1913: 69, 151; Otchet, 1914: 69, 177; Otchet, 1915: 126, 263)

Year	Nobles and functionaries	Persons of ecclesiastical status	Distinguished citizens and merchants	Members of other urban estates	Peasants	Cossacks	Foreigners	Other	Total
1908	164	18	118	107	59	-	-	4	470

1909	184	18	115	139	66	1	-	7	530
1910	186	19	126	160	91	1	-	8	591
1911	186	20	106	173	103	-	-	7	595
1912	189	25	96	231	120	-	-	10	671
1913	210	25	105	248	106	1	-	5	700
1914	124	19	125	225	77	-	2	7	579

Virtually throughout the period under review, the region's largest estate group was represented by nobles and functionaries. The group started to shrink sharply in 1914, due to the start of World War I. A portion of the region's student body left the front-line area to be evacuated to areas that were far from the combat zone, while the rest went to the war as volunteers (Molchanova et al., 2013: 91-92; Cherkasov et al., 2016). At the same time, by no means all of the key groups posted a decline in number of students. For instance, there was an increase in the size of the 'Distinguished Citizens and Merchants' group, as well as that of the group designated as 'Other'.

By tradition, major significance in the education system was attached back then to the libraries. As mentioned earlier, most secondary and lower educational institutions in the region had the following two separate library sections in place – fundamental (for teachers) and discipular (for students).

In 1909, the region's real school had a library stock of 933 items in the fundamental library section and 672 items in the discipular one (Otchet, 1910: 97). At the same time, the Kars Female Gymnasium had 419 items in the fundamental section and 815 items in the discipular one (Otchet, 1910: 152).

In 1910, the region witnessed a major increase in the real school's library stock – to 1,686 items in the fundamental section and 1,080 items in the discipular one (Otchet, 1911: 97). At the same time, the library stock of the Kars Female Gymnasium remained virtually the same – 449 items in the fundamental section and 845 items in the discipular one (Otchet, 1911: 216).

The period 1911-1912 did not witness a major increase in the region's library stock. However, in 1913 the Kars Real School now had 2,074 items in the fundamental section and 1,474 items in the discipular one (Otchet, 1914: 84). The Kars Female Gymnasium had 574 items in the fundamental section and 1,466 items in the discipular one (Otchet, 1914: 210).

By the start of World War I, in 1914, the Kars Real School had 2,127 items in the fundamental section and 1,511 items in the discipular one (Otchet, 1915: 142). The Kars Female Gymnasium had 670 items in the fundamental section and 1,466 items in the discipular one (Otchet, 1915: 314). Thus, the overall library stock of the region's real school had increased from about 1,600 to 3,600 items, and that of its female gymnasium had increased from about 1,200 to 2,100 items. That said, it is worth remembering that, due to quite high rates of wear and tear on the books and items not being returned, the library stock needed to be replenished regularly.

Lower education

The system of lower education in Russia at the time was represented by urban schools, mountain schools, female Mariinsky schools*, and industrial schools.

In 1908, in conjunction with the implementation of the program on the introduction of compulsory primary education, there began to open urban schools in the region. As mentioned earlier, prior to 1908 only two urban schools had been established in Kars Oblast – Kars and Kagyzman.

On September 1, 1911, Kars Oblast became home to two more lower schools – Ardagan and Olty (Otchet, 1912: 323). Thus, as early as 1911, all four districts within Kars Oblast had urban schools in place.

However, the reform process did not stop at that. On January 1, 1914, the Ardagan and Kagyzman schools were transformed into six-grade higher primary schools (Otchet, 1915: 522). That same year, they also transformed the Kars school, and on September 1, 1914 they did the Olty school as well (Otchet, 1915: 524). Consequently, all of the urban schools (all with a period of study

* Female educational institutions run by the Office of the Institutions of Empress Maria

of three-four years) in Kars Oblast were transformed into higher primary schools (with a period of study of six years).

Table 5. Numbers of Kars Oblast’s Lower Educational Institutions and Students in Them in the Period 1908–1914 (Otchet, 1909: 275, 411; Otchet, 1910: 293, 405; Otchet, 1911: 286, 301, 409; Otchet, 1912: 266, 301; Otchet, 1913: 232, 260, 350; Otchet, 1914: 286, 320, 442; Otchet, 1915: 433, 486, 488)

Year	Number of educational institutions				Number of students		
	Higher primary school	Urban school	Lower tradesman’s school	Female vocational school	Boys	Girls	Total
1908	-	2	1	1	353	223	576
1909	-	2	1	1	391	273	664
1910	-	2	1	1	427	250	677
1911	-	4	1	1	650	257	907
1912	-	4	1	1	709	284	993
1913	-	4	1	1	672	288	960
1914	4	-	1	1	490	209	699

In analyzing Table 5, it is worth understanding that in Kars Oblast, just like in many other regions of the Caucasus at the time, boys and girls were educated separately. For girls the region had in place a female Mariinsky educational institution, and for boys there were in place an urban school and a tradesman’s school. Through the period 1908–1914, the region’s gender balance did not change much percentagewise, despite an increase in the number of its male educational institutions.

Table 6. Distribution of Students in Kars Oblast’s Lower Educational Institutions by Ethnicity in the Period 1908–1914 (Otchet, 1909: 351; Otchet, 1910: 375; Otchet, 1911: 375, 453; Otchet, 1912: 375, 441; Otchet, 1913: 232, 322, 383; Otchet, 1914: 286, 410, 475; Otchet, 1915: 432, 636, 638, 765)

Year	Russians	Georgians	Armenians	Tatars	Mountaineers	Other ethnicities	Total
1908	36	7	142	3	2	126	316*
1909	43	5	170	10	4	132	355†
1910	61	5	192	8	-	161	427‡
1911	75	8	271	16	1	279	650§
1912	99	11	464	26	2	390	993
1913	112	20	463	27	4	334	960
1914	87	87	361	37	2	125	699

In analyzing Table 6, we can see that up to 50 % of students before 1908 (Magsumov et al., 2020: 226) remained the largest national group in lower primary schools. This group was followed by ‘Other Ethnicities’, which almost entirely was made up of Greeks, and then by ethnic Russians. Note that by 1914 the region witnessed quite a steady increase in the number of Tatar students in its lower educational institutions.

* Exclusive of data on the region’s female Mariinsky school and tradesman’s school

† Exclusive of data on the region’s female Mariinsky school and tradesman’s school

‡ Data not available on the female Mariinsky school

§ Data not available on the female Mariinsky school

Table 7. Distribution of Students in Kars Oblast’s Lower Educational Institutions by Faith in the Period 1908–1914 (Otchet, 1909: 275, 368, 411; Otchet, 1910: 301, 409; Otchet, 1911: 306, 409; Otchet, 1912: 266, 301, 395; Otchet, 1913: 232, 260, 350; Otchet, 1914: 286, 320, 442; Otchet, 1915: 433, 486, 488)

Year	Orthodox Christians	Armenian Gregorian Christians	Catholics	Protestants	Jews	Muslims	Representatives of other faiths	Total
1908	241	307	10	3	2	6	7	576
1909	194	167	8	2	1	12	7	391*
1910	214	179	15	7	1	9	2	427†
1911	414	415	32	24	2	20	4	907
1912	458	454	32	10	4	28	5	993
1913	422	427	41	31	5	30	4	960
1914	288	360	27	3	1	18	2	699

In analyzing Table 7, we can see that in 1909, 1910, 1912 the number of students of the Orthodox faith began to prevail over a similar number of Armenian-Gregorians. It should be noted that until 1908 the number of students of the Armenian-Gregorian faith was about 50-60 % of all students (Magsumov et al., 2020: 227).

Table 8 illustrates the distribution of students in Kars Oblast’s lower educational institutions at the time by estate.

Table 8. Distribution of Students in Kars Oblast’s Lower Educational Institutions by Estate in the Period 1908–1914 (Otchet, 1909: 275, 411; Otchet, 1910: 301, 409; Otchet, 1911: 301, 409; Otchet, 1912: 266, 301, 395; Otchet, 1913: 261, 351; Otchet, 1914: 321, 443; Otchet, 1915: 487, 489)

Year	Nobles and functionaries	Persons of ecclesiastical status	Distinguished citizens and merchants	Members of other urban estates	Peasants	Cossacks	Foreigners	Other	Total
1908	8	4	18	131	181	3	1	7	353‡
1909	16	11	65	93	179	3	7	17	391§
1910	14	5	89	104	181	3	7	24	427**
1911	16	7	38	204	365	2	-	18	650††
1912	16	13	44	235	374	8	-	19	709‡‡
1913	11	25	201	89	331	-	-	14	672§§
1914	8	23	151	112	216	1	-	5	699*

* Data not available on the female Mariinsky school

† Data not available on the female Mariinsky school

‡ Data not available on the female Mariinsky school

§ Data not available on the female Mariinsky school

** Data not available on the female Mariinsky school

†† Data not available on the female Mariinsky school

‡‡ Data not available on the female Mariinsky school

§§ Data not available on the female Mariinsky school

As evidenced in [Table 8](#), most of the region's estate groups did not perform stably in terms of their share of the student body in its lower educational institutions. For instance, there kept fluctuating the numbers of 'Nobles and Functionaries', 'Persons of Ecclesiastical Status', and 'Cossacks'. By 1913, the region witnessed a sharp, almost abrupt, increase in the number of students within its 'Distinguished Citizens and Merchants' group. At the same time, there was an increase in the number of peasant students as well.

A few words will now be said about the libraries of the region's lower educational institutions at the time.

As mentioned earlier, by 1908 the combined library stock of lower educational institutions in Kars Oblast numbered 6,897 items ([Magsumov et al., 2020: 228](#)). Below is an account of how the library stock changed through the period 1909–1914.

In 1909, the Kars Female Mariinsky School had 1,377 items in the fundamental library section and 451 items in the discipular one ([Otchet, 1910: 273](#)). At the same time, the Kagyzman Urban School had 571 items in the fundamental section and 549 items in the discipular one. There was a large library stock in the Kars Lower Urban School too (2,756 items in the fundamental section and 1,004 items in the discipular one) ([Otchet, 1910: 327](#)).

In 1910, the Kars Female Mariinsky School now had 1,593 items in the fundamental section and 543 items in the discipular one ([Otchet, 1911: 273](#)). The Kagyzman Urban School had 664 items in the fundamental section and 549 items in the discipular one. At the same time, the Kars Lower School had 2,882 items in the fundamental section and 1,052 items in the discipular one ([Otchet, 1911: 327](#)). The Kars Lower Tradesman's School had 436 items in the fundamental section and 245 items in the discipular one ([Otchet, 1911: 423](#)).

In 1911, an increase in the number of urban schools in Kars Oblast resulted in an increase in the number of libraries in the region. For instance, in 1911 the Kars Female Mariinsky School had 1,605 items in the fundamental section and 543 items in the discipular one ([Otchet, 1912: 273](#)). The Ardagan Urban School had 354 items in the fundamental section and 208 items in the discipular one. The Kagyzman Urban School had 701 items in the fundamental section and 605 in the discipular one. At the same time, the Kars Lower School had 3,017 items in the fundamental section and 1,100 items in the discipular one ([Otchet, 1912: 327](#)). The Kars Lower Tradesman's School had 320 items in the fundamental section and 143 items in the discipular one ([Otchet, 1912: 409](#)).

Subsequently, the region witnessed a slow increase in the size of its combined library stock. For instance, in 1912 the Kars Female Mariinsky School had 1,256 items in the fundamental section and 527 items in the discipular one ([Otchet, 1913: 236](#)). The Ardagan Urban School had 217 items in the fundamental section and 218 items in the discipular one. The Kagyzman Urban School had 775 items in the fundamental section and 878 in the discipular one. At the same time, the Kars Lower School had 3,131 items in the fundamental section and 1,148 items in the discipular one. The Olty Lower School had 80 items in the fundamental section and no items in the discipular one ([Otchet, 1913: 280](#)). The Kars Lower Tradesman's School had 320 items in the fundamental section and 143 items in the discipular one ([Otchet, 1913: 360](#)).

In 1913, the Kars Female Mariinsky School had 1,319 items in the fundamental section and 632 items in the discipular one ([Otchet, 1914: 290](#)). The Ardagan Urban School had 435 items in the fundamental section and 327 items in the discipular one. The Kagyzman Urban School had 811 items in the fundamental section and 906 in the discipular one. At the same time, the Kars Lower School had 3,143 items in the fundamental section and 1,148 items in the discipular one. The Olty Lower School had 164 items in the fundamental section and 142 in the discipular one ([Otchet, 1914: 348](#)). The Kars Lower Tradesman's School had 269 items in the fundamental section and 124 items in the discipular one ([Otchet, 1914: 452](#)).

By 1914, Kars Oblast's lower education sector had the following library stock: Kars Female Mariinsky School – 1,361 items in the fundamental section and 654 items in the discipular one ([Otchet, 1915: 442](#)); Ardagan Urban School – 456 and 434 items, respectively; Kagyzman Urban School – 867 and 923 items, respectively; Kars Lower School – 3,148 and 1,167 items, respectively ([Otchet, 1915: 532](#)); Olty Lower School – 173 and 462 items, respectively ([Otchet, 1915: 534](#)); Kars Lower Tradesman's School – 242 and 101 items, respectively ([Otchet, 1915: 720](#)). All in all, the

* Data not available on the female Mariinsky school

region's lower educational institutions had a combined library stock of 9,988 items. Thus, the region's total library stock had increased 1.5 times.

Primary education

The region's network of primary educational institutions was represented by private, ministerial (schools under the Ministry of Public Education, including zemstvo and public schools), and parochial schools.

Private primary schools

Private primary education was not common in Kars Oblast. In the period 1908–1914, the region had only one private primary school in place, which was in operation from 1911 to 1912.

Table 9 covers the student body within the region's private primary education sector at the time.

Table 9. Number of Students within Kars Oblast's Private Primary Education Sector in the Period 1908–1914 (Otchet, 1909: 466; Otchet, 1912: 466; Otchet, 1913: 466; Otchet, 1914: 486-487; Otchet, 1915: 784)

Year	Number of Students		
	Boys	Girls	Total
1908	-	-	-
1909	-	-	-
1910	-	-	-
1911	13	-	13
1912	11	1	12
1913	Data not available		
1914	-	-	-

As evidenced in Table 9, the number of students in the region's private educational institutions was not large at the time. However, a distinctive characteristic was that they could be attended by boys and girls alike.

Ministerial schools

Kars Oblast's primary education sector commenced operation in 1908, i.e. the year the project on the introduction of compulsory education was launched, with a whole network of primary schools being established (there were 66 primary schools in Kars Oblast in 1908). Subsequently, the actual sector posted one of the highest growth rates across the Caucasus percentagewise. For instance, in Kuban Oblast the rate of growth in number of educational institutions over the same period was over 50 % (Molchanova et al., 2020: 99).

Table 10. Distribution of Kars Oblast's Primary Schools under the Ministry of Public Education by Type in the Period 1908–1914 (Otchet, 1909: 400; Otchet, 1910: 390, 392; Otchet, 1911: 390, 392; Otchet, 1912: 448, 450; Otchet, 1913: 334-335; Otchet, 1914: 426-427, 428; Otchet, 1915: 668-669)

Year	Two-grade schools	One-grade schools	Special-status schools	Total schools	Number of students		
					Boys	Girls	Total
1908	12	53	-	66	3,360	830	4,190
1909	18	53	1	72	3,917	961	4,878
1910	20	70	1	92	5,011	1,263	6,274

1911	37	84	1	122	6,341	1,803	8,144
1912	42	114	-	156	8,401	2,117	10,518
1913	58	133	-	191	9,186	3,464	12,650
1914	58	144	-	202	9,335	3,369	12,704

As evidenced in [Table 10](#), in the period 1908–1914 the region witnessed a major increase in ministerial institutions of primary learning. The total number of these schools grew more than three times. An even greater increase was posted by the region’s two-grade schools – nearly five times. This helped place in school three times more boys in 1914 than in 1908, with the number of girls in school having grown as well – by four times.

Table 11. Distribution of Students in Kars Oblast’s Primary Schools by Ethnicity in the Period 1908–1914 ([Otchet, 1909: 402](#); [Otchet, 1910: 400](#); [Otchet, 1911: 399](#); [Otchet, 1912: 457](#); [Otchet, 1913: 343](#); [Otchet, 1914: 435](#); [Otchet, 1915: 683](#))

Year	Russians	Georgians	Armenians	Tatars	Mountaineers	Other ethnicities	Total
1908	1,139	21	1,559	264	15	1,192	4,190
1909	1,033	11	1,873	288	95	1,578	4,878
1910	1,138	20	2,604	568	163	1,781	6,274
1911	1,245	10	3,530	634	488	2,237	8,144
1912	1,235	9	4,991	478	660	3,145	10,518
1913	1,559	21	6,322	802	-	3,996	12,650
1914	1,539	21	6,481	874	760	3,029	12,704

Of major interest is [Table 11](#). As evidenced therein, the period under review witnessed increases in the share in the student body within the region’s primary education sector on the part of virtually all of its ethnic groups, except for the Georgians. With that said, the numbers of Armenians and Tatars rose nearly four times. An increase of 50 times was posted by the region’s mountaineers, which could serve as testimony to the attitude of members of this group toward the Russian Empire’s secular education system changing by the start of the World War I period.

Table 12. Distribution of Students in Kars Oblast’s Primary Schools by Faith in the Period 1908–1914 ([Otchet, 1909: 394](#); [Otchet, 1910: 392](#); [Otchet, 1911: 375](#); [Otchet, 1912: 457](#); [Otchet, 1913: 336-337](#); [Otchet, 1914: 428-429](#); [Otchet, 1915: 672-673](#))

Year	Orthodox Christians	Armenian Gregorian Christians	Catholics	Protestants	Jews	Muslims	Representatives of other faiths	Total
1908	1,399	1,391	132	13	25	284	946	4,190
1909	1,663	1,625	140	1,033	40	351	26	4,878
1910	1,985	2,338	141	1,034	34	708	34	6,274
1911	2,439	2,196	137	1,271	9	1,041	51	8,144
1912	3,150	4,898	211	871	13	1,375	-	10,518
1913	2,915	5,799	395	1,482	22	1,675	364	12,650
1914	2,813	5,907	397	1,373	17	1,853	344	12,704

As evidenced in [Table 12](#), the situation with the student body in the region’s primary schools in terms of religious affiliation was similar to that in its secondary and lower education sectors. More specifically, the region’s primary education sector, too, was exhibiting an increase in Christian students, with Protestants posting the largest increase. Negative figures were exhibited by

Jews. Surprisingly, the size of this particular group kept decreasing virtually throughout the period under review.

Parochial schools

Apart from ministerial educational institutions, Kars Oblast also had in place an entire network of primary schools run by the Holy Synod. Track of the activity of these schools was kept at the time quite meticulously by way of the Reports of the Chief Procurator. Some of the data are provided in [Table 13](#).

Table 13. Numbers of Kars Oblast’s Parochial Schools and Students in Them in the Period 1908–1914 ([Vsepoddanneishii otchet, 1911: 220-221, 244-245](#); [Vsepoddanneishii otchet, 1912: 112-113](#); [Vsepoddanneishii otchet, 1913: 178-279, 206-207](#); [Vsepoddanneishii otchet, 1915: 122-123](#); [Vsepoddanneishii otchet, 1916: 124-125](#))

Year	Number of schools				Number of students		
	Two-grade	One-grade	Grammar schools	Total	Boys	Girls	Total
1908	9	57	-	66	3,182	719	3,901
1909	10	53	-	63	2,967	772	3,739
1910	14	48	-	62	3,120	896	4,016
1911	14	49	-	63	3,248	1,029	4,277
1912	15	48	-	63	3,225	1,162	4,387
1913	17	44	-	61	3,129	1,160	4,289
1914	17	44	-	61	Data not available		

As evidenced in [Table 13](#), during the period under review the Russian Orthodox Church was conducting work that was similar to what the Ministry of Public Education was doing. This, above all, involved supporting the operation of schools established before 1908 and by any means increasing the student body in them. On the other hand, the church was also conducting work on reorganizing one-grade schools into two-grade ones. The key difference from what the Ministry of Public Education was doing was that the Russian Orthodox Church was establishing schools and educating children at its own expense, whereas the Ministry of Public Education was using state loans.

[Table 14](#) illustrates the achievements of the system of public education in Kars Oblast in the period 1908–1914.

Table 14. Kars Oblast’s Public Education System in the Period 1908–1914 ([Otchet, 1909: 400](#), [Otchet, 1912: 466](#); [Otchet, 1913: 392-393](#); [Otchet, 1914: 486](#))

Year	Schools under the Ministry of Public Education						Students			
	Secondary	Lower		Primary			Total	Boys	Girls	Total
		MPE	Private	MPE	Private	Parochial				
1908	2	4	-	66	-	66	134	7,139	1,998	9,137
1909	2	4	-	72	-	63	141	7,543	2,268	9,811
1910	2	4	-	92	-	62	160	8,858	2,700	11,558
1911	2	6	1	122	1	63	195	10,565	3,371	13,936
1912	2	6	-	156	1	63	228	12,710	3,771	16,581
1913	2	6	-	191	-	61	260	13,357	5,242	18,599
1914	2	6	-	202	-	61	271	13,271	5,000	18,271

It is worth noting that, based on data from the Ministry of Public Education, at January 1, 1915 there were 35,216 children of school age (from 8 to 11 years) in Kars Oblast (RGIA. F. 733. Op. 207. D. 39. L. 3), with already more than 18,000 of these attending school (at the region's ministerial, private, or parish schools). While it is apparent that the region still had lots of work to do in the area of education, one must take into account the area's regional characteristics. By January 1, 1913, Kars Oblast had a population of 333,000 (Pamyatnaya knizhka, 1914: Vedomost' 2). Of these, 149,000 were represented by the region's three major Christian groups (ethnic Russians – 16,000, Armenians – 85,000, and Greeks – 48,000), while 179,000 were represented by its four major Muslim groups (Turks – 68,000, Kurds – 52,000, Qarapapaqs – 43,000, and Turkmens – 16,000). Given that the number of children of school age within the Christian group was 10%, i.e. 14,900 individuals, in 1913 school was attended by nearly 85 % of all Russian children in the region, with nearly 100% of these being boys. There was a similar situation with the region's Armenians and Greeks. Of note is the serious gender imbalance within the Christian group. More specifically, in 1913 the region's schools were attended by about 11,100 Christian boys and just around 5,000 Christian girls, with the total number of Muslim girls in the schools being just 285. Given that Kars Oblast had a gender ratio of 55 % male to 45 % female, at 1913 the region's schools were short nearly 5,000 girls, which accounted for 50% of the region's school-age female population. At the same time, between 1912 and 1913 the region witnessed the largest increase in girls enrolled in school – an increase of 1,500 in 1913 on 1912. If this pace had carried on, the region would have been able to overcome its gender imbalance as early as between 1916 and 1917. However, with World War I starting in late 1914 in the Caucasus front, Kars Oblast would become a front-line area.

It was not long before military action in the region spread to the Ottoman Empire. A portion of the schools was transformed into hospitals. Overall, the school system in Kars Oblast continued to operate up to February of 1917. Concurrently, the Ministry of Public Education had plans to introduce compulsory primary education in Russia right after the end of the war. To this specific end, during the war the government built teacher's seminaries and organized pedagogical programs of study, but in February of 1917 the situation in Russia started to develop based on a totally different scenario.

5. Conclusion

Kars Oblast's system of public education was characterized by a number of distinctive features. Creating the system of public education from scratch subsequent to the incorporation of the formerly Turkish-controlled areas into the Russian Empire required convincing the locals of the need to have their children attend Russian secular schools. A key role in making primary education accessible was played by the implementation of the project on the introduction of compulsory primary education. In the period from 1908 to 1914, the number of ministerial primary schools in the region rose from 66 to 202. This helped increase the number of students in the region from 4,000 to 12,000. In addition to this, a large amount of work in the area of public education was also conducted by the Russian Orthodox Church, which ran over 60 primary schools in the region.

By the start of World War I, schools in Kars Oblast were attended by nearly 100% of all Russian boys in the region, with similar figures posted by the region's Greek and Armenian boys and much lower ones exhibited by its girl population. However, on the war's eve, the region's female education system was making such headway that the school system seemed capable of reaching all of its Christian population by as early as the period 1916-1917, which, of course, was achievable on condition that the pace carried on.

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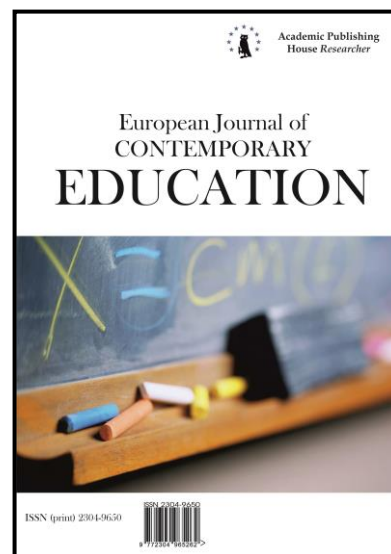
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The System of Public Education in Stavropol Governorate in the Period 1804–1917. Part 1

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Abstract

This work examines the system of public education in Stavropol Governorate in the period 1804–1917. The present part of the work covers the development of the region's public education system in the period 1804–1871.

In putting this work together, the authors drew upon both various regulatory documents issued in the Russian Empire in the area of public education, including some of those listed in the Complete Collection of Laws of the Russian Empire, and a set of statistical digests.

In terms of methodology, the authors made extensive use of the statistical method. The use of this method helped identify some of the key distinctive characteristics of the making and development of the system of public education in Stavropol Governorate in the period 1804–1871. To achieve their research objectives, the authors also employed a set of general methods of research, including analysis and synthesis, concretization, and summarization. In addition, use was made of the historical-situational method to explore particular historical facts in the context of the era under study in conjunction with various “neighboring” events and facts.

The authors' conclusion is that the period 1804–1871 was a time of the making of the system of public education in Stavropol Governorate. It was a complicated process, as there was a war waged in the Caucasus up to 1864 (the Caucasian War of 1817–1864). Nevertheless, by 1871 the governorate became home to an extensive network of educational institutions, which included secondary (two gymnasia), lower (five uyezd schools and one St. Aleksandra female school), and

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primary educational institutions (52 primary schools). In addition, a key role in the development of the governorate's system of primary education was played by the Department of Religious Affairs, which ran 56 primary educational institutions in the region.

Keywords: Stavropol Governorate, system of public education, period 1804–1871.

1. Introduction

It is a known fact that Stavropol Governorate did not exist as an administrative unit at the beginning of the period under review. In the early 19th century, the region formed part of Astrakhan Governorate (the areas where Stavropol Governorate, Terek Oblast, and Kuban Oblast were subsequently situated). In 1802, the governorate saw Caucasus Governorate being set apart into a separate constituent unit, with Georgiyevsk as its capital. However, that was not a very good place to site the governorate's capital, as it was a swampy area fraught with a high risk of disease for the locals. Twenty years later, Caucasus Governorate was renamed Caucasus Oblast, with Stavropol as its capital. In 1847, the region came to be known as Stavropol Governorate. This part of the work will examine the making of the system of public education in Stavropol Governorate in the period 1804–1871.

2. Materials and methods

In putting this work together, the authors drew upon both various regulatory documents issued in the Russian Empire in the area of public education, including some of those listed in the Complete Collection of Laws of the Russian Empire, and a set of statistical digests.

In terms of methodology, the authors made extensive use of the statistical method. The use of this method helped identify some of the key distinctive characteristics of the making and development of the system of public education in Stavropol Governorate in the period 1804–1871. To achieve their research objectives, the authors also employed a set of general methods of research, including analysis and synthesis, concretization, and summarization. In addition, use was made of the historical-situational method to explore particular historical facts in the context of the era under study in conjunction with various “neighboring” events and facts.

3. Discussion

During the period under review, Stavropol Governorate's system of public education was part of the Caucasus Educational District. The systems of public education within the Caucasus Educational District have been researched at different times by different researchers. For instance, O.V. Natolochnaya has explored the activity of mountain schools in the Caucasus ([Natolochnaya et al., 2018](#)), T.A. Magsumov has investigated the system of public education in Kars Oblast ([Magsumov et al., 2018](#)), and V.S. Molchanova has researched the system of public education in Kuban Oblast ([Molchanova et al., 2019](#); [Molchanova et al., 2019a](#); [Molchanova et al., 2020](#)).

In 2016, a group of researchers led by N.A. Shevchenko brought forward and tested a new system for periodizing the development of the system of public education in the Caucasus. The system involves dividing the process into the following three major periods:

1) Period 1 (1802–1834), which covers the first initiatives by the Russian government in the area of public education; in this period, the right to provide instruction to the population was granted even to Protestants;

2) Period 2 (1835–1871), which witnessed a toughening of requirements for provision of instruction in the region's educational institutions and the centralization of the educational process;

3) Period 3 (1872–1917), in which educational institutions in the Caucasus became an analogue for educational institutions in the European part of Russia; by 1917, the process of the system's making was over ([Shevchenko et al., 2016: 364](#)).

In recent years, researchers have expressed keen interest in the study of the systems of public education in various governorates within the Russian Empire. Of particular interest in this respect are the works of A.Y. Peretyatko and T.E. Zulfugarzade devoted to the system of public education in the Cossack region of the Don ([Peretyatko, Zulfugarzade, 2017](#); [Peretyatko, Zulfugarzade, 2017a](#); [Peretyatko, Zulfugarzade, 2019](#); [Peretyatko, Zulfugarzade, 2019a](#)). A team of researchers led by A.A. Cherkasov has explored the system of public education in Vologda Governorate ([Cherkasov et al., 2019](#); [Cherkasov et al., 2019a](#); [Cherkasov et al., 2019b](#); [Cherkasov et al., 2019c](#)). Elsewhere,

O.V. Natolochnaya has investigated the system of public education in Vilna Governorate (Natolochnaya et al., 2019; Natolochnaya et al., 2019a), and T.A. Magsumov has researched the system of public education in Vyatka Governorate (Magsumov et al., 2018).

4. Results

The first schools in Stavropol Governorate emerged at the very outset of the 19th century. Specifically, the region’s first official school was the so-called “particular parish school”, which was established in the Stavropol region back in 1804. Due to its distinct characteristics, the school had a primary focus on instruction in the ecclesiastical Cyrillic script, the book of hours, and the psalter. The school was in operation for about 11 years. In late 1815, it was transformed into a parish school (Tvalchrelidze, 1902: 1).

On August 30, 1811, the Stavropol region became home to an uyezd school. For several decades, these two schools were the region’s only educational institutions. It should be noted from the outset that the fact that there was a lack of schools in the region does not mean that most of its residents were illiterate. The thing is that in areas where there were no public schools in place instruction to children was provided through private “home” schools by individuals known as “gramoteys” (‘lettered persons’). It is worth noting that in the 18th century schools of this kind existed throughout Russia and Western Europe alike (Cherkasov et al., 2019; Mamadaliev et al., 2018; Mamadaliev et al., 2019). While teaching methodology used in them was, obviously, not very innovative, they did teach children to read, write, and perform the basic arithmetic operations.

Quite soon, a group of like-minded pedagogues truly dedicated to teaching began to form around the region’s two public educational institutions. The group included individuals who were willing to put up their own money toward the hiring of teachers of elective courses. For example, V.A. Taranov, a teacher at the uyezd school, deemed it absolutely necessary for a school to teach drawing, but the course was not part of the curriculum at the time. To this end, Mr. Taranov pledged 75 rubles of his own money in annual funding toward having a drawing instructor on the school’s staff (Tvalchrelidze, 1902: 2).

The two schools had been in operation for an entire era – 33 years. Over this period, the educational institutions had provided instruction to 2,504 students, with a portion of this student body having received a more or less finished education and the rest having become literate, at least.

Secondary education

In late 1828, the region’s uyezd school was transformed into a higher uyezd school. It was maintained with state funding (13,000 rubles). On October 18, 1837, it was transformed into a gymnasium (Tvalchrelidze, 1902: 4). The Stavropol Parish School ceased operation on January 1, 1850 – it was incorporated as a preparatory grade into the Stavropol Gymnasium.

In 1839, they established at the Stavropol Gymnasium a boarding school for the children of nobles and local functionaries.

Table 1 provides data on the numbers of teachers and students in the Stavropol Gymnasium in the period 1859–1867.

Table 1. Stavropol Gymnasium’s Pedagogical Personnel and Student Body in the Period 1859–1867 (Sbornik statisticheskikh svedenii, 1868: 168)

Year	Pedagogical personnel		Number of students
	Required on staff	Actually employed	
1859	43	28	427
1860	43	28	411
1861	43	27	396
1862	43	27	440
1863	43	28	412
1864	43	26	413
1865	43	26	382
1866	38	32	370
1867	38	32	374

By 1868, in addition to Greek, the gymnasium provided instruction in the natural sciences as well. The institution had two major departments – classic and real (used for the children of the region’s mountaineers).

An institution at the level of a gymnasium in the Stavropol region was its first-rate female school. The institution opened up on September 15, 1861, but its fifth and sixth grades were launched only in 1867. The school was funded via the following sources: 1) urban levies (2,900 rubles); 2) funding from the revenue of the Stavropol welfare board (400 rubles); 3) subsidies based on contributions from functionaries in the Excise Office; 4) interest (320 rubles from the school’s capital of 8,000 rubles); 5) tuition. On top of this, each year the school received additional funding from various benefactors. Instruction in the sciences in this school was provided by teachers from the Stavropol Gymnasium exclusively ([Sbornik statisticheskikh svedenii, 1868: 171](#)).

Lower education

The system of lower education in Stavropol Governorate was represented by several uyezd schools and one private institution – the Stavropol Female School.

One of the oldest uyezd schools in the Stavropol region was the Kizlyar Uyezd School, established in January of 1820 (Table 2).

Table 2. Kizlyar Uyezd School’s Pedagogical Personnel and Student Body in the Period 1859–1867 ([Sbornik statisticheskikh svedenii, 1868: 172](#))

Year	Pedagogical personnel		Number of students
	Required on staff	Actually employed	
1859	7	8	91
1860	7	8	107
1861	7	8	109
1862	7	8	116
1863	7	8	87
1864	7	8	87
1865	7	8	104
1866	7	8	128
1867	7	8	141

As evidenced in [Table 2](#), the school had more teachers on staff than required. This was due to the fact that the institution had two extra teachers on staff – a teacher of Armenian (employed via charity) and a teacher in the preparatory grade (employed with funding contributed by the urban community).

In May of 1862, the region became home to the Mozdok Uyezd School. The institution was maintained with state subsidies. Table 3 provides data on the school’s teaching staff and student body in the period 1859–1867.

Table 3. Mozdok Uyezd School’s Pedagogical Personnel and Student Body in the Period 1859–1867 ([Sbornik statisticheskikh svedenii, 1868: 172](#))

Year	Pedagogical personnel		Number of students
	Required on staff	Actually employed	
1859	7	7	143
1860	7	7	143
1861	7	6	148
1862	7	6	138
1863	7	7	128
1864	7	7	126
1865	7	7	166
1866	7	7	149
1867	7	7	153

All in all, there were five uyezd schools in Stavropol Governorate.

The Stavropol St. Aleksandra Female School was subordinate to the Ministry of Public Education, but the administration-and-management side of its operation was handled by the Council of the Stavropol St. Aleksandra Female Benevolent Society, founded by Princess E.K. Vorontsova in 1848. The school opened up in October of 1849. The number of students in the institution would reach 200 females ([Sbornik statisticheskikh svedenii, 1868: 172](#)).

Primary education

At the outset of the early 19th century, educational institutions in the North Caucasus were first subordinate to the Kazan Educational District, but on April 20, 1821, the authorities appointed a Director of Caucasus Schools. The first director was E.P. Manassein, an adjunct professor at Kazan University. The second Director of Caucasus Schools was F.I. Sorokin, who concurrently was also Head of the Stavropol Higher Uyezd School (transformed into the Stavropol Gymnasium). From that time and up to 1870, the directors of gymnasia also served as the Directors of Schools in the North Caucasus.

The region's primary educational institutions were established in several waves. The first wave took place in the period 1839–1851. In this 13-year timeframe, the region became home to 14 primary schools. The region's first primary educational institution, the First Novogrigoryevskoye School, was established in 1839 ([Tvalchrelidze, 1902: 6](#)). In 1840, the region became home to the First Praskoveyevskoye School, in 1841 – the Don-Aleksandrovskoye School, in 1842 – the Novo-Yegorlykoye School, in 1843 – the Sredne-Yegorlykoye School, in 1844 – the First Beloglinskoye School, in 1846 – the Johannesburg School, in 1847 – the Ovoshchinskoye School, in 1848 – the Obilenskoye School and the First Soldatsko-Aleksandrovskoye School, in 1849 – the Ladovsko-Balkovskoye School, in 1850 – the First Petrovskoye School, and in 1851 – the Sablinskoye School and the Sergeyevskoye School ([Tvalchrelidze, 1902: 7](#)).

Over the subsequent seven years, no educational institutions were opened in the governorate. Only in 1858 there began the second wave of the establishment of educational institutions in the region. The second wave lasted from 1858 to 1870, with another 17 educational institutions opening up. In 1858, the region became home to the First Medvezhenskoye School, in 1859 – the Vorontsovskoye School and the Sandatovskoye School, in 1860 – the Novo-Dmitriyevskoye School, in 1861 – the Arkhangel'skoye School, in 1863 – the Elisavetinskoye School, in 1864 – the Bogoroditskoye School, the Kugultinskoye School, and the Trukhmenskoye School, in 1865 – the Urazhainskoye School, in 1867 – the Velichayevskoye School, the Kruglolesskoye School, and the Tatarskoye School ([Tvalchrelidze, 1902: 9](#)), in 1868 – the Lopanskoye School, the Novo-Pavlovskoye School, and the Martinfeld Evangelical Lutheran School, and in 1869 – the Dubovskoye School.

With the Caucasian War drawing to an end, the education system in the Caucasus began to take on a more harmonious form, as it was being brought into alignment with the parameters of the Russian education system. On June 25, 1867, the government issued 'The Statute on Education across the Caucasus' ([PSZRI, T. LXII. Otd. 1-e. № 44748](#)). This document was to help bring the region's education policy in alignment with the all-Russian one, i.e. the one developed by the Ministry of Public Education. On December 9, 1867, the authorities restored the Caucasus Educational District ([Gatagova, 1993: 65](#)), and on January 13, 1868, the post of Trustee of the Caucasus Educational District was reinstated as well ([Modzalevskii, 1880: 60](#)). Secondary educational institutions within the Caucasus Educational District were now reliant upon a single charter for gymnasia and progymnasia under the aegis of the Ministry of Public Education (the Charter of November 19, 1864) and were divided into classic and real gymnasia ([PSZRI, T. XX19th. Otd. 2-e. № 41472](#)). The region's lower educational institutions were guided by 'The Statute on Primary Public Schools' of July 14, 1864 ([Istoricheskii obzor, 1902: 450](#)).

One of the key issues in the development of the region's system of primary public education was a shortage of pedagogical personnel. To this specific end, in 1866 the authorities set up at the first-rate female school (which qualified as a gymnasium) a special pedagogical course. Around the same time, they also permitted females in the Caucasus to teach.

In February of 1870, the authorities introduced the post of Inspector of Public Schools in Stavropol Governorate ([Tvalchrelidze, 1902: 10](#)). From that moment on, even parochial schools would be under the instructor's supervisory control. In 1870, there began the third wave of the

establishment of primary educational institutions in the region. It started with a sharp increase in number of educational institutions. Specifically, in 1870 the region became home to as many as 16 educational institutions (the Praskoveiskoye, Aleksandrovskoye, First Bezopasnenskoye, Second Bezopasnenskoye, Ivanovskoye, Kitayevskoye, Letnitskoye, Medvedskoye, Aleksandro-Mariinskoye, Nikolayevskoye, Ninskoye, First Novoselitskoye, Polivyanskoye, Pokoino-Aleksandrovskoye, Aleksandriiskoye, and Podgornenskoye schools). Note that the figure even surpassed the number of schools established in the region over the 13-year period of the first wave.

In 1870, the region's 36 schools under the aegis of the Ministry of Public Education had a combined enrollment of 984 students, and its 56 parochial schools had a combined enrollment of 922 boys and 133 girls (Tvalchrelidze, 1902: 11).

In 1871, the region's primary educational institutions were for the first time divided into several categories, which are as follows: model schools, staff schools, and public non-staff schools. All in all, there were one model, 31 staff, and 20 non-staff schools in the region (Sbornik statisticheskikh svedenii, 1873: 6). There was only one model school in the governorate – the Praskoveiskoe Primary School, the only state-funded primary school in the region. A staff school was an educational institution that was maintained with funding collected each year from the region's peasantry. Each staff school received from those funds 250 rubles, of which 160 rubles went toward a teacher's pay, 45 rubles toward rent for the space, 17.5 rubles toward the pay of a nightwatchman, and 27.5 rubles toward the purchase of textbooks (Tvalchrelidze, 1902: 11).

A non-staff public school was an educational institution set up on the initiative of the region's rural communities and maintained with funding from them. Depending on a community's paying capacity, maintaining a non-staff school cost between 48 and 400 rubles.

In 1871, the governorate now had in place 52 primary educational institutions, after another nine schools had been established in the region (the Kalinovskoye, Kurshavo-Aleksandrovskoye, First Mikhailovskoye, Moskovskoye, Novo-Georgievskoye, First Nogutskoye, Severnoye, First Chernoleskoye, and Beshpagirskoye schools) (Tvalchrelidze, 1902: 14). Out of these 52 schools, only five were housed in a properly equipped space, with the rest housed either in a church gatehouse or in a rented space that was hardly suited for a school. One normally rented a peasant's log cabin, as most rural localities did not have any other buildings that could work for the purpose. As regards school furniture, none of the schools had desks designed properly in terms of hygiene. Some of the schools did not have a full set of furniture in the classroom, with some of the students having to stand in class while the rest were sitting. Certain schools were using plain peasant benches, which had nothing in common with a proper classroom bench. Nevertheless, in 1871 the situation in the region's public schools was a lot better than in 1870, when there were cases of schoolchildren having to sit on the floor due to the absence of chairs or benches in the classroom.

On August 9, 1871, the governorate's administration established at each staff school a warehouse for textbooks and other academic paraphernalia for the purpose of making these items available to the students at affordable prices. The authorities enjoined that 100 rubles be allocated to each school from the remaining funding toward the purchase of books for the fundamental and discipular library sections. This momentous decision by the Stavropol administration would lead to the establishment of school libraries in the region. On the other hand, the region's seven schools that by 1871 already had in place a library were making their library holdings available to the educated portion of the peasant population.

Based on data for 1871, primary schools in Stavropol Governorate had a workforce of 61 teachers, of which eight were teachers of religion, four were priest teachers, 45 were regular male teachers, and four were regular female teachers (Sbornik statisticheskikh svedenii, 1873: 32). Instruction in most of the schools was not provided by teachers of religion, with Scripture taught by regular male and female teachers. A common issue throughout Russia at the time was staffing the schools with quality teaching personnel, as there were few candidates with a secondary education, with most of these being graduates of uyezd and primary schools.

5. Conclusion

The period 1804–1871 was a time of the making of the system of public education in Stavropol Governorate. It was a complicated process, as there was a war waged in the Caucasus up to 1864 (the Caucasian War of 1817–1864). Nevertheless, by 1871 the governorate became home to an extensive network of educational institutions, which included secondary (two gymnasia), lower

(five uyezd schools and one St. Aleksandra female school), and primary educational institutions (52 primary schools). In addition, a key role in the development of the governorate's system of primary education was played by the Department of Religious Affairs, which ran 56 primary educational institutions in the region.

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