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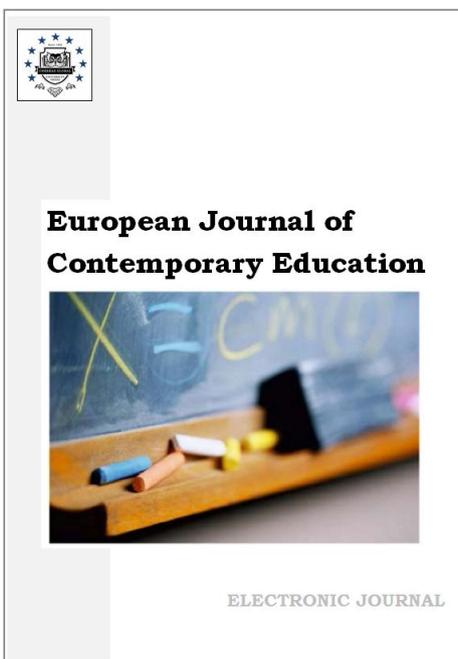
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## The Problems of Contemporary Education

### Reflections about Complex Thought and Complex Thinking: Why These Theoretical Constructs Matters on Higher Education?

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#### Abstract

This article is based on the knowledge that complex thinking as a construct is nowadays shaping a system of meta-competencies which depends entirely on synergy at all its levels. In higher education contexts, it is well known that the development of transversal competencies allows fostering a better recognition and adaptation to the environment. However, the indistinct use of some concepts that allude to competencies generates confusion regarding what they imply, both theoretically and practically. Consequently, the present article analyzes the differences between *complex thought* and *complex thinking*, as relevant concepts, and competencies in higher education. We analyzed to what extent the concept of complex thought is a possible starting point for the adoption of the term and development of the competence of complex thinking, and how this is permeating all branches of knowledge. A qualitative research methodology was used to support the present theoretical reflection, through a critical reflection of the literature. Both concepts, their uses, and implications were analyzed through a compilation of scientific papers, which allowed an entire observation, and document analysis to ensure objective study. The present work presents practical implications in higher education contexts: 1) complex thought has become a relevant matter for explaining the multidisciplinary from theory of knowledge in epistemology, and 2) complex thinking has become a mean for ensuring new academic skills and strengths for problem solving among students in higher education.

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**Keywords:** academia, adaptation, complex thinking, complex thought, educational innovation, epistemology, higher education, multidisciplinary, paradigm.

### 1. Introduction

Complex thought as a concept, often used in science and epistemology, has been undergoing a process of construction and refinement since the French philosopher and sociologist Edgar Morin coined it in the mid-twentieth century. Strikingly, this notion seems to be profoundly hard to understand not precisely because of the level of difficulty involved in its meaning among the words themselves that contain the concept; but essentially because of its level of multidisciplinary and transdisciplinary that involves a prominent intervention of various aspects and field of knowledge within this whole construct (Montouri, 2004; Textor, 2010).

It can be said that complex thought as a construct within epistemology (that branch of philosophy that studies knowledge in general and its properties) alludes to the nature of association and the relationship between a series of elements that necessarily share an essential complementarity. Although such elements may be heterogeneous, in any case, there may be a relationship of synergy between all of them, which represents a paradox of the individual and the group from the logic of systems (Morin, 1992; Morin 2005; Moraes, Petraglia, 2021). Likewise, complex thought must, in ontological terms, fulfill very numerous conditions to be considered as such. For example, it must link the object to the subject and in turn both with the environment; all these as elements of a system that raises complex problems within the organization and order. Likewise, it must respect the multidimensionality of beings and things. It must deal and dialogue with uncertainty, with the rationalizable. Similarly, it must not disintegrate the world of phenomena, but try to account for it by mutilating it as little as possible (Morin, 1984; Kaspar, 2014; Preiser et al., 2013).

Thus, complex thought can be defined, among one of its various meanings, as the ability to integrate different ideas, which a priori may seem unconnected, but which over time, in the network of knowledge that is built within science, end up being connected. A situation that involves providing explanations and solutions to the problems, which at the phenomenal level, are present in the very evolution of life and human reality. However, Morin's whole proposal took a new direction not only because of the possible translation into English of a term originally written in French and deeply convoluted, but also because over time complex thought has gone from being a less philosophical idea, proper to the field of epistemology, to a more practical idea that has reached a more practical meaning related to learning. All of the above, as is the case with complex thinking, which is currently associated with the development of competencies in higher education (Castañeda-Bustamante, 2018; Solana-Ruiz, 2019; Baena-Rojas et al., 2022).

Regarding complex thinking, the concept is also in a current process of construction and refinement since the American philosopher and pedagogy theorist Matthew Lipman started to deal with this in the last twentieth century. Then, this notion conjures different strategies to enhance educational resources, besides expand the range and nature of the concepts taught and promoting self-correction, critical aptitudes, modification of the methods and content that is taught from cognitive processes (Kennedy, 2012).

In this manner, on the one hand, complex thought is from Edgar Morin's contributions a strategy or way of thinking that has the purpose of encompassing phenomena holistically but, at the same time, recognizes the specificity of the parts or elements that make up the whole as an ensemble. Thus, everything related to complex thought is linked to epistemology that then seeks the production and validation of scientific knowledge through the analysis of different criteria (Salazar, 2020). On the other hand, complex thinking is from Matthew Lipman's contributions defined as different ideas based on coherence that besides are shaped by profound and dynamical terms which enhance the need to investigate and explore different topics and matters from academia (Gratton, 2004; Silva-Pacheco, Iturra-Herrera, 2021).

The current paper recognizes the relevance of complex thought as a remarkable input for the current dynamic of sciences in general for understanding different disciplines of knowledge in a wider manner and without ignore the particularities that comprise it. Similarly, this article also indicates the role of complex thinking as an evolved component and relevant output from the previous construct, in this case focused to learning, for instilling this type of thinking in students to

stimulate their intellect, their critical sense and their creativity for solving problems. All of this in a changing environment subordinated to education systems and educational trends.

### **Research problem**

Among higher education literature, the vague use of the concepts *complex thought* and *complex thinking*, has caused confusion regarding what they imply, both theoretically and practically, generating in turn, uncertainty, and lack of specificity regarding academic activities. Consequently, in order to clarify the origins, definitions and implications of the use of both concepts, the present article analyzes the differences between them, as relevant conceptions in higher education. We analyzed to what extent the concept of complex thought is a possible starting point for the adoption of the term and development of the competence of complex thinking, and how this is permeating all branches of knowledge. Discursive, as well as interactive relationships were considered between the concepts, contemplating the following query for the present reflection:

Are there substantial relations and variations, on the one hand, between complex thought and, on the other hand, with complex thinking; addressing both notions as constructs within field of knowledge where different scientific disciplines join on higher education?

Being clear about the relationships, variations, uses and implications of both concepts, educational practice at the higher level will benefit from establishing well-defined areas of competence for both terms. Likewise, it will give clarity to the teaching education community regarding the theoretical baseline and practice under which the training of students will be focused.

## **2. Literature Review**

### **Considerations about complex thought and complex thinking**

Complex thought as a term, still in construction, entails a kind of method or practice, where empirical research and philosophical reflections on complex systems and complexity science require to be analyzed holistically in order to understand better the reality of daily. In this way, it is clear current literature on complex thought is quite extensive but paradoxically, in many cases, it also seems to be somewhat confusing and convoluted. Especially considering an apparent lack of technical and conceptual precisions which allow to understand better some essential relations with other particular and specialized fields such as education. Then, even though complex thought is not a new matter this construct is still moving forward and adapting to new circumstances of human reality; merely feeding various scientific disciplines within epistemology itself (Massip-Bonet et al., 2019; Rezaei, 2021).

It is possible to affirm that complex thinking has tried, since its origins in the middle of the 20th century, to focus on the study of problems that attempt to explain the development of the human subject. This is precisely how the French philosopher Edgar Morin developed a whole idea supported by various disciplines and fields of study, at that time, such as biotechnology, systems theory, cybernetics, and information theory. All these which end up being an important input for the whole epistemological proposal of complexity (Chaves, 2010).

With other new technological advances and even diverse scientific revolutions, all of the contributions from Morin have revealed an astounding, varied and rich body of work during more than 50 years. In this manner, Morin is usually recognized as one of the most important French and European thinkers to emerge in the 20th century. Although is remarkably curious to misread his work on Method and Complex Thought as being focused exclusively on the cognitive domain. The term complex thought might be misleading here because it is relevant to point out that Morin's work is far broader, as his first literary production indicates. Therefore, Morin's proposal offers a wide vision of complexity and of thought explicitly connects reason and emotion, wisdom and compassion, idealism and realism, besides other interesting human features (Montuori, 2004).

In any case, while the academic community in general recognizes the relevance and validity of Morin's work, there is also some criticism of the way in which some of his work is approached. This is part of the reason why there may be ambiguities in the interpretation of his ideas, which for some may be somewhat vague and difficult to assimilate. All this in addition given its pomposity in the dialectic of his ideas that makes it not only philosophically robust, but also lends itself to various interpretations. This apart from the fact that it can also be excessively qualitative, which some of his own critics interpret as weak at the logical and mathematical level (Reynoso, 2006; Solana-Ruiz, 2011).

Even though the complex thought shows then approaches, in general, very qualitative, there are some new works that have also tried to further strengthen the theories of this construct with certain mathematical contributions that pretend increase the rigor of this concept. All this, precisely because the ideas addressed within this notion involve or consider the susceptibility to change as well as the adaptation itself to the circumstances. Nevertheless, complex systems and the elements that interact with each other within them show non-linear behaviors, difficult to measure, and with constant feedback from the environment (Tsoukas, 2005; Chevallier, 2016).

In any case, the real systems of thought, as a deductive and discursive manner for analyzing reality supports philosophy, theology, science, etc. and this is why complex thought is also associated with common sense, popular culture, popular knowledge, everyday knowledge, social representations, among other names. Obviously, this is because this construct permeates any single area of cognition aiming at a non-divided, non-reduced knowledge, as well as the constant search for the limits of all that is unfinished or incomplete within all knowledge in general (Viana, 2015; Juárez, Comboni, 2012).

Thus, it is quite clear that complex thought is related to the educational sciences not only because of its remarkable field of influence on all sciences in general, but also because of the very condition of multidisciplinary of this notion that holistically integrates knowledge. In fact, this influence is increasingly recognized by specialized international organizations because education is currently developing diverse pedagogical projects that involve different educational approaches more and more integral and therefore more in line with complex thought. In addition, the migration to the new educational paradigm continues to require a new structural model, whose components are not analyzed in isolation but in a complementary manner. This is a clear characteristic of complex thinking as well as the fact that education focuses on social, human, and technological aspects (De Oliveira, De Souza, 2006).

In any case, it is necessary to recognize that although Morin's contribution, given its transdisciplinary and multidisciplinary essence, influences contemporary educational theories, his postulates are only one element that generates what is called "complex thinking", which as a concept, in recent decades, has proliferated an enormous number of new studies on educational sciences. Thus, this other construct is usually recognized more in the field of educational systems and despite generating a robust literature on the subject, with points in common with complex thought, it is necessary to make it clear that both terms do not allude to the same idea and therefore should not be used as synonyms (See Figure 1).

Term	Definition	Approach	Referent authors	Points in common
Complex thought	The concept refers the capacity to interconnect different dimensions of reality, constructed by the sciences and their different disciplines, without generating reductionisms and fractioning the parts that integrate the whole object of study.	Transdisciplinary	Morin (1992)	<ul style="list-style-type: none"> <li>• Problem solving</li> <li>• Disciplines</li> <li>• Information</li> <li>• Education</li> <li>• Competencies</li> <li>• Knowledge</li> <li>• Cognition</li> <li>• Reality</li> <li>• Understanding</li> </ul>
Complex thinking	The concept refers the capacity to develop different meta-competencies, in any discipline of knowledge, in order to improve problem solving all this adopting innovative strategies in educational system.	Academic	Lipman (1995)	

**Fig. 1.** Parallel between complex thought and complex thinking

Source: own elaboration based on Viana, 2015 and Cruz-Picón, Hernández-Correa, 2021

Precisely, the American philosopher Mathew Lipman goes deeper regarding this other construct derived from complex thought; all this emphasizing in the learning processes that

compose it. Then, based on action and interaction with the environment (full of uncertainty and vulnerability) in addition to cognitive and metacognitive processes, it is valid to postulate complex thinking as a notion especially challenging for education with meta-competencies such as critical, systemic, scientific, and innovative thinking (Silva-Pacheco, 2020; Ramírez-Montoya et al., 2022; Nur et al., 2022).

It can be said that complex thought subordinated to Lipman's contributions is of enormous conceptual richness because of the way it explores a socio-pedagogical, psychological, and logical educational context that must be in constant change considering the conditions of human learning. That is why this construct is nourished by a constant and broad analysis based on diverse epistemological and pedagogical meanings that, with a critical narrative, depends in turn on the notion of "complex thought" for the generation of different and heterogeneous theoretical lines that can improve learning techniques and cognitive processes (Cruz-Picón, Hernández-Correa, 2021).

### **Justification**

There is a need to address certain challenges related to an operational conceptualization that allows the development of instruments, tasks or evaluation systems for observation or measurement, from the conceptual perspectives derived from "complex thought" and "complex thinking", both considered as some of the most relevant and referenced notions in the educational field today (Silva-Pacheco, Iturra-Herrera, 2021).

Therefore, complex thinking has recently become an important topic for higher education. All this, not only because it considers, epistemologically speaking, the foundations of "complex thought" to approach the sciences and their various fields in a multidisciplinary and systemic way; but also, because it has been concerned to show within the educational sciences that students must develop new capabilities, regardless of their training, to better meet the technological, environmental, social, political, and social challenges of the present (García, 2020; Vázquez-Parra, et al., 2022). Specifically, complex thinking understood as a mega competence, is a useful training tool for students and the educational community in general, to propose solutions to complex problems in an innovative way and with scientific bases (Suárez-Brito et al., 2022). As mentioned above, it is made up of the subcompetencies of critical, scientific, innovative, and systemic thinking (González-Pérez, Ramírez-Montoya, 2022; Ramírez-Montoya et al., 2022), each of which presents its own characteristics, and are also conceived as part of the 21st Century Skills proposed by UNESCO (Fadel, 2008; UNESCO, 2017; UNESCO, 2022). Thus, by integrating competency-based training in higher education that includes complex thinking development, each of the abilities in turn detonates other skills, promoting a comprehensive and holistic training of individuals that prepares them to face today's complex problems. Likewise, all the above characterizations and conceptions are aligned with the Sustainable Development Goals (UN, 2022), in order to contribute to a better education in the global context.

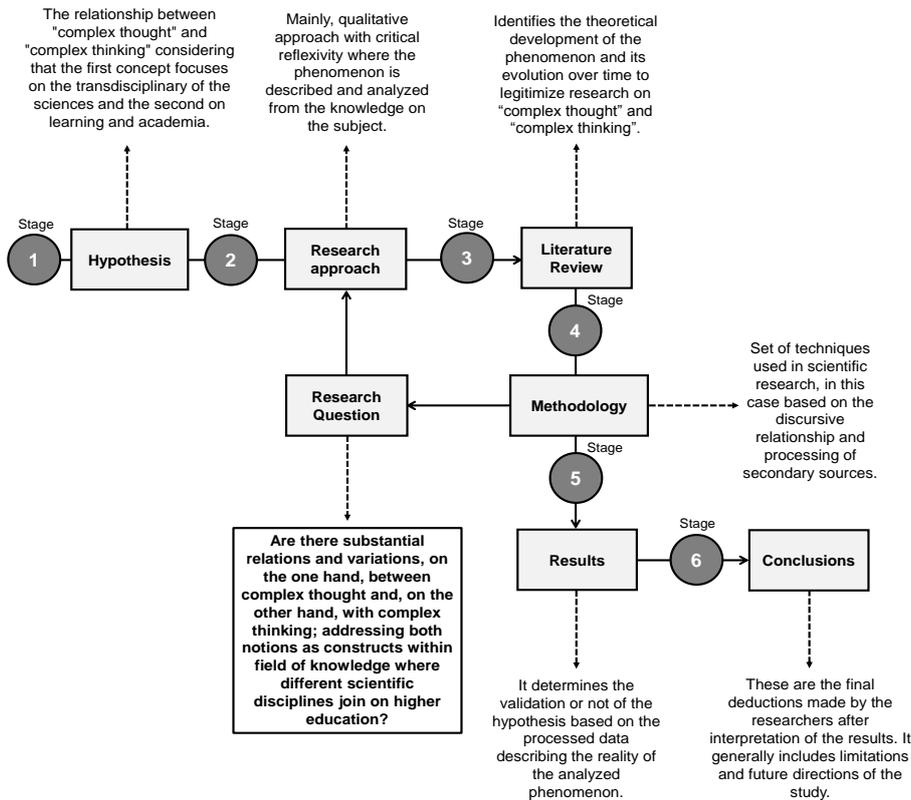
### **3. Methodology**

A qualitative methodology was used with descriptive critical reflection of the literature, through an informetric analysis of 814 indexed articles, as well as conceptual analysis of the terms of interest. Figure 2 shows graphically the methodological procedure from the establishment of hypotheses to the conclusions. Likewise, this article carries out an exercise of critical reflexivity with a qualitative approach within the Social Sciences. In this way, according to De la Cuesta-Benjumea (2011) this reflexivity exposes the researcher's awareness of the subject under study, also showing its connection with the circumstances of the research. It is a theoretical and detailed process in which researchers analytically and critically examine the content of an idea or even a specific phenomenon over time. These ideas or phenomena are usually present in the research question. The latter is answered from the researcher's reasoning, either through a propositional exercise where he/she reflects on possible relationships and explanations, both discursive and interactive, according to the available literature and knowledge of the subject.

It should be noted that the research question can also be answered using available databases (Scopus and Google Scholar in this case) whose information can be processed to construct figures and their respective explanations that open the debate on a given topic within the academy.

It is relevant to indicate that this paper aims to not only to answer the research question of this proposal through a discursive and conceptual approximation but also document with evidence,

using the Scopus data base, some relevant ideas which finally validate the hypothesis suggested on this entire study.



**Fig. 2.** Methodological steps and stages to complete this study  
Source: Own elaboration

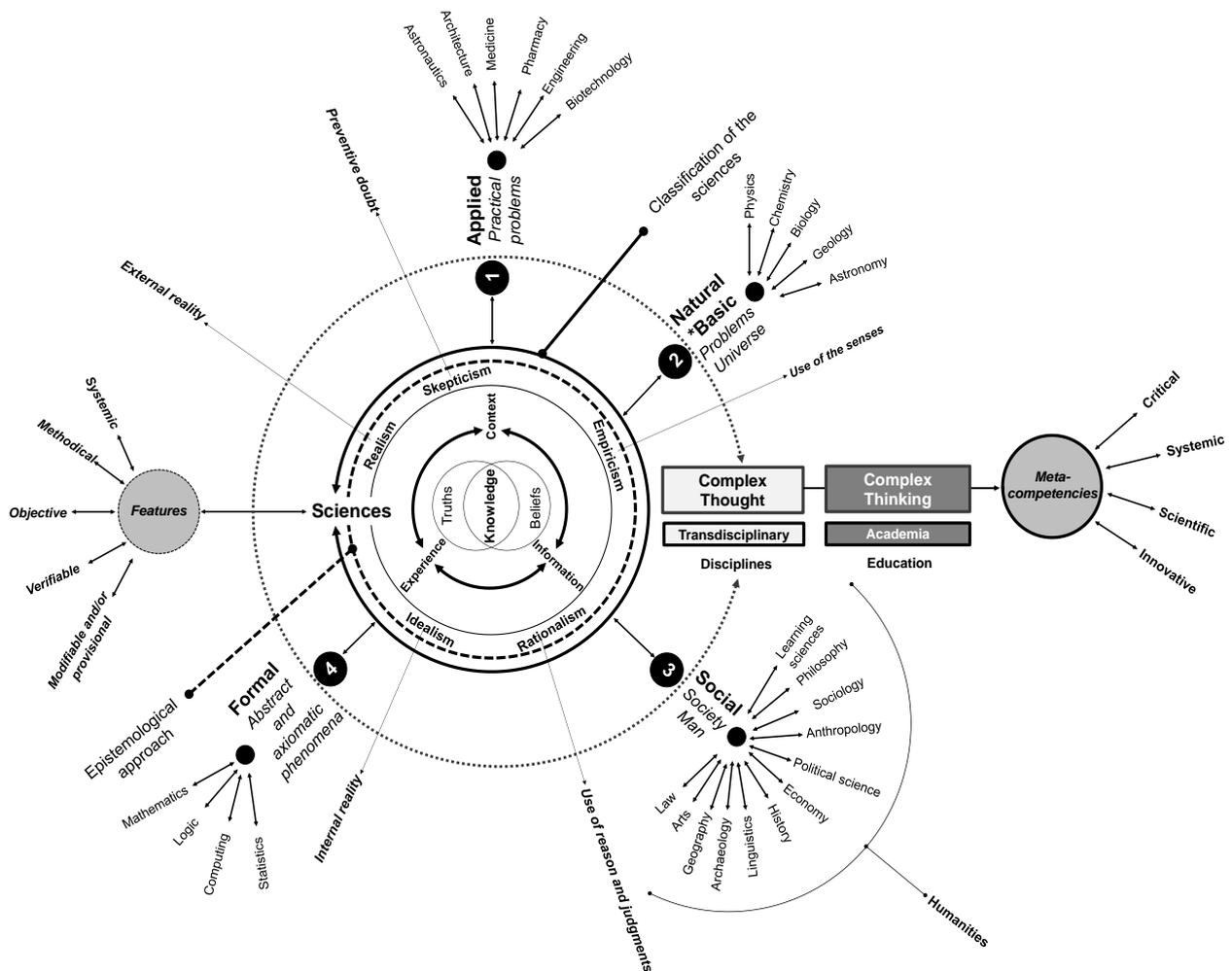
Therefore, the process of collecting, verifying, and analyzing about the content written on complex thought and complex thinking allow to transform historical and recent papers, as well as statistics data from Scopus, into new knowledge or at least open new debates regarding all this matter.

In this way, with the current analysis the authors seek to highlight and understand how two relevant concepts such complex thought and complex thinking are related besides where exactly these terms take distance from each other. All of this, despite some theoretical approaches surprisingly associate both terms or constructs as the same, without establishing the conceptual boundaries or limits among them. In fact, the Spanish translation of these two constructs is literally the same denoting a lack of deepening into the addressed topic of this article. Then, this current proposal pretends to point out the essential topics, issues and elements which usually are linked as those who are not mostly related between these two constructs framed within sciences in general and higher education.

#### 4. Results

In this section, it is essential to highlight, epistemologically, the relationship between the central concepts of this article, such as "complex thought" and "complex thinking". In this way, these constructs are represented in a remarkable and intricate network that represents knowledge, where these interact with various disciplines and fields of science at a general level, as several theoretical works suggest. Subsequently, the incidence of the central concepts of this work is analyzed; all this, on the different disciplines according to their classification within the sciences. Likewise, co-occurrences are identified for each concept based on the most recurrent themes that are related. Then, this part of the article closes by pointing out those themes that are common (and that generate intersection) among all the most important literary production at present that contains the terms "complex thought" and "complex thinking".

Therefore, in the first part of the results, a comprehensive review of different theoretical sources was carried out to recognize, at the epistemological level, where "complex thought" and "complex thinking" are located, considering that both constructs are not only different, but in each case their fields of study are different. However, it should be noted that although it can be said that there is a discursive causality that derives from the way the second construct has been nourished by the first. All of this, to achieve the understanding of various aspects within its *raison d'être*, as the literature shows according to Figure 3; this does not mean that both do not have points in common because theoretically in deductive terms both complement each other.



**Fig. 3.** Representation of complex thought and complex thinking in epistemology  
 Source: own elaboration based on Tsoukas, 2005; Henry, 2013; Hyytinen et al., 2014; Ramírez-Montoya et al., 2022

In the second part of the results, after considering various disciplines and fields within the classification of sciences, it is possible to indicate possible perceptions and relationships between "complex thought" and "complex thinking". Thus, according to Table 1, there are sciences with a greater affinity with respect to "complex thinking", as is the case with the applied sciences due to the enforceability of their disciplines. This is also the case of the social sciences because of their focus on epistemology in addition to the object of study itself, in this case man. On the other hand, there are also sciences with a greater affinity to complex thinking because of their focus on education and teaching, as is the case with the social sciences and the formal sciences. Similarly, the current analysis points out how some of these sciences also have a significant affinity with the meta-competences of complex thinking, as is the case here with the applied sciences and the formal sciences, where there seems to be an enormous potential for the enrichment of complex thinking as a construct.

**Table 1.** Perception and relationship between complex thought and complex thinking in science

No	Classification of sciences	Complex Thought	Complex Thinking	Influence of meta-competencies			
		Relation	Relation	Critical	Systemic	Scientific	Innovative
1	<b>Applied</b>	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>High</b>	<b>High</b>	<b>High</b>
	Astronautics	Low	Low	Low	High	High	High
	Architecture	Medium	Medium	Low	High	High	High
	Medicine	High	High	Low	High	High	Medium
	Pharmacy	High	High	Low	High	High	High
	Engineering	High	High	Low	High	High	High
	Biotechnology	High	High	Low	High	High	High
2	<b>Natural</b>	<b>Medium</b>	<b>Medium</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>	<b>High</b>
	Physics	Medium	Medium	Low	Medium	High	High
	Chemistry	Low	Low	Low	Medium	High	High
	Biology	Medium	Medium	Low	Medium	High	Medium
	Geology	Low	Low	Low	Low	High	Low
	Astronomy	Low	Low	Low	Medium	High	Medium
3	<b>Social</b>	<b>High</b>	<b>High</b>	<b>High</b>	<b>High</b>	<b>Medium</b>	<b>Low</b>
	Learning sciences	High	High	High	High	High	High
	Philosophy	High	High	High	High	Medium	Low
	Sociology	High	Medium	High	High	Medium	Low
	Anthropology	High	Low	High	High	Medium	Low
	Political science	High	Medium	High	High	Medium	Low
	Economy	High	High	High	High	High	Medium
	History	Medium	Medium	High	High	Medium	Low
	Linguistics	High	High	High	High	Medium	Medium
	Archaeology	Medium	Medium	Medium	High	Medium	Low
Geography	Medium	Medium	Low	High	Medium	Medium	
4	Arts	Medium	Medium	Medium	Low	Low	High
	<b>Formal</b>	<b>Medium</b>	<b>High</b>	<b>Medium</b>	<b>High</b>	<b>High</b>	<b>High</b>
	Mathematics	High	High	Medium	High	High	Medium
	Logic	Medium	Medium	Low	High	Medium	Low
	Computing	High	High	High	High	High	High
Statistics	High	High	High	High	High	High	

Source: own elaboration based on [Montuori, 2013](#); [Ramírez-Montoya et al., 2022](#)

Then, in the third part of the results, an additional analysis of co-occurrence is performed. In this case, after considering the papers resulting from the Scopus search (total = 814 papers) and using as a filter the two central constructs of this study, it is possible to identify the words, which in turn act as sub-themes, most recurrent in the literature analyzed. Thus, it is possible, according to [Table 2](#), to recognize for the case of "complex thought" that there are a series of key clusters from which different themes are derived. In this case, nonhuman, male and human stand out regarding other terms; all of them, that suggest the connection of this first construct of the current study with

living organism's cognition. In this case, the co-occurrence percentages of related topics and recurrent words within the concepts of interest are presented. Given the descriptive perspective of this work, in this study we were not interested in showing statistical comparisons between the links and the co-occurrences of the clusters.

**Table 2.** Co-occurrence of related topics and recurrent words within complex thought

Nº	Cluster	Nº	Items	Links	%	Total link strength	%	Co-occurrence	%
1	Nonhuman	1	Nonhuman	22	9,65	157	15,56	35	17,50
		2	Controlled study	26	11,40	164	16,25	30	15,00
		3	Unclassified drug	19	8,33	125	12,39	23	11,50
		4	Animals	19	8,33	117	11,60	22	11,00
		5	Animal cell	17	7,46	77	7,63	14	7,00
		6	Animal	17	7,46	60	5,95	13	6,50
		7	Metabolism	19	8,33	53	5,25	11	5,50
		8	Gene expression	18	7,89	48	4,76	10	5,00
		9	Animalia	16	7,02	42	4,16	9	4,50
		10	Protein binding	14	6,14	47	4,66	9	4,50
		11	Genetics	11	4,82	33	3,27	8	4,00
		12	Protein function	14	6,14	40	3,96	8	4,00
		13	Protein localization	16	7,02	46	4,56	8	4,00
		<b>Total</b>				<b>228</b>	<b>100</b>	<b>1009</b>	<b>100</b>
2	Male	1	Male	28	12,02	206	17,87	37	17,29
		2	Female	28	12,02	182	15,78	32	14,95
		3	Adult	19	8,15	162	14,05	28	13,08
		4	Thinking	20	8,58	75	6,50	18	8,41
		5	Cognition	20	8,58	80	6,94	17	7,94
		6	Brain	20	8,58	77	6,68	16	7,48
		7	Human experiment	17	7,30	92	7,98	15	7,01
		8	Physiology	23	9,87	89	7,72	14	6,54
		9	Review	21	9,01	66	5,72	13	6,07
		10	Aged	12	5,15	39	3,38	8	3,74
		11	Normal human	13	5,58	53	4,60	8	3,74
		12	Problem solving	12	5,15	32	2,78	8	3,74
		<b>Total</b>				<b>233</b>	<b>100</b>	<b>1153</b>	<b>100</b>
3	Human	1	Human	33	24,44	353	46,94	87	37,83
		2	Humans	32	23,70	243	32,31	53	23,04
		3	Complex Thought	8	5,93	13	1,73	29	12,61
		4	Complexity	5	3,70	7	0,93	17	7,39

	5	Nursing	9	6,67	24	3,19	10	4,35
	6	Child	16	11,85	47	6,25	9	3,91
	7	Phycology	9	6,67	29	3,86	9	3,91
	8	Philosophy	10	7,41	15	1,99	8	3,48
	9	Theoretical study	13	9,63	21	2,79	8	3,48
	<b>Total</b>		<b>135</b>	<b>100</b>	<b>752</b>	<b>100</b>	<b>230</b>	<b>100</b>

Source: own elaboration based on [Scopus, 2022](#).

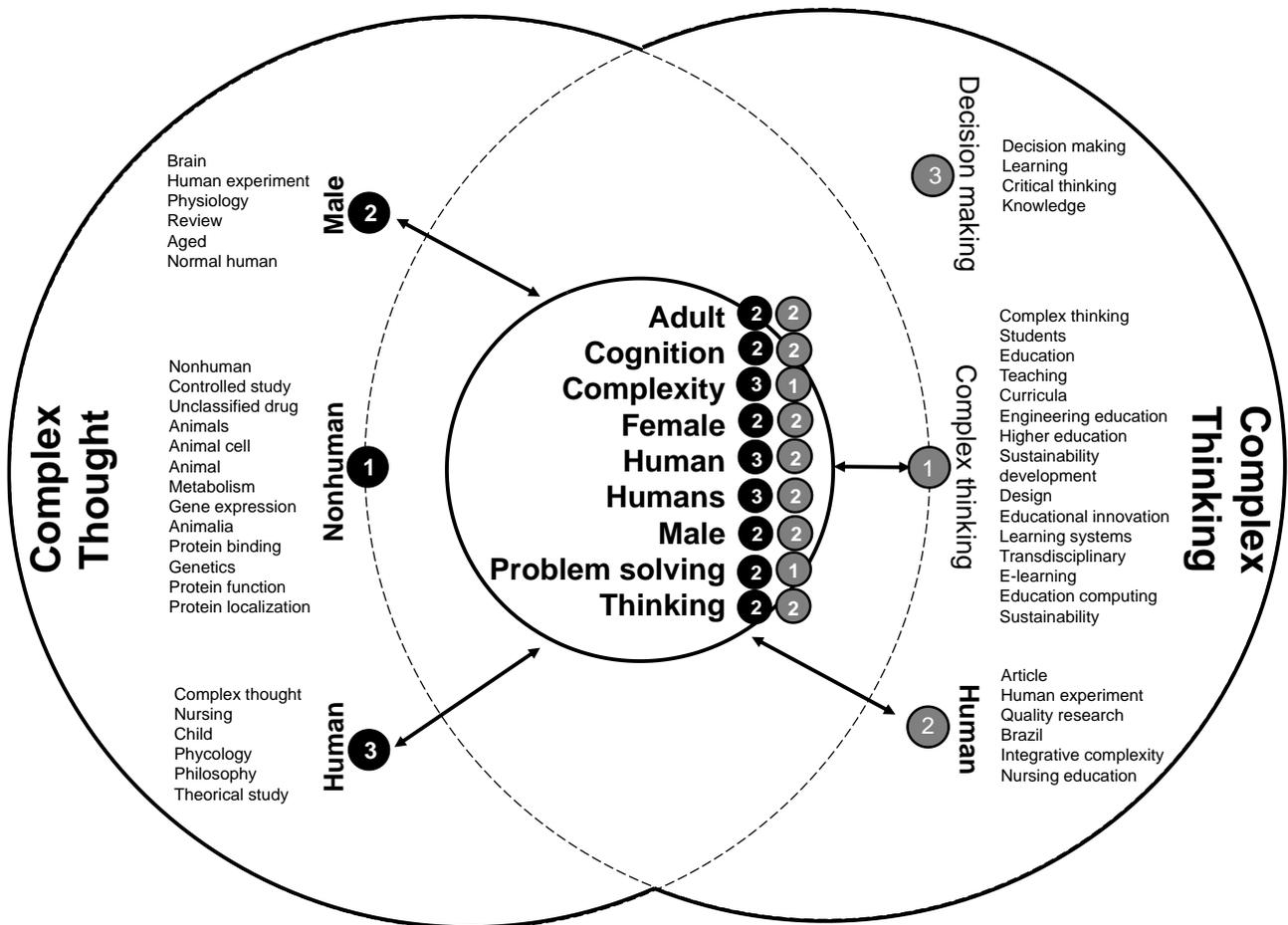
Similarly, it is possible, according to [Table 3](#), to recognize for the case of "complex thinking" that there are also a series of key clusters from which different themes are derived. In this case, students, complexity, and educations stand out regarding other words and terms that suggest the connection of this second construct of this study with learning sciences.

**Table 3.** Co-occurrence of related topics and recurrent words within complex thinking

N <sup>a</sup>	Cluster	N <sup>o</sup>	Items	Links	%	Total link strength	%	Co-occurrence	%
1	Complex thinking	1	Complex thinking	30	10,00	156	16,79	97	25,13
		2	Students	29	9,67	143	15,39	48	12,44
		3	Complexity	16	5,33	33	3,55	36	9,33
		4	Education	28	9,33	86	9,26	29	7,51
		5	Teaching	28	9,33	96	10,33	25	6,48
		6	Curricula	14	4,67	62	6,67	20	5,18
		7	Engineering education	16	5,33	51	5,49	19	4,92
		8	Higher education	19	6,33	49	5,27	15	3,89
		9	Problem solving	26	8,67	59	6,35	15	3,89
		10	Sustainability development	12	4,00	29	3,12	13	3,37
		11	Design	13	4,33	27	2,91	11	2,85
		12	Educational innovation	13	4,33	31	3,34	11	2,85
		13	Learning systems	12	4,00	22	2,37	10	2,59
		14	Transdisciplina ry	7	2,33	13	1,40	10	2,59
		15	E-learning	16	5,33	23	2,48	9	2,33
		16	Education computing	13	4,33	34	3,66	9	2,33
		17	Sustainability	8	2,67	15	1,61	9	2,33
		<b>Total</b>		<b>300</b>	<b>100</b>	<b>929</b>	<b>100</b>	<b>386</b>	<b>100</b>
2	Human	1	Human	28	10,85	303	19,04	68	21,45
		2	Humans	27	10,47	235	14,77	49	15,46
		3	Article	24	9,30	209	13,14	41	12,93
		4	Thinking	23	8,91	168	10,56	32	10,09
		5	Female	22	8,53	158	9,93	25	7,89
		6	Male	22	8,53	151	9,49	23	7,26
		7	Adult	21	8,14	124	7,79	18	5,68
		8	Human experiment	18	6,98	75	4,71	15	4,73

		9	Quality research	12	4,65	29	1,82	10	3,15
		10	Brazil	16	6,20	33	2,07	9	2,84
		11	Cognition	16	6,20	39	2,45	9	2,84
		12	Integrative complexity	12	4,65	22	1,38	9	2,84
		13	Nursing education	17	6,59	45	2,83	9	2,84
		<b>Total</b>		<b>258</b>	<b>100</b>	<b>1591</b>	<b>100</b>	<b>317</b>	<b>100</b>
		3	Decision making	1	Decision making	25	31,25	96	44,24
2	Learning			22	27,50	58	26,73	15	25,86
3	Critical thinking			21	26,25	42	19,35	13	22,41
4	Knowledge			12	15,00	21	9,68	9	15,52
<b>Total</b>				<b>80</b>	<b>100</b>	<b>217</b>	<b>100</b>	<b>58</b>	<b>100</b>

Source: own elaboration based on [Scopus, 2022](#).



**Fig. 4.** Relations between complex thought and complex thinking according to the most important literary production

Source: own elaboration based on [Scopus, 2022](#).

Finally, in the fourth and last part of the results it is possible to identify the terms or words, from the previous co-occurrence exercise, that are repeated within some of these clusters. This is the case for clusters 2 and 3 of "complex thought" and likewise for clusters 1 and 2 of "complex thinking". According to the above, this means that among the different terms with co-occurrence only adult, cognition, complexity, female, human, humans, male, problem solving, and thinking are repeated among some of the clusters of the two central constructs of this research.

## **5. Discussion**

All the documents and research papers obtained from the Internet, as well as from the scientific database used for the search of specialized literature, allow us to deduce that there is, at least in the literature in Spanish, a deeply striking and relevant situation. It is a lack of conceptual and theoretical precision between the constructs precisely addressed in this article, such as "complex thought" and "complex thinking". As has been pointed out, although both concepts are complementary, in fact possibly one is derived from the other (complex thinking derived from complex thought), their purposes and objectives of study tend to differ from each other; then, these cannot be understood as synonyms. In the first case, the construct of complex thought focuses mainly on achieving an epistemological interconnection of the different transdisciplinary dimensions of the real in an integral and holistic way without generating reductionism and disintegration between the different fields of knowledge. Also, within this construct it is also intended to analyze, at a biological level, the associative functioning not only of the animal mind and specifically the human mind for a better understanding of problem solving. In the second case, the complex thinking construct focuses more on the development within the academy of strategies that, from the complex thought itself, allow students, or people susceptible to learn, to achieve certain skills to further qualify their individual and professional profiles. From the perspective of this notion, it is also essential to maximize the use of any technological tool that allows the achievement of critical, systemic, scientific, and innovative meta-competences.

From this perspective, scientific research on the study of complex thought and complex thinking has been oriented to a greater extent to its use and implications in the context of higher education, both at the theoretical and practical levels. In the analyses presented in this paper, it can be identified how each of the concepts is oriented towards problem solving and the cognitive process of thinking from its practical application. However, each of them presented certain thematic clusters that differentiate it from each other. In this context, higher education institutions play a relevant role in determining from which perspective (epistemological or practical) they will want to approach the enhancement of processes and/or competencies for the benefit of their students. Likewise, it has been seen that interdisciplinary research on this topic, favors problem solving as necessary skills in the 21st Century in the same students (Fadel, 2008; UNESCO, 2017; UNESCO, 2022).

The results shown here, also show practical implications for the development of educational policies, as well as in the attention to the promotion of transversal competences in higher education students (García-González et al., 2019), specially, the mega competence of complex thinking (Ramírez-Montoya, 2022; Suárez-Brito et al., 2022).

## **6. Conclusion and recommendations**

It is possible that a large part of these conceptual and theoretical inconsistencies are the result of the fact that both concepts arose more or less at the same time during the last 20th century, that both notions are still under construction considering the abundant literature that continues to emerge and that also continues to enrich and refine the subject; but above all that both concepts, regardless of the fact that each one focuses on specific topics, can permeate all branches of knowledge and disciplines of science; the latter, given the versatility of both concepts with respect to the epistemological essence of complex thought and the educational essence of complex thinking.

Precisely in relation to this previous aspect, the analysis of co-occurrence reveals that each notion or construct ends up favoring certain specific lines of study. Therefore, in the first case with complex thought, the incidence of topics alluding to epistemology is appreciated, where causes closely related to sciences in general stand out, as well as the biological causes that have an impact on the generation of knowledge. Then, in the second case with complex thinking, the incidence of topics allusive to education can also be seen, where, in this case, causes related to the learning sciences and causes related to the teaching sciences stand out.

Last but not least, at the conceptual level, the database analyzed in this research article also shows that there is a very interesting situation. This is precisely because, although each of the two constructs analyzed in this article focuses on very specific issues. In any case, there are also common themes where intersectionality is present, which shows that both constructs are complementary with points in common and possible causal relationships.

Likewise, as future lines of work, it would be ideal to carry out surveys among some prominent authors in the present topic under study, through their publications and citations, to contrast at a practical level possible similarities and differences between complex thought and complex thinking; all this, in order to further clarify at a conceptual level these two constructs that continue to generate new scientific literature after the contributions of Morin and Lipman.

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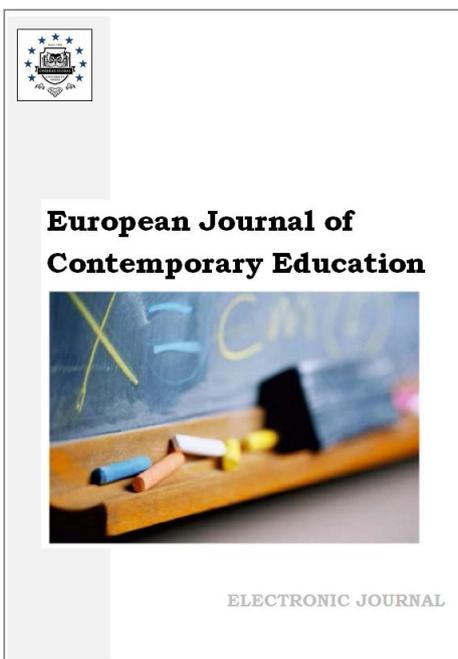
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## Learning, Thinking and Behaviour Among Pupils with Learning Disabilities

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### Abstract

The educational process is a complex system in which individual subjects such as teachers and pupils interact. However, external elements (e.g. the subject matter or atmosphere in the classroom) also influence them. It is necessary to know how the learning process works and how pupils influence each other's behaviour, how the pupils' behaviour influences learning and how the way of thinking reflects in the behaviour. In addition, we need to take into account various learning and behavioural disorders in the educational process. In pedagogical practice, we consider pupil discipline and learning disorders to be the two most significant problems in education. Research often focuses on only one of these elements. The article focuses on both mentioned aspects of the teaching process. In the first part, we examine why pupils disturb and how the class disturbance is related to the complexity of the topic. Using the test, we find out the pupils' level of knowledge and how they solve the tasks. We observe the success in solving tasks with gradually increasing difficulty based on methods of differentiated teaching. We are interested in the connection between the success in solving tasks and the pupils' disturbance during the lesson. We found out, that most pupils disturb because of the easy subject matter or they disturb spontaneously. The second part of the study focuses on the success of integrated pupils in solving mathematical problems in comparison to the success of pupils without learning disabilities. Our task is to determine whether these two groups are different and whether learning disabilities have a significant impact on pupil success. The success of these two groups has been proven to be statistically not significantly different.

**Keywords:** intact pupils, integrated pupils, inclusive education, study.

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## 1. Introduction

Pupils with learning disabilities have difficult access to education for many reasons. We most often encounter dysgraphia, dyslexia, dyscalculia and attention deficit disorder in the teaching process. The influence of individual learning disabilities on information processing is described e.g. in works (Mather, 2003; Moll, et al., 2015; Jimenez-Fernandez, 2016). Since pupils with learning disabilities present only a relatively small number in mainstream schools, a case study method is usually used for the study (e. g. in (Karimi, 2013) the case study focuses on the impact of learning disabilities in mathematics education). According to (Vagge et al., 2015; Zoccolotti, Friedmann, 2010), more boys than girls suffer from dyslexia and approximately the same number of boys and girls suffer from dyscalculia. Dyscalculia often appears together with attention deficit disorder and dyslexia. The work (Butterworth et al., 2011) points to methods that playfully help in the education of pupils with learning disabilities and activate the brain parts that influence the learning disabilities.

The form of inclusive education for pupils with learning disabilities has come to the fore in recent years. Pupils with learning disabilities are integrated into mainstream classes, and their educational process is appropriately adapted. By an estimate, there are less than 10 % of pupils with learning disabilities, and therefore their inclusion in the mainstream class should pull them forward, but it should not restrict their classmates in the educational process. On the contrary, this inclusion should also have a positive effect on the socialization of pupils. Authors in (Ratnaningsih et al., 2019) point out the weaknesses of inclusive education. Inclusive education is largely influenced by the political situation and legislation. Research (Evans, Lunt, 2002) describes this view of inclusive education, pointing out possible further developments in it. Work (Florian, 2019) focuses on the similarities and differences between inclusive education and special schools. Work (Kershner, 1990) points to the interesting fact: learning disabilities do not correlate with IQ and the level of self-evaluation is for pupils with learning disabilities more important than the level of IQ itself.

It is difficult for many pupils to solve mathematical tasks by themselves. Most pupils handle the task successfully on the blackboard, but they fail by solving a similar task unassisted at the desk. This is because the pupil is sometimes directly or indirectly guided to the right step of the solution by solving the task on the blackboard. The direct form can be an indication of the correct step or a direct indication of the step needed to continue solving the task. An indirect form can be the teacher's body language or the reaction of classmates (for example, a raised hand or a question) to a step they don't understand (usually a wrong step).

One of the main reasons for pupils' lack of interest in independent work and task solving is that they have not enough abilities to solve the problem. We can identify several reasons (Šumný, 1974):

- Inadequacy of tasks to the pupil's knowledge,
- Lack of suitable opportunities for independent work,
- Insufficient knowledge of different solving techniques,
- Ambiguity of the solving technique.

We can gradually eliminate these causes, but it is necessary to identify and understand them. We teach and train pupils with several solving methods and support the development of their skills for different methods. A collection of tasks graded by the difficulty can be used for homework. If the pupil gets lost in the solving process, the most common reason is the occurrence of a step that overreaches the pupil's level of knowledge, or that the pupil has missed the logical sequence of solving steps used at some point.

The method of gradual steps can be also helpful. We can increase the complexity of the tasks, while the size of particular steps depends on the pupil's level of knowledge. This method is a part of the Program teaching (Šumný, 1974), which uses the knowledge of behavioural psychology in the teaching process (Semple, 2000). To achieve the goal in the teaching process, we follow the basic principles:

- The principle of small steps
- The principle of active response
- The principle of individual pace
- The principle of evaluation and optimization of the program.

In this work, we compare the success of pupils' solutions of the two groups of the classroom pupils: group of the inclusive educated pupils with learning disabilities (integrated pupils) and a group of the intact pupils without learning disabilities.

**2. Background and methods – 1<sup>st</sup> part**

The first part of the study carried out with the pupils of the 9<sup>th</sup> grade of primary school focuses on classroom management, where we investigate why and how often the pupils disturb. Pupil's lack of concentration, often associated with disturbance during lesson, is the biggest problem in the teaching process.

In the survey form, pupils answered the following questions:

1. How often am I disturbing during the lesson?

I almost don't disturb

I disturb sometimes

I disturb slightly

I disturb often

2. I'm disturbing during the lesson

Because of easy subject matter

Because of difficult subject matter

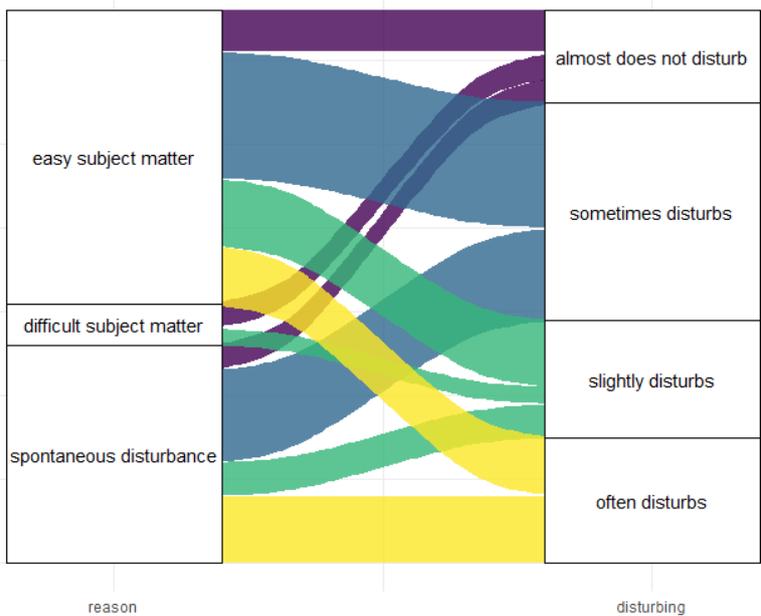
Without a reason (spontaneously).

We were interested in the connection between the success of solving tasks and whether the pupils in the class disturb (or how often). We conducted several hours of mathematics (using methods of differentiated teaching (O'Brien, Guiney, 2001; Heacox, 2001)) to the repetition of the (physical) units conversion topic (the conversion of units of length, area and volume). We gradually increased the difficulty of the tasks so that the easier tasks were the partial tasks in the more difficult tasks. Pupils solved the more difficult task only after they solved two consecutive easier tasks successfully. After the repetitive lessons, the pupils took a paper- and-pencil test, which included application tasks from physics with gradually increasing difficulty.

**3. Results. 1<sup>st</sup> part**

Most pupils (35) said they were disturbing because the topic was easy for them. Least pupils (5) were disturbing because the topic was difficult for them, and 26 pupils said they were disturbing spontaneously.

Figure 1 maps the relationship between the pupils' answers. There are only two subgroups in the group of pupils who interrupt due to the difficult topic: pupils who almost don't disturb and who disturb slightly. So we can conclude, that those pupils who have a problem with attention, disturb quite often during the more difficult task.



**Fig. 1.** Alluvial plot for individual categories of answers

Pupils who disturb sometimes, as well as pupils who disturb often, were divided into only two subgroups: pupils disturbing spontaneously or because of the easy subject matter. In this case, we can explain spontaneous disturbance as an occasional need for rest during mental tiredness. If the reason for the disturbance is an easy subject matter, then pupils disturb probably because they don't need to focus well on the problem, which they consider too simple.

**Paper-and-pencil test**

There were six application tasks from physics with increasing difficulty in the test.

**Test tasks:**

No. 1.  $83hl = \text{cm}^3$

No. 2.  $28000a = \text{km}^2$

No. 3.  $1800 \frac{\text{cm}}{\text{min}} = \frac{\text{m}}{\text{s}}$

No. 4.  $0,01 \frac{\text{hl}}{\text{s}} = \frac{\text{cm}^3}{\text{h}}$

No. 5. Determine what work a person will do when lifting an object weighing 1200 g to a height of 50 cm, if we know the acceleration due to gravity  $10 \frac{\text{m}}{\text{s}^2}$ .

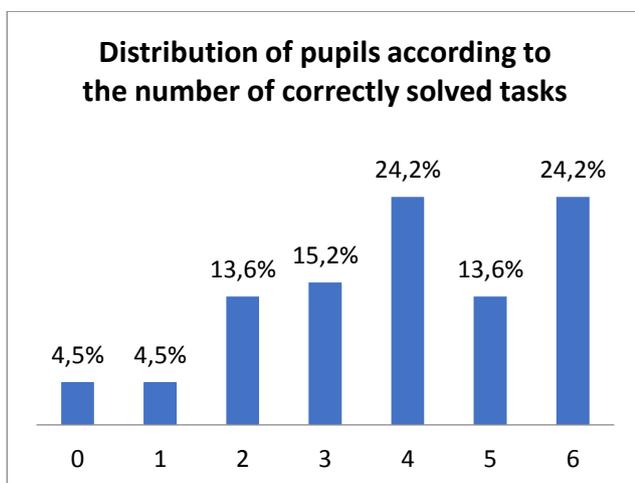
No. 6. Determine the heat needed to heat the water by 5°C in a pool with dimensions of 4 m, 3 m a 5 m, if the density of water is  $1 \frac{\text{kg}}{\text{l}}$ , the heat capacity of water is  $4,2 \frac{\text{KJ}}{\text{°C}}$ .

The first two tasks contained basic conversions of area and volume units. The next two tasks contained the conversions of composite units. The last two were word tasks, in which the pupils needed to convert the units into the basic form and then use the formula. So the solution of the last two tasks required more computational steps. Table 1 gives an overview of the number (and proportion) of pupils according to the individual tasks.

**Table 1.** Number (proportion) of pupils according to the solutions of individual tasks

	task 1	task 2	task 3	task 4	task 5	task 6
correctly solved	47 (71 %)	47 (71 %)	45 (68 %)	41 (62 %)	46 (70 %)	30 (45 %)
unsolved	19 (29 %)	19 (29 %)	21 (32 %)	25 (38 %)	20 (30 %)	36 (55 %)

Figure 2 shows the distribution of pupils according to the number of correctly solved tasks. More than 24 % of pupils solved four tasks correctly and also all six tasks, 4,5 % of pupils did not solve any task.



**Fig. 2.** The distribution of pupils according to the number of correctly solved tasks

The complexity of tasks can be also assessed from the point of view of algorithmic complexity (falls under the level of "fast thinking") and also from the point of view of analytical and logical thinking (thus related to "slow thinking") according to the book of Kahneman (Kahneman, 2011). He adopts terms originally proposed by the psychologists Keith Stanovich and Richard West, and refer to two systems in our mind, System 1 and System 2. „System 1 („thinking fast“) operates automatically and quickly, with little or no effort and no sense of voluntary control. System 2 („thinking slow“) allocates attention to the effortful mental activities that demand it, including complex computations. The operations of System 2 are often associated with the subjective experience of agency, choice, and concentration.“ (Kahneman, 2011).

Based on Cochran's Q-test, we state that the difficulty of individual problems didn't equal ( $Q(5) = 18.6$ ,  $p\text{-value} = 0.002$ ). Task 6, which was correctly solved by the least pupils (45 %), differed significantly from all other tasks in its difficulty. Task 5 was mastered at a similar level as tasks 1, 2 and 3. This is due to the fact that it was focused on the conversion of units of length and weight, which were then subsequently used to calculate the positional energy by the known formula. Tasks from 1 to 5 had a straightforward solution and their complexity depended only on the used mathematical techniques and the number of steps. Tasks 3 and 4 included (in addition to the conversion of physical units) also the computing with fractions, which yielded their higher computational complexity. Task 6 was the most difficult due to the insertion of a weight calculation, for which the volume had to be determined first. Therefore it seemed like two different tasks combined into one.

Figure 3 maps the flows between the solutions of the tasks 1 to 6, representing the individual pupils. The columns visually represent the proportion of pupils who solved or didn't solve the task. We can see that approximately half of the pupils who solved task 5, failed to solve task 6. That agrees with the result of Cochran's Q-test, that task 6 was unlike the all others. On the contrary, only small proportion of pupils who solved a more complex task 6 were unable to solve task 5. That is what we expected: if they could solve a more complex task 6, they were more likely to cope with an easier task 5.

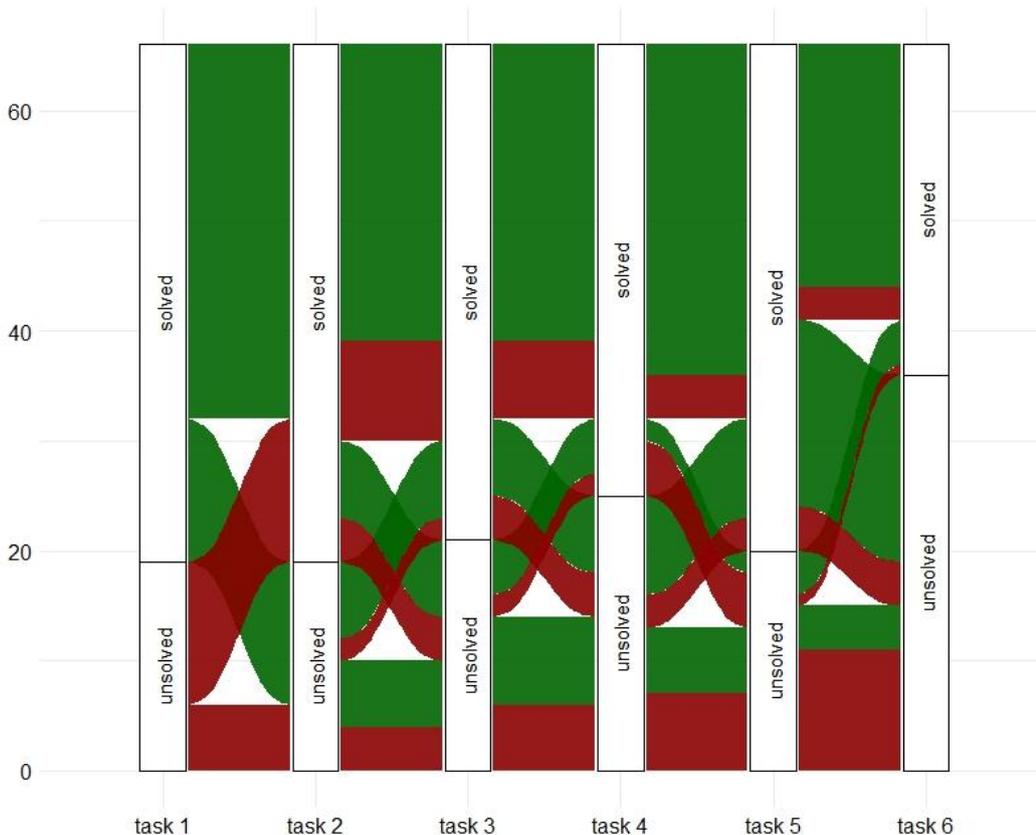


Fig. 3. Alluvila plot of the success of solving individual tasks

Analysis of the pupils' mistakes

We further analyzed the types of mistakes. In tasks 1 to 4, there were mistakes resulting only from the calculations by the conversion of units. Tasks 5 and 6 were more complex and the conversion of physical units was only a partial but essential step for the successful solution of the task. We have identified computational mistakes, mistakes resulting from the use of an incorrect unit conversion relationship, and mistakes caused by a misunderstanding of a physical problem.

We have marked the types of mistakes as follows:

Mistake A – wrong conversion of units (the pupil did not know multiples (kilo-, milli-, micro- and their arrangement),

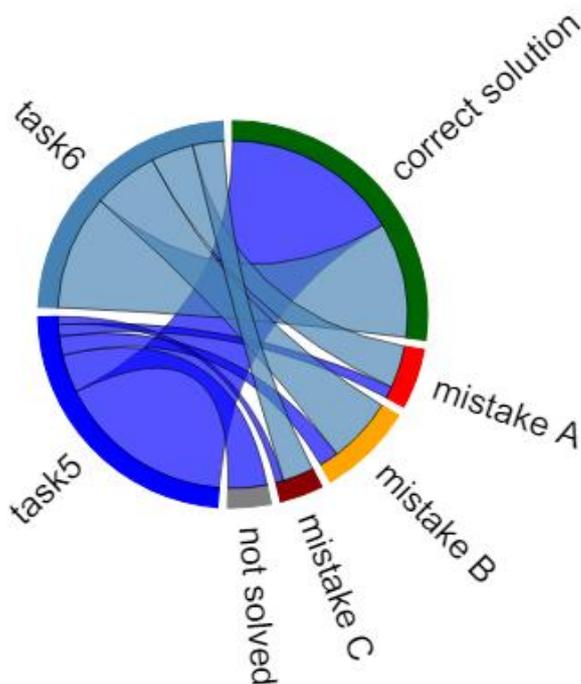
Mistake B – calculation error by modifying a formula as an equation,

Mistake C – incorrect analysis of a physical problem (the pupil was not able to make a record of the word problem and could not proceed).

Table 2 summarizes the error rates of the two most challenging test tasks and Figure 4 shows the visualisation of the pupils' solutions of these two tasks.

**Table 2.** Frequencies of mistakes in pupils' solutions of tasks 5 and 6 (source: own calculation)

	correct solution	mistake A	mistake B	mistake C	not solved
task 5	46	3	5	2	10
task 6	30	11	17	8	0



**Fig. 4.** Circleplot of the pupils' solutions of the task 5 and 6

From the survey form, we found that up to 53 % of pupils consider the subject matter simple, but only 24 % of pupils were able to solve all tasks unassisted. We know from experience that pupils disturb most often in the exposure phase. During the subject explanation they think that they understand the subject. Therefore, it is appropriate to insert knowledge verification methods into the exposure phase in order to immediately reveal ambiguities in the understanding and application of the teaching subject.

#### 4. Background and methods. 2<sup>nd</sup> part

The second part of the study focused on the success of integrated pupils in solving mathematical problems in comparison to the success of pupils without learning disabilities. We analyzed paper-and-pencil tests from the physics of 9<sup>th</sup> grade elementary school pupils. The tasks examined the electrical resistance of the conductor, and their solution required to know the methods of solving linear equations. The necessary mathematical methods were taught in mathematics lessons, so it was not necessary to teach new methods in physics lessons, but only to practice and apply knowledge from mathematics. Since there were 53 intact and only 8 integrated pupils in the study sample, we used a nonparametric Wilcoxon 2-sample test for statistical evaluation (samples don't meet the normality condition for the parametric test).

#### 5. Results. 2<sup>nd</sup> part

Intact pupils achieved an average test score of 16.3 (median 17.5) integrated pupils achieved an average test score of 14.4 (median 16.5). Resulting from the nonparametric Wilcoxon 2-sample test ( $p$ -value = 0.29), we don't reject the hypothesis that the mean score does not differ significantly between intact and integrated pupils.

Figure 5 graphically shows the distribution of pupils according to the success rate for both groups of integrated and intact pupils. This representation also supports our hypothesis that groups of pupils don't differ significantly in the achieved test results – pupils were relatively evenly divided into all groups according to the success rate.

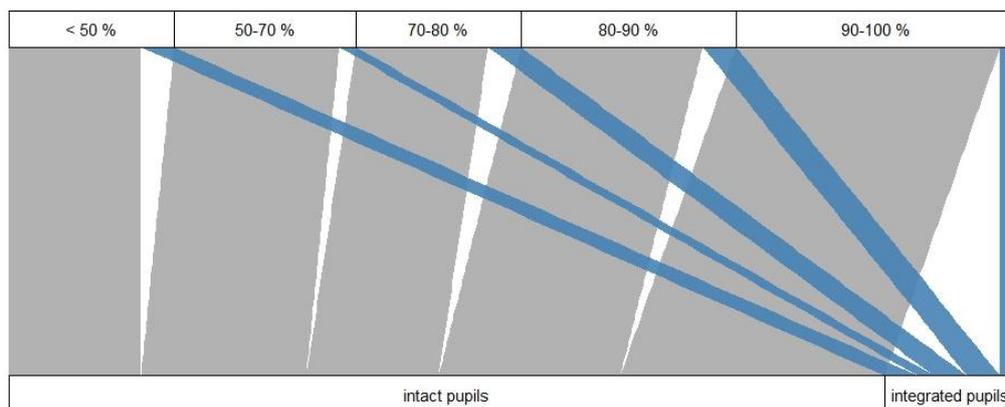


Fig. 5. Distribution of pupils according to the success rate in the paper-and-pencil test

#### 6. Conclusion and further research

The article focused on two educational problems. The first was classroom management, where we analyzed the reasons why and how often pupils disturb by the lessons. We applied differentiated teaching (O'Brien, Guiney, 2001; Heacox, 2001) and then we examined the level of knowledge by the paper-and-pencil test with gradually increasing difficulty tasks. We found out, that most pupils disturb because of the easy subject matter or they disturb spontaneously. The paper-and-pencil test results showed, that pupils mastered easier tasks well, but many of them couldn't solve the most complex last task.

The second problem was the integration of the pupils with learning disabilities into the mainstream classes. We focused on comparing the success of pupils with learning disabilities and pupils without learning disabilities in the same class. The success of these two groups has been proven to be statistically not significantly different.

As an explanation, we can find the interpretation of mathematical models of learning in articles (Dedera et al., 2011) and (Dudáková et al., 2016). In the work (Dedera et al., 2011) the coefficients of learning and forgetting appear. It is these coefficients that, in the extreme case, manifest themselves as learning and attention disorders. The second learning model (Dudáková et al., 2016) is focused on the gradual creation of connections in a neural network. Creating a fixed connection means storing and processing information. These are the parameters associated with the creation and cancellation of connections, that can be related to the parameters mentioned in

(Dedera et al., 2011) and thus, in the extreme case, they manifest themselves as a learning disorder. In addition, the work (Kershner, 1990) pointed out the influence of self-concept in the case of integrated pupils, and this phenomenon can also influence the attitude of ordinary pupils to their mindset toward teaching.

Based on the above results and theoretical knowledge, we incline to the opinion arising from the work (Kershner, 1990) that self-perception has a greater effect on the success of pupils in solving tasks, than their learning disabilities. Therefore, in order to compensate for learning disabilities, it is appropriate that pupils with learning disabilities get sufficient enough time to solve tasks. But it is necessary to examine this phenomenon from different perspectives to create a suitable teaching plan for pupils with learning disabilities.

The problem of the study is that the reasons and frequency of interruptions is the subjective attitude of the pupils. It would be much more effective to pair the questionnaires with a video recording of the lesson, where the behavior of the individual could be observed and compared with the answer in the questionnaire. As a continuation of our study, it would be appropriate to compare the questionnaire answers with success in the test. A very interesting approach is also to describe the behaviour of pupils in the classroom from the perspective of Game Theory using the "Hawk-dove" model (Ďuriš, Šumný, 2018), which allows us to analyze conflicting situations and to find the best strategy to maximize the satisfaction of the personal needs of pupils and teachers.

The further research will focus on critical thinking and its formation, which is one of the most cognitively demanding activities and confirms the consequences of differentiated teaching. Solving tasks requires more cognitive activities such as searching for information, transforming the task into a standard task and finally algorithmic solution of the standard task. Critical thinking is based on obtaining and filtering information, subsequent processing and evaluation of the obtained information. A set of these activities forms the basis for critical thinking. While critical thinking itself in its individual phases uses the principles of other types of thinking such as abstract thinking, which sets a filter for essential and true information when filtering information, algorithmic thinking, which is mainly involved in information processing, and logical thinking in the evaluation phase. Critical thinking is necessary for various fields of study, e.g. for physics, as we can see in the publication (Velmovská et al., 2019) where the authors focus on primary and secondary school pupils. Similarly, the article (Velmovská, 2015) focuses on critical thinking in physics teaching, which deals with a specific strategy for the development of critical thinking and applies it to physical tasks. For mathematics, we find the article (Tomková, 2017), in which the author points out the knowledge and skills acquired when solving mathematical problems and their influence on critical thinking.

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## Teaching English for Special Purposes to Bachelors of Engineering and Technology: Corpus Approach and Terminological Units

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### Abstract

This article deals with application of the corpus approach in ESP teaching to Bachelors of Engineering and Technology in order to reach their research goals of finding and selecting authentic language contexts, analyzing and classifying grammar structure, making conclusions about grammar environment of the terminological units, selecting the best translation method and enriching their basic terminological vocabulary. Work with the text corpus as the source of comprehensive information about actual use of terminological units can be treated as the backbone in searching for empirical and supportive material about various grammatical environments of the terminological units and further use of such information to make foreign language learning more effective. Work with the authentic text corpus develops skills of correct use of terminological units and ensures management of the learning outcomes level thanks to a vast array of examples found in the natural context environment used by native speakers. The educational experiment included three stages (introductory, operational and final); introductory and final tests, analysis and processing of the statistical learning data. In the course of the educational experiment, the experimental group of bachelors was taught to work with the corpus data and analyze the grammar environment of the terminological units, in addition to other available classical educational methods and learning aids. The outcome of the experimental learning included great improvement in information coverage when translating professional texts, correct use of terminological units in grammar structures, and terminological vocabulary enriched with characteristics of grammar environment of a term in a professional context.

**Keywords:** corpus-based approach, grammatical environment, ESP course, translation.

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## **1. Introduction**

Nowadays, educationalists engaged in theory and methods of teaching English are diligently looking for the ways to upgrade learning methods in order to match modern goals of higher education. Therefore, we need to pinpoint new approaches to learning content development and find a more effective way to overcome a large gap between the contents in the ESP textbooks and the real engineering discourse of the native speakers. For instance, Russian technical universities allocate lots of face-to-face hours to analysis of formal grammar rules and phenomena; however, most often, grammar exercises do not ensure any practical use of professional terms in grammar structures of the engineering discourse. In the recent decades, Russian and foreign researchers in the field of learning content and quality of specialized learning have been concentrating on information (Chitez et al., 2020; Valeeva et al., 2019; Murzo et al., 2019; Gerasimova et al., 2020) and corpus resources (Boulton, 2016; Boulton et al., 2017; Ma et al., 2022). A turn to those resources provides comprehensive reference data (Rogers et al., 2021; Durovic, 2021) about use of terminological lexical units (Skorniyakova et al., 2021; Vinogradova et al., 2020) and grammar structures (Brooke, 2022) in the natural language environment, thus contributing to a higher quality of translation and deepening the insights into the norms of modern language.

Another important aspect of upgrade in the modern Russian higher technical education, which is embodied in the educational standards, is a focus on independent students' research. Its key goal is development of lexical and research competencies in students of engineering programs (Bakirova, 2021; Goman, 2019; Pushmina et al., 2022; Sveshnikova et al., 2022). So, corpus-based learning can be treated as student-centered, ensuring a shift from an inductive to a deductive approach. The teacher acts here as a research consultant, who guides and coordinates language corpus data learning; while students, as subjects of the learning process, are to deal with corpus data by themselves and develop independent learning skills. This paper studies application of the corpus approach in teaching ESP to Bachelors of Engineering and Technology in order to reach their research goals of finding and selecting authentic language contexts, analyzing and classifying grammar structure, making conclusions about grammar environment of the terminological units, selecting the best translation method and enriching their basic terminological vocabulary.

## **2. Theoretical background**

The main way of using corpus approaches in teaching foreign language is Computer-Assisted Language Learning, which uses corpus linguistics techniques (Lacková, 2021; Ma et al., 2021) and applies a methodology based on collection and study of language data – Data-Driven Learning. Long-term benefits and importance of this methodology are widely discussed in papers of foreign and Russian authors (Lin et al., 2015; Crosthwaite, 2017; Rudneva, 2020). Topical nature of this approach, especially in terms of modern requirements to higher education in Russian colleges, can be proved by the fact that independent research encourages students to get continuous learning through the use of information technologies. For instance, the theory is apprehended through quantitative and qualitative analysis, when working directly with the original linguistic data in natural contexts derived from the text corpus (Sun, 2022). Investigating grammar environment of the term in a certain context, students guess its meaning and representation in the language, and reinforce this knowledge by doing relevant tasks. In this way students act as researchers, learning to understand grammar environment of the terminological units, make independent conclusions about grammar environment with reliance upon linguistic material, and use the terms in speech. This approach makes the learning process student-oriented (Jablonkai et al., 2020).

It should be noted that even a complete and detailed list of terminological units does not dismantle the issue of correct translation and use of a term in a foreign-language sentence. In this regard, it is especially difficult to deal with specialized engineering and scientific discourses presented by the texts that engineering students study throughout the whole training period at a higher educational institution (Borisova et al., 2020; Pushmina et al., 2021; Rogova et al., 2020). When translating such texts into a foreign language, students face many obstacles, like no analogues of some grammar structures, or different grammar environments of the terminological units, misuse of which distorts the content.

Application of corpus techniques aimed at understanding characteristics of grammar environment of terminological units provides ample opportunities for ESP teachers. Regrettably, nowadays this approach is not widely popular in higher technical educational institutions of

Russia, which still focus on classical methods of ESP learning that omit use of modern information technologies. Apart from terminological units and complex nominal constructions profession-oriented engineering and scientific texts have complex grammar structures.

The corpus approach allows students to make a lexical and grammatical profile of terminological units, taking into account their possible contexts, i.e. grammar environment; while concordance line ensures understanding of grammatically correct use of terms in speech. Students have a chance to study grammar environment of terminological units independently, see how a specialized term functions in its real contexts, develop lexical and grammatical language skills, as well as skills of information analysis and further conclusion drawing, thus bringing their language proficiency in line with the required standards. In teaching ESP to engineers-to-be, authenticity and reliability of information plays an important role, since classical textbooks often contain artificial clichés, fabricated by a resourceful teacher or textbook author, however, such phrases are far from accurate and real native-speaking structures.

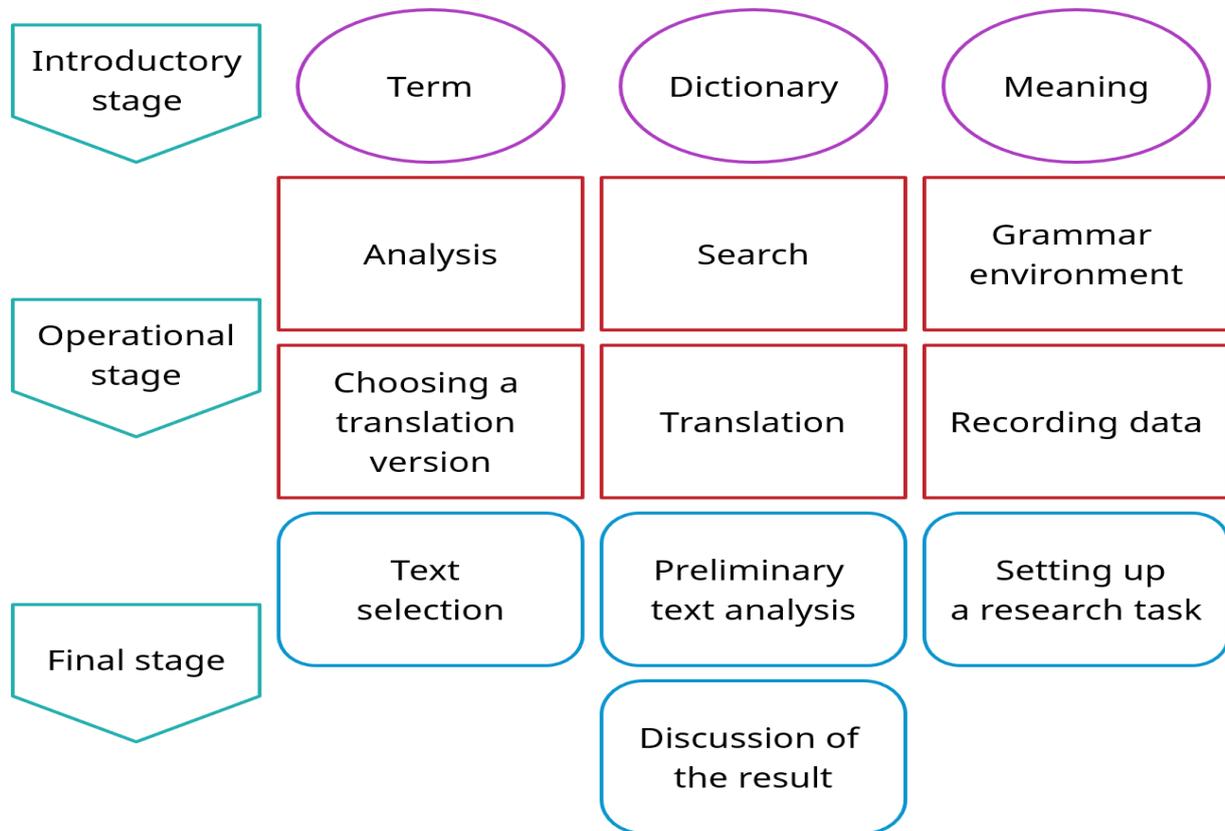
The hypothesis of the study is formulated as follows: use of corpus techniques aimed at studying characteristics of grammar environments of the terminological units in ESP teaching ensures greater efficiency of foreign language learning for Bachelors of Engineering and develops their professional skills. The learning goal is to develop skills in analyzing text material and identifying key information, including terminological units, skills in searching for and analyzing grammar environment of terminological units in the language corpus, skills in translating specialized texts, taking into account grammar environment of terminological units. The learning objectives included learning to identify terminological units, search for and analyze characteristics of their grammar environment, translate them in accordance with such characteristics and enrich the basic terminological vocabulary with data about grammar environment of the terms.

### **3. Materials and methods**

Experimental ESP learning was performed at Saint Petersburg Mining University under the curriculum of the second-year bachelors, and was initiated in order to validate effective use of corpus techniques aimed at studying characteristics of grammar environment of the terminological units. The study included 160 students who studied the course of General English for two academic semesters (2021–2022 academic year) with proven English proficiency of “upper – intermediate” (there was no special selection into experimental and control groups apart from English proficiency level). The students were divided into control and experimental groups by using the stratified sampling technique; so that each group includes students of 6 academic majors. Then we used simple random sampling to sample from each academic major. It should be pointed out that in this study we did not take into account the gender of students either when dividing them into the control and experimental groups, or when making calculations; the gender is mentioned below for reference only. The control group contained 80 participants, with 49 male and 31 female students, the experimental group included 80 participants, with 43 male and 37 female students. Linguistic learning materials were derived from the corpus of engineering texts -Hong Kong Engineering Corpus (HKEC) and Russian National Corpus (RNC) using quantitative and qualitative methods for studying concordance lines. Experimental ESP learning was applied to majors as “Electronics and Nanoelectronics”, “Metallurgy”, “Civil Engineering”, “Oil and Gas Engineering”, “Ecology and Nature Management”, “Chemical Technology”. Experimental learning included three stages (introductory, operational and final), introductory and final tests, analysis and processing of the statistical learning data.

During the educational experiment, bachelor students of the control group were taught under a traditional approach, through classical learning and teaching aids; while, bachelor students of the experimental group were taught to work with corpus data, analyze grammar environment of the terminological units, in addition to other available classical educational methods and learning aids. Students did assignments aimed at translating a specialized text; they were asked to identify terminological units in the corpus, search for characteristics of their grammar environment, select the best option and translate the terms, and enrich the basic terminological vocabulary with the data about grammar environment of terminological units. At the final stage of training, the students were asked to refine this algorithm by giving a research task for their peers and acting as an expert for peers.

The algorithm of experimental learning can be described by three stages in the model of corpus analysis of grammar environment of a term and is presented in Figure 1.



**Fig. 1.** The model of corpus analysis of grammar environment of a term  
Compiled by Stepan Boyko.

Below we will consider each stage of the proposed model:

Introductory stage:

Identify professional terms in the original text.

Read available basic terminological vocabulary and specialized dictionaries.

In accordance with the list of meanings therein, select the most appropriate one in the given context.

Operational stage:

Analyze grammar environment of the term in the context of the original sentence.

Search for a term in the corpus.

In accordance with frequency of use, identify typical grammar environment of the term in the concordance lines.

In accordance with corpus data about grammar environment and meaning of the professional term selected at the introductory stage choose the most accurate translation version.

Translate the sentence containing the term, taking into account the data above.

Record data about characteristics of grammar environment of a term into the existing basic terminological vocabulary.

Final stage

Provide students with an opportunity to select original texts with various professional terms independently.

Provide students with a preliminary opportunity to analyze and translate such texts, following the proposed algorithm in the introductory and operational stages, and record characteristics of grammar environment of the terms in such texts.

Provide students with an opportunity to set a research task for translation in accordance with

the introductory and operational stages, acting as experts for peers.

Discuss translation results and characteristics of grammar environment of a term.

The resulting translation must meet requirements of complete information coverage, correct use of grammar structures, use of relevant style in the professional context, including terminological units.

Translations were assessed by the following parameters:

The task was considered as “failed” if only 20 % of the text was translated. Number of correctly used grammar structures of the text was equal to 20 %. Number of correctly translated professional terms in the text was equal to 20 %. Cases added to the basic terminological vocabulary from all data about characteristics of grammar environment of terms in the text were equal to 20 %.

The task was considered to have been completed “satisfactory” if only 50 % of the text was translated. Number of correctly used grammar structures of the text was equal to 50 %. Number of correctly translated professional terms in the text was equal to 50 %. Cases added to the basic terminological vocabulary from all data about characteristics of grammar environment of terms in the text were equal to 50 %.

The task was considered to have been completed “good” if only 80 % of the text was translated. Number of correctly used grammar structures of the text was equal to 80 %. Number of correctly translated professional terms in the text was equal to 80 %. Cases added to the basic terminological vocabulary from all data about characteristics of grammar environment of terms in the text were equal to 80 %.

The task was considered as “excellent” if all 100 % of the text was translated. Number of correctly used grammar structures of the text was equal to 100 %. Number of correctly translated professional terms in the text was equal to 100 %. Cases added to the basic terminological vocabulary from all data about characteristics of grammar environment of terms in the text were equal to 100 %.

The original grades received by students of the control and experimental groups were summed up based on results of the introductory and final tests, and the sum was used to calculate the arithmetic mean. In order to check equality of mean values, of the introductory and final tests, we used a paired T-test, which included all grades received both in the control and experimental groups of bachelors. We calculated p-value in order to test correctness of the null hypothesis, and checked significance of the results. The null hypothesis was formulated as follows: the mean value of the expected difference between the two groups is zero for the introductory and final tests:

$$H_0: \mu_d = \mu_0 ; H_1: \mu_d \neq \mu_0$$

T-value was calculated according to the formula:

$$t = \frac{\bar{X}_d - \mu_0}{S_d / \sqrt{n}} \quad (1)$$

Where:

$\bar{X}_d$  – average of differences;

$\mu_0$  – expected difference between the two groups.

n - sample size;

$S_d$  – standard deviation.

The effect size was calculated according to Cohen's d:

$$d = \frac{|\bar{X}_d - \mu_0|}{S_d} \quad (2)$$

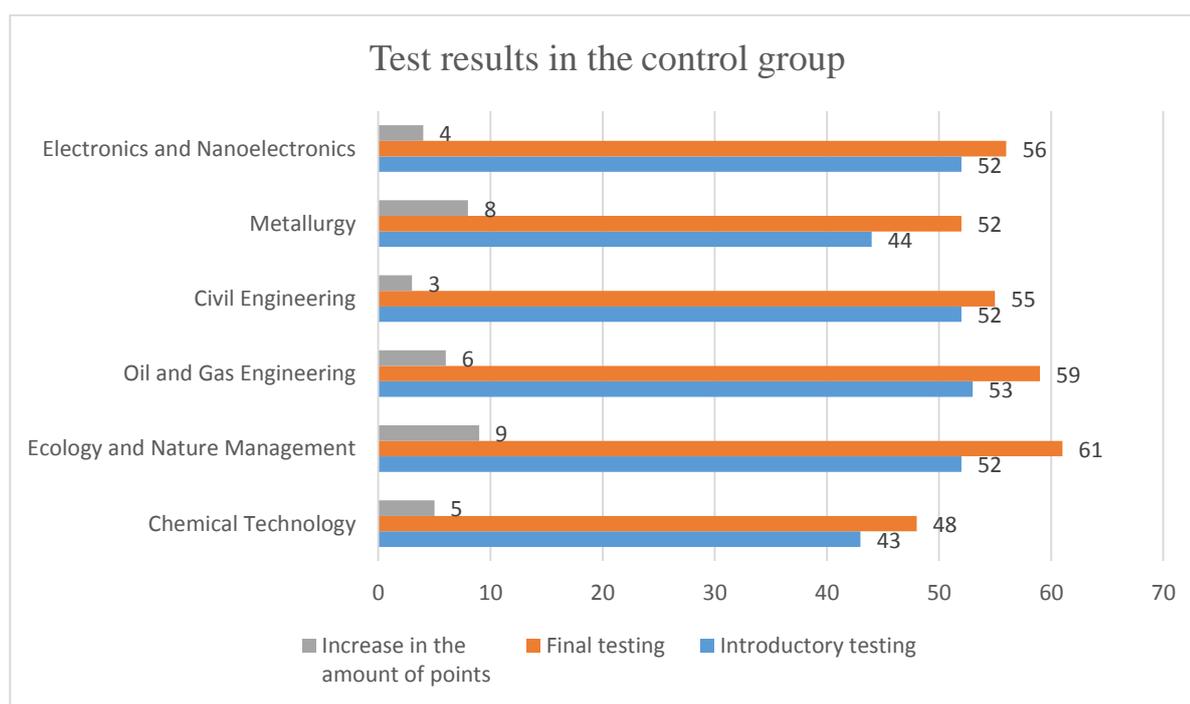
#### 4. Results

ESP Teaching was performed at Saint Petersburg Mining University under the curriculum of the second-year bachelors, which included 160 students who learnt for two academic semesters (2021–2022 academic year). The introductory test was made at the beginning of the academic year, in September 2021, while the final test was conducted at the end of the academic year, in June 2022. Students were trained in specialties of “Electronics and Nanoelectronics”, “Metallurgy”, “Civil Engineering”, “Oil and Gas Engineering”, “Ecology and Nature Management”, “Chemical Technology” (Table 1)

**Table 1.** Distribution of students in the control and experimental groups

Speciality	Control group			Experimental group		
	Total number	Male	Female	Total number	Male	Female
Electronics and Nanoelectronics	15	9	6	15	12	3
Metallurgy	12	10	2	13	7	6
Civil Engineering	13	5	8	14	12	2
Oil and Gas Engineering	15	11	4	12	5	7
Ecology and Nature Management	14	6	8	12	3	9
Chemical Technology	11	8	3	14	4	10
Total	80	49	31	80	43	37

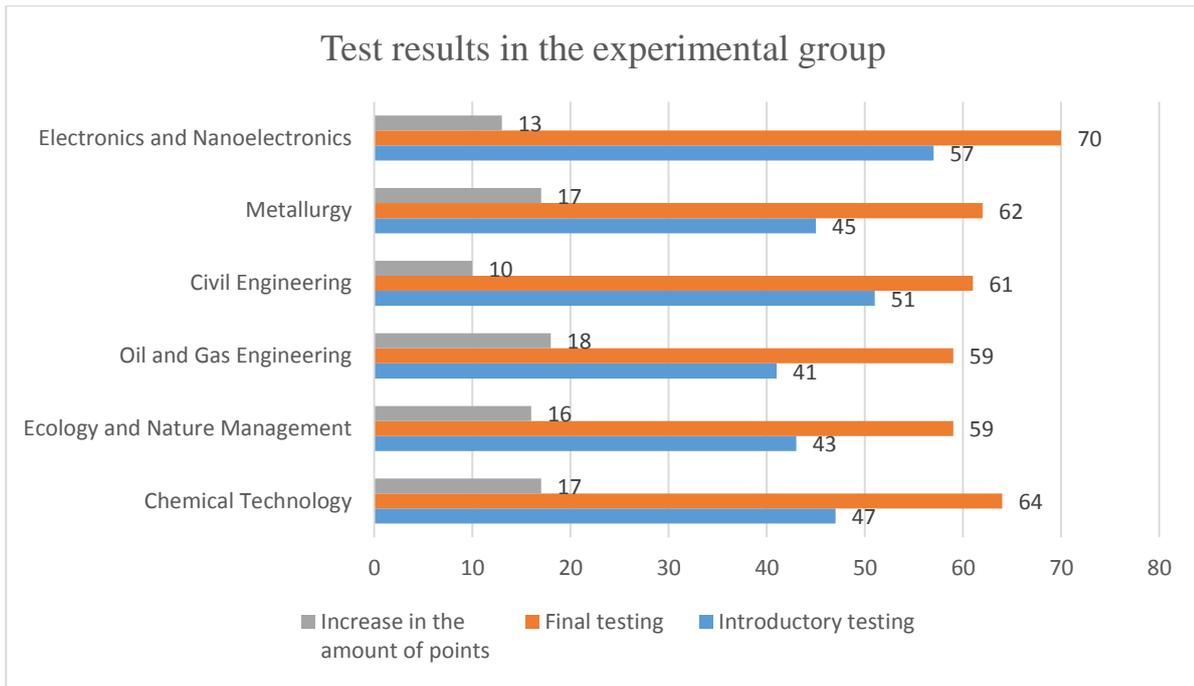
The control group included 80 students, of which 49 were male and 31 female, with proven English proficiency of “upper – intermediate”. The control group used only traditional teaching methods in the classroom. Below we consider the test results (Figure 2).



**Fig. 2.** Test results in the control group

Summarizing results of the introductory test in the control group, we get the total grade for all specialties as 296 points, in the final test it totals to 331 points, thus, we can see that the total figure for all Bachelors of Engineering increased by 35 points. We also witness a special increase among students of “Ecology and Nature Management” specialty.

The experimental group included 80 students, of which 43 were male and 37 female, with proven English proficiency of “upper – intermediate”. In the experimental group, apart from traditional methods of ESP learning, we applied search for characteristics of grammar environment of a term in linguistic corpus. Below we consider the test results (Figure 3).



**Fig. 3.** Test results in the experimental group

Summarizing results of the introductory test in the experimental group, we get the total grade for all specialties as 284 points, in the final test it totals to 375 points, thus, we can see that the total figure for all Bachelors of Engineering increased by 91 points. We also witness a special increase among students of “Oil and Gas Engineering” specialty. Let's consider generalized grades of the introductory and final tests and their arithmetic mean (Table 2).

**Table 2.** Sum of grades and their arithmetic mean in the control and experimental groups of students in the introductory and final tests

Students	Introductory testing – sum of points	Final testing – sum of points	Increase in the amount of points	Introductory testing – average	Final testing – average	Increase in the arithmetic mean
Control group	296	331	35	3.7	4.1	0.4
Experimental group	284	375	91	3.5	4.6	1.1

As Table 2 shows, combining traditional methods of ESP learning with search for characteristics of grammar environment of a term in linguistic corpus contributed to a dramatic increase of the total figures and arithmetic mean in the experimental group compared to the control group. Let's consider results of T-test for the introductory and final tests (Table 3).

**Table 3.** Results of T-test for the introductory and final tests

Parameter	Control group	Experimental group
	Value	
P-value	2.29e-7	0
T-value	5.665	13.123

Sample size (n)	80	80
Average of differences ( $\bar{X}_d$ )	0.438	1.137
SD of differences ( $S_d$ )	0.691	0.775
Normality p-value	5.06e-9	1.32e-7
Effect size (d)	medium, 0.63	large, 1.47

The data in the table was represented in Figure 4 for the control group, and in Figure 5 for the experimental group.

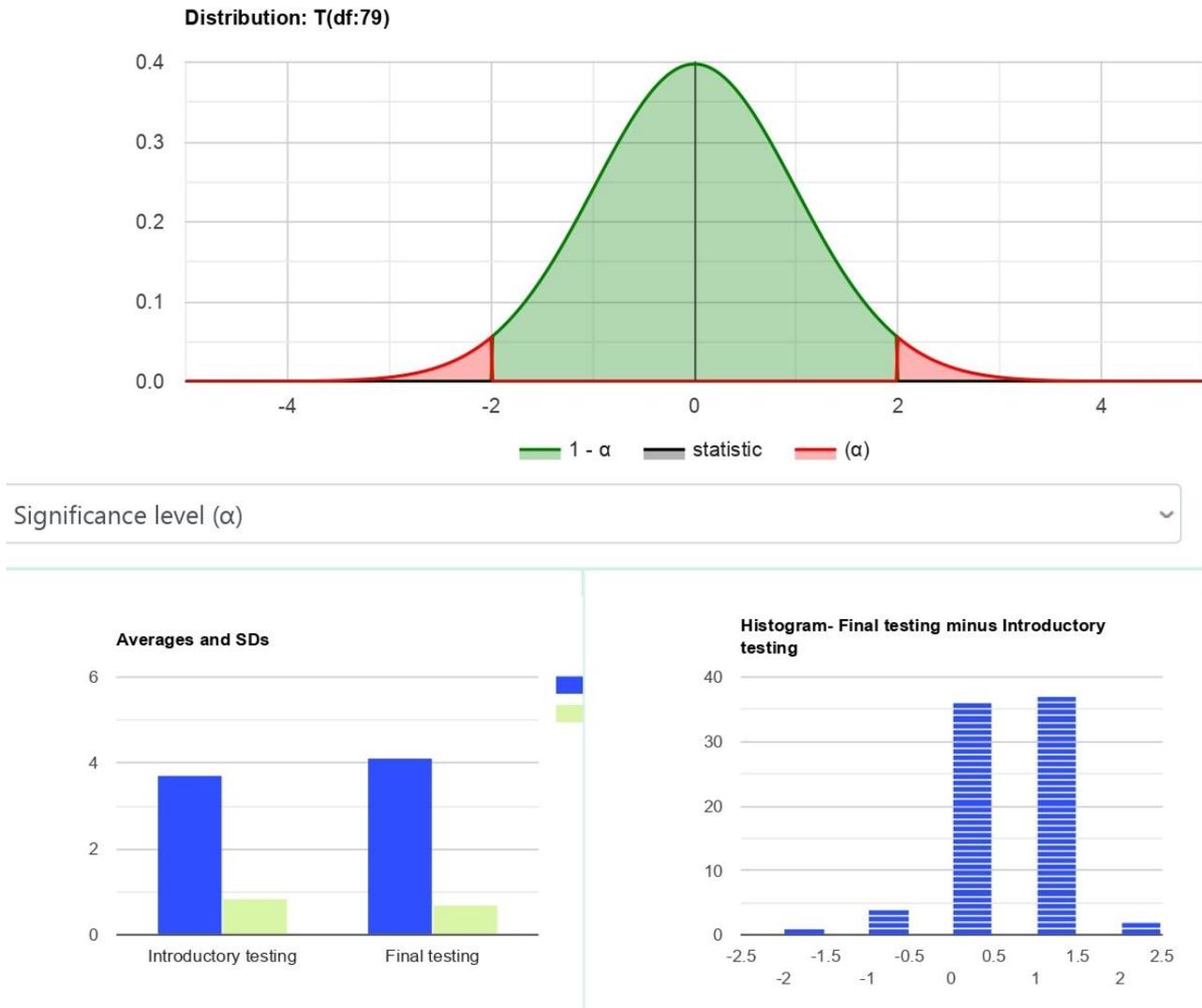


Fig. 4. Results of the paired T-test of the control group for the introductory and final tests.

Results of the paired-t test indicated that there is a significant medium difference between introductory testing with M (means) = 3.7, SD (standard deviation) = 0.9, and final testing with M = 4.1, SD = 0.7. T - value (79) = 5.7,  $p < 0.001$ . The test statistic t-value = 5.665, which is not in the 95 % region of acceptance: [-1.99, 1.99]. The 95 % confidence interval of final testing minus introductory testing is: [0.284, 0.591]. The observed effect size d is medium, 0.63. This indicates that the magnitude of the difference between the average of the differences and the expected average of the differences is medium. The p-value =  $2.29e-7$ ,  $(P(x \leq 5.665) = 1)$ . It means that the chance of type I error (rejecting a correct  $H_0$ ) is small:  $2.29e-7$  (0.000023 %). The smaller the p-value the more it supports  $H_1$ . Since the p-value  $< \alpha$ ,  $H_0$  is rejected (the difference between the averages of introductory testing and final testing is big enough to be statistically significant).

Based on the results obtained, traditional methods of ESP learning used for bachelors in the control group gave small, but statistically significant differences in test results.



**Fig. 5.** Results of the paired T-test of the experimental group for the introductory and final tests

Results of the paired-t test indicated that there is a significant large difference between introductory testing with M (means) = 3.5, SD (standard deviation) = 0.8, and final testing with M = 4.7, SD = 0.5. T-value (79) = 13.1,  $p < 0.001$ . The test statistic t-value = 13.123, which is not in the 95 % region of acceptance: [-1.99, 1.99]. The 95 % confidence interval of final testing minus introductory testing is: [0.965, 1.31]. The observed effect size d is large, 1.47. This indicates that the magnitude of the difference between the average of the differences and the expected average of the differences is large. The p-value = 0, ( $P(x \leq 13.123) = 1$ ). It means that the chance of type I error is small: 0 (0 %). Since the  $p\text{-value} < \alpha$ ,  $H_0$  is rejected (the difference between the averages of introductory testing and final testing is big enough to be statistically significant).

Based on the foregoing, we can see that despite the fact that the control group got larger total figures and arithmetic mean in the introductory test compared to the experimental group, their total sum and arithmetic mean in the final test is much less than that of the experimental group. We should also consider that with statistically significant differences cancelling the null hypothesis in both tests, T-value and effect size of the experimental group is higher compared to the control group. The aggregate data suggests that ESP learning combined with search for characteristics of grammar environment of a term in linguistic corpus leads to better results.

## **5. Discussion**

This study evolved the hypothesis of applying corpora in foreign languages learning as a source with most complete information about practical use of language units, and an important tool for development of students' vocabulary skills (Aşık et al., 2015; Mukhamadiarova et al., 2020; Safriyani, 2020); this idea was considered in our paper as a background in search for empirical and illustrative evidence of various grammatical environments of the terminological units to be learnt.

The paper presents a didactic method of applying the study results for improved efficiency of foreign language learning and control over the competence level of the learning content by involving ample examples used by native speakers in their natural contextual environment; the method matches the idea that class work with corpus data can help to generate most exact language lists of the terminological units to be learnt (Liu et al., 2015; Dang, 2020).

The study requires that the students of the experimental group make a concordance analysis of the corpus. An important role of corpus concordance lines, which ensures using corpus data in grammar learning (Park et al., 2019; Girgin, 2019), is highlighted herein by a possibility to use the lines in order to create a lexical-grammatical profile of the terminological units, taking into account their possible contexts expressed by grammatical environment.

The study results confirm the data presented in (Lanxin, 2021; Fauzan et al., 2022) about application of the corpus for grammar learning and prove an effective use of corpus technologies for learning of English language units, their grammatically correct use in speech, and development of students' professional skills.

It should be remarked that the study had a number of limitations. For instance, it was conducted in an engineering university of mineral sector and included 160 bachelors of the 2nd year of 6 majors with proven English proficiency of “upper – intermediate”. The study did not take into account the gender and age of the subjects. In this paper, students were divided into control and experimental groups by using the stratified sampling technique, so that each group included students of 6 academic majors, which is relatively small numbers of strata that may have contributed to a decrease in the reliability of the results. In future studies we plan to have a larger sample to represent more engineering specialties and language proficiency levels, and take into account the gender and age of students.

## **6. Conclusion**

This experimental ESP learning was performed at Saint Petersburg Mining University under the curriculum of the second-year bachelors, in the 2021-2022 academic year; it applied learning materials based on the data from language corpus, and was aimed at testing effectiveness of corpus techniques for understanding characteristics of grammar environment of terminological units.

In accordance with the learning goal, it ensured development of skills in analyzing text material and identifying key information, including terminological units, skills in searching and analyzing grammar environment of terminological units in the language corpus, skills in translating specialized texts, taking into account characteristics of grammar environment of terminological units.

Calculated results of the control group compared to the experimental group lead us to the conclusion that practical application of corpus technologies in the experimental learning confirms their effectiveness for teaching ESP to Bachelors of Engineering. The approach proposed in the study promoted analysis of specialized linguistic materials, identification of characteristics of grammar environment of terminological units, ensured fewer mistakes in using the terms in grammar structures, better information coverage in translation of professional texts, and enrichment of basic terminological vocabulary with data about characteristics of grammar environment of a term in a professional context.

The results prove that application of the corpus approach in identifying characteristics of grammar environment of the terminological units in the ESP course at technical universities deserves closer attention.

## **6. Acknowledgements**

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## **Stratified Student Society in Higher Education Fields. Impact of Expected Earning on Students' Career**

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### **Abstract**

According to the literature, career choice is a decision process influenced by value orientation, motivation and inclination, based on a rational consideration of available resources and the perceived realities of the family and the student. Students' aspirations for further education are a well-researched area. Searching for moratorium, following intergenerational patterns, and the drivers of knowledge and relationship orientation are the focus of empirical studies. The aim of this paper is to explore the recruitment base of higher educational fields with different earnings promises and the impact of expected earnings on higher educational careers. We conducted our analysis using the PERSIST 2019 quantitative research database among students in Hungary, Slovakia, Romania, Ukraine, and Serbia (N = 2199). We used the IBM SPSS Statistics 20 program. Based on expected earnings, we divided respondents into three terciles (below average, average, above average), along which we examined their social and educational background. Our results show that social status and secondary school attainment are associated with students' career choices but that the role of these background factors seems to weaken throughout the higher educational career due to different selection mechanisms in the educational fields. Our findings complement research that interprets commitment to study completion as a complex phenomenon.

**Keywords:** higher education, career choice, moratorium orientation, persistence

### **1. Introduction**

#### **Economics versus the dual value of higher education**

In modernised societies, the educational system is closely linked to other social subsystems, particularly the labour market (Papp, Hajós, 2014). The multifaceted relationship between the two is reflected in the fact that the educational system shapes the skill structure of the emerging

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generations and implements the retraining and upgrading of the available human resources. The demand for higher education supply is fundamentally influenced by labour market developments, including the earnings attainable with each qualification, non-economic benefits, prestige and job opportunities. Therefore, understanding the economic context of education is essential for higher education policy goal setting, planning and implementation (Polónyi, 2004). Dual value economic approaches focus on highly prestigious, marketable careers and offer favourable earnings opportunities. Following this, students who are admitted to and graduate from higher education courses with these characteristics can be considered successful. However, if we regard the value duality of the higher education subsystem as a stand-alone measure, we should focus on the extent of the mismatch between student input and output (Pusztai, 2015a).

An existing organisational strategy is to view the high social prestige of students as a profitable product. Although the expansion of higher education has promoted the development of a complementary institutional system, competition for students and other resources has led to a need to evaluate institutional performance. Given the diversity of economic, pedagogical and academic preferences, ranking criteria may vary. A common weakness of inter-institutional comparisons is that the characteristics of each attractiveness region are less or not taken into account when constructing the indices (Pusztai, 2015a). This is in contrast to research exploring student outcomes in higher education, a distinctive strand of which focuses on students' social background and secondary school careers and seeks to identify the breakpoints between courses of different prestige (Pusztai, 2015a; Hegedűs, Sebestyén, 2019; Kocsis et al., 2022; Pusztai, Szigeti, 2021a; Pusztai, Szigeti, 2021b).

We have already mentioned that sociological studies of education focus on the differential access to higher education and the internal stratification and disadvantage-compensating function of each institution (Godó et al., 2020). Róbert (2003) discusses the issue of self-selection mechanisms as his results show that before the second millennium, the proportion of graduates with parents and students with advantageous cultural and economic capital was dominant among applicants to higher education compared to the group of non-graduates. After two decades, the impact of location in the vertical hierarchy of society on schooling and degree attainment remains at the forefront of research (Pusztai, 2015a). Students are not a homogeneous group at entry (Csók et al., 2019; Kovács et al., 2019), which is based on the fact that they start their tertiary education under unequal conditions. The family and secondary school pathways of disadvantaged students are in many ways inferior to those of their peers in higher status (e.g. financial situation, parents' example, intellectual care, 6-8 grade high school graduation, shadow education), but also sources of resilience such as mother's and student's literacy, parental care, teachers' and parents' advice, friends' example or the driving force of relationship building (Godó et al., 2020). While basic demographic and social status indicators can largely determine career aspirations, the strength of social and cultural capital endowments within the family have also been shown to be explanatory variables of the direction of further education (Pusztai, 2015a).

Recognising the impact of 'soft' factors on school career (Ceglédi et al., 2022), the international literature has placed particular emphasis on the role of parental involvement (Chavkin, Williams, 1989; Desforges, Abouchaar, 2003; Ntekane, 2018; Chee, Ullah, 2020), two main dimensions of which have been identified by researchers: School-based parental involvement and Home-based parental involvement (Sheldon, Epstein, 2005; Green et al., 2007; Epstein et al. 2009; Imre, 2015; Imre 2017). The extent to which parental suggestions are taken into account and family shared decision-making is an important issue for our topic. According to Imre (2017), developing an interest in learning is more important for groups of higher social status, which they consider to be a pillar for further education and a successful school career. Moreover, the contacts of parents with a degree imply a natural flow of information related to the range of higher education courses and job opportunities. In contrast, there is a strong demand from parents with a lower social status for school support in career choices. Overall, it can be seen that communication between family and school is an important driver of successful student progress, as the child develops in the sharp or imperceptible fault line between these two socialisation arenas (Kozma, 2001; Pusztai, Fényes, 2022). It should be noted that the more educational partners are involved in the collaboration, the more characteristic changes in students' academic performance can be observed (Epstein, Sanders, 2006; Pusztai, Fényes, 2022).

## 2. Methodological framework

In our research, we analyse a large sample student database (PERSIST 2019, N = 2199) of the Centre for Higher Education Research and Development (hereinafter: CHERD-Hungary). The data collection for the academic year 2018/19 covered higher educational institutions in the eastern region of Hungary as well as cross-border colleges and universities in Slovakia, Romania, Ukraine and Serbia. The Hungarian subsample (N = 1034) uses quota sampling and is representative of the faculties, the academic area of the courses, and the forms of funding. Respondents from cross-border institutions (N = 1165) were selected using a probability sampling procedure. Students were approached in groups at university and college courses, where we carried out a full survey. The sample included full-time second-year undergraduate and second- and third-year graduate respondents (Pusztai, Szigeti, 2021b).

The CHERD-Hungary research team calculated labour market prospects and expected net starting wages using career tracking data for the field of education (Pusztai, Szigeti, 2021b). Then, based on expected earnings, respondents were divided into three-thirds (bottom: 0-215.00 thousand HUF; middle: 215.01-239.00 thousand HUF; top: 239.01 thousand HUF and above), and respondents who could not be classified were excluded from the sample. Our analyses are conducted along the constructed thirds (N<sub>total</sub> = 2166), which we have named as follows: below-average earners (N = 707), average earners (N = 721) and above-average earners (N = 738). In the present study, we investigate the social background of the respondents, the transition from secondary school to higher education and the student career. After reviewing the literature and research, we formulate three hypotheses, which we test using a quantitative technique by comparing tercile trained based on expected earnings. (1) We hypothesise that children of parents with lower social status have a higher proportion of below-average earners (Róbert, 2010; Godó et al., 2020). (2) We assume that the highest number of children claiming extra points for extra achievement is among those with above-average earnings (Pusztai, Szigeti, 2021a; Pusztai, Szigeti, 2021b). (3) We assume that the most engaged group of students is represented in the lower tercile (Kovács et al., 2019; Pusztai, Szigeti, 2021b). For data processing, we use IBM SPSS Statistics 20, applying the following statistical methods: frequency analysis, cross tab-analyses (chi-square) and analysis of variance (ANOVA). Table 1 shows the operationalisation of the concepts under study.

**Table 1.** Dimensions of the concepts used in the study

Social status	High school over-performance	Commitment
parents' educational attainment	advanced level school-leaving exam	above average persistence
parents' employment	language certificate	average persistence
the objective, subjective and relative financial situation	competition result	below average persistence
the type of settlement of the student's residence at the age of 14	technician qualification/completed training listed on the National Qualifications Register	

Before interpreting the results, it is necessary to introduce the distributions according to the gender and training field. Significant differences can be detected between the groups in terms of gender. On average, females are represented in the sample with 70.9 %, while the adjusted standardised residual in the lower tercile indicates an over-representation (84.0 %). They are followed by female students in the second tercile with 73.0 % and female respondents in the upper tercile with 56.3 %. The educational disadvantage and self-selection of men is a noticeable phenomenon (Liskó, 2003; Fényes, 2009a; Fényes, 2015), although their share in the higher-paid courses is 43.7%, which is 15 percentage points above the average. The earnings groups also show an uneven distribution in the training field. According to the cellular data, teacher candidates (71.6%) and agricultural graduates (16.4 %) are overrepresented among those with below-average earnings. Several studies highlight teachers' unfavourable earnings situation (Polónyi, 2015; Csók,

2021), while the earnings disadvantage of agricultural graduates has been highlighted in recent career tracking studies of recent graduates (Garai, Veroszta, 2011). In the average earning group, the dominance of humanities (30.9 %), medicine and health (28.0 %) and social sciences (25.8 %) is evident. In the top third, economics (37.9 %), engineering (17.1 %) and computer science (15.0 %) are the leading fields (Table 2).

**Table 2.** Dominant training areas along the tercile created based on the expected earnings (in percent)

Below average earners (N = 707)	Average earners (N = 721)	Above-average earners (N = 738)
teacher training (71.6)	humanities (30.9)	economics (37.9)
agricultural (16.4)	medicine and health sciences (28.0)	engineering (17.1)
	social sciences (25.8)	computer science (15.0)

Notes: The values visualised indicate that there are far more people in the given cells in the table than would have been expected in a random ordering (Adj.Resid. > 2.0). Chi-square test,  $p = 0.000$ .

Source: PERSIST 2019

### 3. Results

#### 3.1. Social status of students

One of the most important differences between the groups can be found in their social background. It is a basic tenet of the sociology of education that the educational attainment of students is largely determined by the educational background of their parents (Boudon, 1974; Engler, 2010; Róbert, 2003; Pusztai, 2007; Pusztai, 2015a; Godó et al., 2020). This general correlation is confirmed by our study, as the majority of children of mothers with secondary education (43.7 %) and fathers with primary education (41.4 %) are oriented towards lower-income education. Furthermore, data on parents' combined educational attainment (Róbert, 1986) show an under-representation of children from families with a university degree (25.7 %). The control groups show a more favourable picture, with a higher proportion of parents with a college or university degree (38.1 %) among those with average earnings (Table 3). As an explanation, families who are higher up the income and hierarchy ladder want their children to be able to reproduce at least their social status. Consequently, careers offering lower-income and prestige are less attractive to children of more highly qualified parents (Benkő, 2009; Csók, 2020).

**Table 3.** Parents' educational attainment along terciles based on expected earnings (column percentage)

	Mother highest education			Dad highest education			Parents together education		
	Below average earnings (N = 707)	Average earnings (N = 721)	Above-average earnings (N = 738)	Below average earnings (N = 707)	Average earnings (N = 721)	Above-average earnings (N = 738)	Below average earnings (N = 707)	Average earnings (N = 721)	Above-average earnings (N = 738)
Primary	<u>29.9</u>	23.3	26.0	<u>41.4</u>	28.6	34.5	<u>23.2</u>	15.6	19.0
Secondary	<u>43.7</u>	38.9	38.0	37.5	39.2	37.1	<u>51.1</u>	46.3	46.2
Tertiary	26.4	<u>37.8</u>	36.0	21.1	<u>32.2</u>	28.4	<u>25.7</u>	<u>38.1</u>	34.8
Total	100	100	100	100	100	100	100	100	100

Notes: The underlined values indicate that there are far more people in the given cells in the table than would be expected in a random ordering (Adj.Resid. > 2.0). Mother highest education:

Pearson Chi-Square test,  $\chi^2 = 23.529$ ,  $df = 4$ ,  $p = 0.000$ . Dad highest education: Pearson Chi-Square test,  $\chi^2 = 32.217$ ,  $df = 4$ ,  $p=0.000$ . Parents together education: Pearson Chi-Square test,  $\chi^2 = 29.740$ ,  $df = 4$ ,  $p = 0.000$ .  
Source: PERSIST 2019

Data on parents' educational attainment suggest a more open nature of the fields of education in the lower tercile (e.g. teacher training, agriculture). In line with our results, Gáti (2010) approximates the intergenerational reproduction of schooling advantages with a traditional indicator: the child of parents with a university degree also obtains a university degree. Her analysis shows that the 'inheritance' of university education is most 'closed' in the legal (31 %) and medical (29 %) fields, complemented by the natural sciences (27 %). However, the least prevalent are in agriculture (14 %) and education (11 %), which can be considered the most "open" fields. Students form a caste social structure, which is also reflected in unequal access to types of education (Róbert et al., 2017). The results of our study confirm the literature, as we found significant differences when we looked at the internal stratification of higher education by field of study. Children of first-generation parents dominate the bottom third, where prospective teachers are over-represented (share of parents with quasi tertiary education: total sample 32.9 %, teacher education 18.1 %). By contrast, the middle tercile shows the strongest selection by social background, which can be explained by the high proportion of students in the medical and health sciences (parents with quasi tertiary degree: 59.7 %). The emphasis on IT, engineering and economics in the top tercile gives the group its more socially heterogeneous character.

We explored whether, in addition to education, there are significant differences in the labour market profile of parents. Our analysis shows that the majority of the students surveyed have parents who are employed. Among those with below-average earnings, 88.6 % of fathers and 86.3 % of mothers are employed, however, community employment is overrepresented in the latter group (16.4 %). The highest proportion of parents without work is found in the middle tercile (father: 12.6 %, mother: 19.9 %) (Table 4), which is typically explained by the death of the father (N = 32) and the role of the mother in the household (N = 59). The data of our empirical study confirm previous research findings that mothers have higher educational attainment in the regions included in the study (Kiss, 2011; Pusztai, Márkus, 2019), but their employment rate is lower than that of fathers due to the high share of mothers in household status (Pusztai, Márkus, 2019). This is particularly characteristic of Hungarian families living beyond the borders, where the traditional role and value orientation are even more pronounced. It is worth noting that some research suggests that mothers who work in the household or who do not work full-time have higher child-rearing efficiency because they invest more time in the child's future (Coleman, 1988; Pusztai, 2007; Pusztai, Márkus, 2019).

**Table 4.** Employment of parents along terciles based on expected earnings (column percentage)

	Mother's labour market situation			Father's labour market situation		
	Below average earners (N = 707)	Average earners (N = 721)	Above-average earners (N = 738)	Below average earners (N = 707)	Average earners (N = 721)	Above-average earners (N = 738)
Not employed	13.7	<b><u>19.9</u></b>	14.1	11.4	<b><u>12.6</u></b>	9.9
Employed as a public worker	<b><u>16.4</u></b>	10.9	7.9	16.5	12.1	7.6
Employed as not a public worker	69.9	69.1	<b><u>78.1</u></b>	72.1	75.3	<b><u>82.5</u></b>
Total	100	100	100	100	100	100

Notes: The underlined values indicate that there are far more people in the given cells in the table than would be expected in a random ordering (Adj.Resid. > 2.0). Mother's labour market situation: Pearson Chi-Square test,  $\chi^2 = 38.976$ ,  $df = 4$ ,  $p = 0.000$ . Father's labour market situation: Pearson Chi-Square test,  $\chi^2 = 29.558$ ,  $df = 4$ ,  $p = 0.000$ .

Source: PERSIST 2019

Hereinafter, the economic resources of the students were examined, as the database provided the opportunity to map the objective, subjective and relative financial situation. However, there are no significant differences in the economic capital of the families, who own six out of nine consumer goods on average. Furthermore, neither the subjective nor the relative indicator shows significant differences on the basis of the dimensions examined. However, differences were observed when measuring the student's own objective financial status along with six items ( $p = 0.017$ ), showing that students in the middle tercile (1.89) are in the most advantaged situation, followed by those in the above-average income group (1.75) and finally those in the lower tercile (1.66). The averages are low for all groups, as young people are less likely to have a house fund (25.5 %), a car (22.2 %) and a property (14.0 %). Furthermore, relatively few people own a tablet or e-book reader (29.7%), but this may be because they do not necessarily need or want one, as around two-fifths of respondents use a more expensive than average phone (43.8 %), laptop or computer (40.8 %). However, to explain the results, we would need to identify students' value systems, their attitudes towards material goods and their consumption habits (Pusztai, Márkus, 2019). Thus, overall, no sharp gaps can be identified in terms of economic capital.

In addition to social stratification, the residential environment's type, size and location also determine academic careers and perceptions of work (Forray, Kozma, 1992; Pusztai, 2007; Pusztai, 2015a; Csók, 2019; Godó et al., 2020). In our study, the proportion of students from villages/towns is high (47.1 %) among students from the lower tercile. In contrast, the smaller town (35.7 %) and the county seat (33.8 %) were the most frequently selected settlements of permanent residence at age 14 in the middle and upper tercile groups, respectively (Table 5). A phenomenon also observed in previous research is that while a strong municipal dominance is observed in the lowest entry average scores (Kiss, 2011), universities offering 'marketable' degrees have a significantly lower proportion of students coming from lower levels of the municipal hierarchy (Róbert, 2003).

**Table 5.** Type of settlement of the student's residence at the age of 14 along terciles based on expected earnings (column percentage)

	<b>Below average earners</b> (N = 707)	<b>Average earners</b> (N = 721)	<b>Above-average earners</b> (N = 738)
Municipality, village	<b><u>47.1</u></b>	35.2	31.2
Smaller town	36.8	35.7	31.8
County seat	14.8	26.0	<b><u>33.8</u></b>
Capital	1.3	3.1	3.2
Total	100	100	100

Notes: The underlined values indicate that there are far more people in the given cells in the table than would be expected in a random ordering (Adj.Resid. > 2.0). Pearson Chi-Square test,  $\chi^2 = 88.172$ ,  $df = 6$ ,  $p = 0.000$ .

Source: PERSIST 2019

Educational research over the past decades has demonstrated the influential role of the social status of the family of origin, as students from different backgrounds receive different levels of parental support in terms of financial, intellectual, aspirational and procedural aspects, which can affect young people's plans for further education and employment (Pusztai, 2015a; Pusztai, Márkus, 2019). At the same time, there is also a consensus among higher education researchers that individuals' career choices can be shaped by other resources, such as social capital within the family (Pusztai, 2005; Pusztai, 2007; Pusztai, Márkus, 2019), which is reflected in the question 'During your higher education years, how typical was it for your parents to...?' (Pusztai, Márkus, 2019). Respondents were asked to rate nine activities on a 5-point Likert scale (1: not at all, 2: not typical, 3: somehow typical, 4: typical, 5: very typical). The mean scores for the frequency of each activity show that families in the lower tercile are significantly more active in organising joint programs. In addition, parents are relatively likely to provide financial support to their children (3.62), ask them about their studies and exams (3.62), talk to them (generally) (3.59), encourage them to continue their studies (3.51) and inform them about their leisure activities (3.36) (Table 6).

So, although parents' educational attainment is lower than the other two groups, they also recognise the value of learning and try to support their children's academic success (Pusztai, Márkus, 2019).

**Table 6.** Students' intra-family social capital along terciles based on expected earnings (averages on a four-point scale)

During your higher education years, how typical was it for your parents...	<b>Below average earners</b> (N = 707)	<b>Average earners</b> (N = 721)	<b>Above-average earners</b> (N = 738)	df	F	Sig.
to have a conversation with you?	3.6	3.6	3.5	2	1.596	0.203
to be informed about how you spend your free time?	3.4	3.3	3.3	2	1.549	0.213
that they asked you about your studies and exams?	3.6	3.6	3.6	2	0.749	0.473
that they have financially supported you?	3.6	3.7	3.6	2	1.276	0.279
that they have organised family activities with you?	3.3	3.2	3.2	2	3.695	0.025
that they talked about dropping out?	2.0	2.0	1.9	2	0.499	0.607
that they approved that you should interrupt your studies?	1.6	1.5	1.5	2	1.796	0.166
that they encouraged you to continue your studies?	3.5	3.6	3.6	2	1.596	0.203
that they organised sporting activities with you?	2.4	2.2	2.2	2	4.860	0.008

Source: PERSIST 2019

### 3.2. The transition from secondary school to higher education

In the following, we focus on the years before entering higher education, as the secondary school period is seen as a double-edged sword that can both mitigate and amplify the spillover effects of background (Godó et al., 2020). The students surveyed typically entered higher education from secondary school (74.0 %), with the average-earners group being the most prominent (80.5 %). However, the number of students who graduated from secondary vocational school and secondary technical school classes in the lower tercile is seven percentage points (32.9 %) above the average of 26.0 %. The enrolment trends show that, on the one hand, fewer vocational school graduates apply to higher education and, on the other hand, a higher proportion of those who continue their studies aim for lower prestige majors compared to those who graduate from upper secondary school (Róbert, 2003; Nagy P., 2010; Fehérvári, 2014). This is also confirmed by our data, as former high school students predominate in the field of medicine and health sciences (89.5 %), while vocational high school students predominate in teacher training (38.7 %) ( $p = 0.000$ ).

The majority of respondents said that applying to higher education was an independent decision (74.7 %). However, a comparison of tercile reveals significant differences between groups in terms of following parental expectations, teachers' advice and the example of friends and classmates. Students in majors promising an average income were most likely to follow the advice of their parents (33.8 %) and teachers (18.0 %) and to follow the advice of friends and classmates (10.5 %). In contrast, students in the bottom third of the sample reported that they were less influenced by the above-mentioned people (Table 7). However, the literature suggests that environmental influences (family, reference groups, culture) are directly or indirectly influential,

regardless of how the student perceives or interprets them (Kotler, 1999; Rámháp et al., 2017; Tódor, 2022).

**Table 7.** The decision to apply for higher education along terciles based on expected earnings (multiple answers possible, in percent)

	<b>Below average earners</b> (N = 707)	<b>Average earners</b> (N = 721)	<b>Above-average earnings</b> (N = 738)
I followed my parents' expectations and advice**	26.6	<b>33.8</b>	28.7
I followed the advice of my teachers***	10.9	<b>18.0</b>	16.8
I took my own advice	76.1	72.3	75.9
I followed the example of my sibling(s)	3.8	5.4	6.4
I followed the example of my friends and classmates*	6.6	<b>10.5</b>	8.4
With the help of a careers adviser	3.0	3.2	3.0
Other	3.3	3.2	3.0

Notes: The underlined values indicate that there are far more people in the given cells in the table than would be expected in a random ordering (Adj.Resid. > 2.0). Parents: Pearson Chi-Square test,  $\chi^2 = 9.493$ ,  $df = 2$ ,  $p = 0.009$ . Teachers: Pearson Chi-Square test,  $\chi^2 = 15.727$ ,  $df = 2$ ,  $p = 0.000$ . Friends and classmates: Pearson Chi-Square test,  $\chi^2 = 8.761$ ,  $df = 2$ ,  $p = 0.013$ .

Source: PERSIST 2019

Education researchers have found, based on data from quantitative research in the Partium region, that the main motivation for enrolling in higher education is a thirst for knowledge, in addition to the hope of better labour market opportunities (Pusztai et al., 2015; Kovács et al., 2019). In line with this, our analyses found that these more general factors also played a role in further education in student groups, such as gaining knowledge (89.9 %), searching for a career (86.3 %) and the hope of easier employment with a degree (83.6 %). However, in terms of differences between groups, it is worth noting that among students learning in courses promising higher income, the desire for a well-paid (84.5 %), recognised (83.1 %) occupation, relationship orientation (71.2 %), social mobility (55.8 %) and meeting job requirements (29.3 %) were over-represented. In the lower terciles, local attachment, i.e. the influence of proximity to a geographical institution, is significantly higher (65.3 %). When examining career aspirations, it is also worth mentioning gender differences, since while female students dominate in the lower terciles, the proportion of males is prominent in the upper terciles. For this reason, in addition to the motivations for applying, we have also indicated the gender differences in Table 8. Overall, focusing on the three groups, we find that, in line with the previous findings of Fényes (2009b), girls are primarily motivated by learning (91.1 %) and career search (89.0 %), while boys are typically motivated by higher earnings (83.3 %). In addition, the latter were significantly more likely to be motivated to continue their education by the hope of social advancement (58.3 %), the extension of their working life (40.1 %), intergenerational pattern matching (30.9 %) and meeting job requirements (29.9 %).

Two decades ago, Róbert (2003) already pointed to the academic performance of applicants to "marketable" courses, while Kiss (2011) identified a low proportion of high performers in the lowest average scoring bachelor's courses. When examining input performance, we had to bear in mind that the admission system differs between countries (Godó et al., 2020), so for validity, we have excluded the cross-border subsample from the database. Table 9 shows that the middle tercile has a significantly higher proportion of those who have passed the advanced level school-leaving exams (84.5 %), as well as a significantly higher proportion of those who have passed the intermediate (67.5 %) and the advanced (18.9 %) level exams. Although there is no sharp difference between the groups in terms of academic competitions (e.g. OKTV), again, the middle tercile is the

most competitive (4.5 %). Thus, it can be seen that those in the average earning occupations have achieved high levels of secondary school performance in their progression to higher education. Medical students have a significant role in this, as they enter their studies selectively, with high scores and commitment (Pusztai et al., 2022).

**Table 8.** Their motivations for continuing their studies along tercile based on expected earnings (multiple answers possible, in percent)

	<b>Below average earners</b> (N = 707)	<b>Average earners</b> (N = 721)	<b>Above-average earners</b> (N = 738)	Gender difference
To find a well-paying job***	61.8	76.6	<b>84.5</b>	men prefer ( $\chi^2 = 24.061$ , df = 1, p = 0.000)
To have a recognised profession**	76.2	78.6	<b>83.1</b>	ns
Geographical proximity of higher education institution*	65.3	59.2	63.8	ns
To increase my knowledge	88.4	90.4	90.8	women prefer ( $\chi^2 = 6.693$ , df = 1, p = 0.010)
Finding my vocation	88.0	86.0	85.1	women prefer ( $\chi^2 = 26.532$ , df = 1, p = 0.000)
Because it's easier to get a job with a degree	81.9	83.0	86.0	ns
Because I didn't want to work yet	36.3	32.5	36.1	men prefer ( $\chi^2 = 8.532$ , df = 1, p = 0.003)
To develop a wide range of relationships**	62.2	65.2	<b>71.2</b>	ns
I followed a family tradition	26.6	26.6	27.6	men prefer ( $\chi^2 = 8.812$ , df = 1, p = 0.003)
I could afford it financially	53.3	54.1	56.0	ns
No tuition fees had to be paid	57.9	55.4	55.7	ns
Job requirement**	25.3	21.2	<b>29.3</b>	men prefer ( $\chi^2 = 9.732$ , df = 1, p = 0.002)
Hope for social mobility, breakout***	42.6	52.6	<b>55.8</b>	men prefer ( $\chi^2 = 15.652$ , df = 1, p = 0.000)

Notes: The underlined values indicate that there are far more people in the given cells in the table than would be expected in a random ordering (Adj.Resid. > 2.0). Pearson Chi-Square test, ns = not significant, p\* < 0.05, p\*\* < 0.01, p\*\*\* < 0.001.

Source: PERSIST 2019

Even in the above-average income group, more than half of the students have an intermediate complex language certificate (60.7 %) and advanced level school-leaving exam (54.3 %), with those enrolled in economics leading the way in these performance indicators. In addition, this tercile has the highest proportion of students with a higher percentage of points

for having a technician qualification or a qualification listed in the National Qualifications Register (10.5 %), with students in engineering (15.4 %) and computer science (14.3 %) fields standing out. Technician qualifications in these vocational profiles can be a good basis for higher education (Pusztai, Szigeti, 2021b). Career socialisation can serve as a retention force if it has already started before entering higher education, highlighting the important role of the acquired knowledge, career identification and immersion in the profession.

In the lower tercile, most respondents started tertiary education with lower entry attainment compared to the other two groups. This student base is also under-represented in the completion of the advanced level school-leaving exams (41.1 %), intermediate (46.9 %) and advanced (7.7 %) language certificate. The severity of the gap is shown by the fact that more than twice as many people in the middle tercile passed the upper secondary school leaving certificate and the intermediate level language examination as in the below-average group. The question arises as to what extent we can speak of real underachievement and poorer academic performance. According to Kiss (2011), several professions with lower income are also represented among the professions with lower grade point averages (e.g. infant and nursery teacher, kindergarten teacher, primary school teacher, secondary school teacher). In our view, the entry requirements of the desired profession can play an influential role, as applicants know exactly what conditions they need to meet (e.g. advanced level school-leaving exam), what extra points (e.g. intermediate or advanced level language certificate) they need to reach the entry threshold for the given course. It follows that lower entry thresholds and criteria (e.g. no compulsory advanced level school-leaving exam) can have a pull-back effect, in that students do not feel the need to make the extra effort, as they can gain admission to the desired course without it.

**Table 9.** Extra points along terciles based on expected earnings (subsample in Hungary, multiple answers possible, in percent)

	<b>Below average earners</b> (N = 263)	<b>Average earnings</b> (N = 318)	<b>Above average earnings</b> (N = 430)
Due to sport performance	9.2	6.1	8.5
Due to an academic competition	3.3	4.5	3.3
Due to disability	0.7	1.3	1.4
Due to a disadvantaged situation	9.3	9.6	7.8
Due to a technical qualification or a course listed on the National Qualifications Register **	5.2	3.6	<b><u>10.5</u></b>
Due to intermediate complex language exam***	46.9	<b><u>67.5</u></b>	60.7
Due to advanced level complex language exam***	7.7	<b><u>18.9</u></b>	9.6
Due to a cumulative disadvantaged situation	2.9	2.6	2.1
Due to completing an advanced level school-leaving exam ***	41.1	<b><u>84.5</u></b>	54.3
Due to childcare	1.5	0.3	1.4

Notes: The underlined values indicate that there are far more people in the given cells in the table than would be expected in a random ordering (Adj.Resid. > 2.0). Technical qualification or a course listed on the National Qualifications Register: Pearson Chi-Square test,  $\chi^2 = 14.307$ ,  $df = 2$ ,  $p = 0.001$ . Intermediate complex language exam: Pearson Chi-Square test,  $\chi^2 = 24.563$ ,  $df = 2$ ,  $p = 0.000$ . Advanced level complex language exam: Pearson Chi-Square test,  $\chi^2 = 21.016$ ,  $df = 2$ ,  $p = 0.000$ . Advanced level school-leaving exam: Pearson Chi-Square test,  $\chi^2 = 122.869$ ,  $df = 2$ ,  $p = 0.000$ .

Source: PERSIST 2019

### 3.3. Higher education careers

Before examining the progression to higher education of the groups, Table 10 introduces some of the broad characteristics of the chosen pathway, such as the difficulty rating and attractiveness. These data were obtained by the CHERD-Hungary research team from legislative sources (Annex 10 of Government Decree 87/2015 (9.4.2015)) and educational statistics (admission databases) (Pusztai, Szigeti, 2021b). As indicated in the methodological chapter, the group of below-average earners is typically dominated by fields of education that are considered easier from an educational policy perspective (74.7 %) and highly attractive (71.5 %) (e.g. agriculture, teacher training). Similarly, students in the middle tercile are also over-represented in fields rated as "easier" (70.6 %), highlighting the predominance of humanities and social sciences (the difficulty level of medicine and health is distinct in this respect). In contrast, students in the top category tend to study in fields that are considered more difficult (80.9 %) and highly attractive (66.4 %) (e.g. engineering, computer sciences, economics), but they expect to get a return on the time, money and energy invested in their degree (Pusztai, Szigeti, 2021a). The upper tercile is characterised by slower progress than the curriculum and a high risk of dropping out, as predicted by a high pass rate (7.5 %) and a potential risk of over-achievement (21.1 %).

**Table 10.** Characteristics of the chosen pathway along the tercile created by earnings (in percent)

	<b>Below average earners</b> (N = 707)	<b>Average earners</b> (N = 721)	<b>Above-average earners</b> (N = 738)
Difficulty rating***	deemed easier <u>(74.7)</u>	deemed easier <u>(70.6)</u>	deemed more difficult <u>(80.9)</u>
Attractiveness***	highly attractive <u>(71.5)</u>	moderately attractive <u>(84.7)</u>	highly attractive <u>(66.4)</u>
Have at least one passive half-year***	2.2	4.8	<u>7.5</u>
Potential overrunners (students not finishing their studies on time)***	9.5	14.8	<u>21.1</u>

Notes: The underlined values indicate that there are far more people in the given cells in the table than would be expected in a random ordering (Adj.Resid. > 2.0). Difficulty rating: Pearson Chi-Square test,  $\chi^2 = 557.219$ ,  $df = 2$ ,  $p = 0.000$ . Attractiveness: Pearson Chi-Square test,  $\chi^2 = 1250.728$ ,  $df = 4$ ,  $p = 0.000$ . Passive half-year: Pearson Chi-Square test,  $\chi^2 = 22.128$ ,  $df = 2$ ,  $p = 0.000$ . Potential overrunners: Pearson Chi-Square test,  $\chi^2 = 36.091$ ,  $df = 2$ ,  $p = 0.000$ .

Source: PERSIST 2019

The final stage of our research involved examining the relationship between the terciles based on expected earnings and persistence as a commitment to study completion. The CHERD-Hungary research team conducted a principal component analysis based on four indicators of persistence, which are 1) the studies I am pursuing will be useful for me in my professional career, 2) I am very determined to complete my studies, 3) I want to achieve as good academic results as possible, 4) I will do my best to attend lectures, seminars, practical classes (Ceglédi et al., 2022). The results show a significant difference in persistence by earnings terciles. The least persistent students are the members of the upper tercile (below average: 38.2 %), followed by students in the middle group (average: 36.8 %). Respondents from the lower-income tercile are more persistent than the average (34.7 %) (Table 11). This result is partly explained by the fields of study, as students in the theological and teacher training courses, which dominate the below-average-earners group, are above-average in their determination to complete their studies. Furthermore, we have seen above that female students are over-represented among these students. The data suggest that the value of the principal component of persistence is elevated among females, which can be attributed to traditional gender role behaviour, stronger rule-following attitudes, compliance with manifest expectations and diligence of women. In contrast, more dropout risk factors are present for men,

highlighting a lack of interest in the field and learning, financial problems and learning difficulties (Ceglédi et al., 2022).

**Table 11.** Persistence along terciles based on expected earnings (column percentage)

	<b>Below average earners</b> (N = 707)	<b>Average earners</b> (N = 721)	<b>Above-average earnings</b> (N = 738)
Above-average persistent	34.7	32.0	30.7
Persistent on average	34.1	36.8	31.1
Below average persistent	31.2	31.2	<b><u>38.2</u></b>
Total	100	100	100

Notes: The underlined value indicate that there are far more people in the given cells in the table than would be expected in a random ordering (Adj.Resid. > 2.0). Pearson Chi-Square test,  $\chi^2 = 13.745$ ,  $df = 4$ ,  $p = 0.008$ .

Source: PERSIST 2019

#### 4. Conclusion

In the present study, we investigated the social background, secondary school characteristics and progression to higher education of students in five countries (N = 2166) using the PERSIST 2019 database. We formulated three hypotheses based on the literature, which were tested using statistical methods. Our results provide a sense of the specific characteristics of the groups of students (below-average earners, average earners, above-average earners) based on expected earnings.

In the first part of our study, we focused on the so-called 'hard' sociological indicators (parents' educational attainment and employment, financial situation, type of settlement) since, according to the sociology of education, they are stochastically related to school and labour market life course. They are also sources of economic, social and cultural capital and define the main framework of value system characteristics (Godó et al., 2020). We assumed that children of parents with lower social status have a higher proportion of below-average earners. We were able to confirm our first hypothesis, as our analyses revealed significant differences between the groups in terms of parents' educational attainment and labour market status. Children from graduate families were under-represented in the lower-earning education groups, with children of mothers with secondary education and fathers with primary education standing out. An explanation is that the group was dominated by teacher training, which may function as a one-step channel of social mobility (Róbert et al., 2017). Furthermore, in the lower tercile, the majority of parents worked, but women were overrepresented among public workers. Despite this, no sharp differences can be observed regarding material status. On the other hand, there are no differences in the position in the municipal hierarchy, as the students in the bottom tercile were predominantly from villages/villages, while in the other two terciles, there were more urban students.

In addition to the "hard" sociological indicators, we considered it important to look at family social capital, manifested in parental care, which functions as a resource that can be used during the years of higher education (Pusztai, 2007; Pusztai, 2015a; Godó et al., 2020). This is because family dowries can even override social affiliation, highlighting the role of parental attention and contact (Blaskó, 2003; Pusztai, 2007; Pusztai, 2015a; Godó et al., 2020). Our results show that families in the lower tercile were significantly more active in organising joint family and sports activities. In addition, similar to the other students, contact and discussion with parents appeared to be relatively frequent. This implies that students from a less advantaged status receive parental care similar to that of students from a higher status, which may be a driving force in their studies (Godó et al., 2020).

In our second hypothesis, we assumed that the highest number of people claiming extra credit for extra performance is among those with above-average earnings. This hypothesis could not be confirmed, as students in the middle third of the population stood out in terms of A-levels and language proficiency, which can be partly explained by the over-representation of medical

students. This group was followed by the upper tercile, where those studying economics had an outstanding performance, and the large number of IT and engineering students excelled in obtaining technical qualifications (e.g. NQR). Students in lower-paying fields were the front-runners in terms of input performance.

Finally, it was assumed that the most committed group of students to complete their studies is represented in the lower tercile. Our third hypothesis was confirmed because, although students in the upper tercile enter higher education with a strong sense of moratorium-seeking and prestige-seeking orientation, this sense of upward orientation seems to fade in the more selective and rigorous institutional culture surrounding them. And high rates of dropouts and passive semesters can be a breeding ground for disenchantment with education (Kovács et al., 2019; Pusztai, Szigeti, 2021b). In contrast, students in the lower tercile make uninterrupted progress in "easier" courses (Pusztai, Szigeti, 2021b), which, in addition to moderate training requirements, may also be the result of students' strong sense of vocation, based on vocation and spirituality (Pusztai, 2015b).

Overall, we find a characteristic variation along the terciles generated by expected earnings. The generalisability of our results is limited by the dynamic changes in the higher education system and the circumstances of the survey. Our data complement research (Pusztai, Szigeti, 2021b) that interprets the commitment to completing studies as a complex phenomenon in which several "soft" components (e.g. parental caring, vocational awareness, institutional culture) play a role simultaneously. Our aim is to explore the life course of moratorium-oriented students and the challenges they perceive further during their academic progress in higher education in a qualitative research.

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## Analysis of the Psychosocial Factors of University Professors

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### Abstract

The present study is a proposal of a questionnaire of psychosocial factors for university professors based in a standard proposed in the Mexican law that considers the International Labor Organization recommendation. The study is based on five dimensions: Work environment, factors for the activity, organization of working time, leadership and relationships and work and organizational environment. The information was collected among 300 teachers with a wide range of tenure and conditions at work in Mexico. Also, the questionnaire was developed during the pandemic of COVID-19 which affected the job this kind of professionals. We performed an exploratory factor analysis to evaluate each one of the five dimensions using questionnaires previously validated by different authors. We obtained one dimension for the work environment factor, two dimensions for the factor for the activity, one dimension for the organization of working time, three dimensions for the factor leadership and relations at work and two dimensions for the organizational environment factor. The results showed that the questionnaire is valid and can be used as a tool to improve the conditions of work at universities. We found that the dimension insecurity and leadership were the worst evaluated by university teachers. This questionnaire could be used to promote safety conditions after the sanitary emergency and to promote a healthy environment among workers.

**Keywords:** university professors, psychosocial factors, exploratory factor analysis, Mexico.

### 1. Introduction

Universities have a primary role in our society. On one hand, they have the function of transmitting knowledge to create professionals from the various disciplines that are required in the labor field and, on the other hand, they generate knowledge through their researchers (Pace et al.,

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2021). In recent years, the demands of universities have changed the work requirements of professors due to work overload, administrative requirements, and the achievement of research results (Tacca, Tacca, 2019). Depending on the country, the contractual and salary differences of the universities have caused the levels of job satisfaction to be different according to the type of work that a professor accomplishes (Szromek, Wolniak, 2020).

Mexican universities have a great diversity, and we can classify them as universities exclusively for teaching purposes where full-time professors are very scarce and universities dedicated to teaching and research that are recognized for their quality and scientific impact as the National Autonomous University of Mexico (UNAM) the National Polytechnic Institute (IPN), etc. The types of work contracts that professors have define the type of activity they carry out within the institution and can be part-time or full-time. In both cases there may be definitive contracts or for specific periods of time. Universities can generally be classified as private or public depending on the source from which they obtain their primary resources. Among the most recognized private universities in Mexico is the Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM), the Universidad Iberoamericana, etc.

The levels of well-being of university professors depend on various factors such as social, personal, demographic, economic, institutional, and environmental (Cerci, Dumludag, 2019). An especially important one, is the salary level, this may depend on the type of contract and seniority that the professor has and, on some occasions, if there is a bonus for some type of prize due to activities such as research, work with students, etc. In addition to this, one of the sectors most affected by the COVID-19 pandemic was education, as there was a general stoppage of activities for approximately two years. This recess undoubtedly disrupted all school settings from the study plans to the way of living in the community and the way of carrying out the teaching-learning process. Although there are studies that indicate how the COVID-19 pandemic affected students (Browning et al., 2021), there are few studies that have shown how this situation affected teachers. The most relevant concerns on the part of the teaching and administrative staff in the school environment include the physical, mental, social and administrative areas as described by Pattison et al. (2021) as shown in Table 1. However, it is important to mention that, in the Mexican environment, especially in some states such as Guanajuato, Zacatecas, State of Mexico, etc., gender violence increased, as well as violence by criminal groups, which represents a risk for both teachers as for students. Some universities have had to modify their work schedules to safeguard the safety of the community (INEGI, 2022).

**Table 1.** Risks generated for teachers from the COVID-19 pandemic

Physical environment	Physical distancing in hallways, cafeteria, cubicles, classrooms, etc. Safety in public transport (bus, subway, etc.). Properly clean spaces and use of sanitary products (water, soap, disinfectants, etc.)
Health	Resurgence of new outbreaks of COVID-19. Sufficient vaccination for all students and teachers. Sufficient availability in hospitals for medical care. Obesity problems due to confinement
Mental health	Student concern due to the pandemic (depression, self-esteem, etc.) Sufficient resources for student support (counseling, psychological support, etc.) Support for students who lost a family member in the pandemic

Source: Browning et al., 2021

The International Labor Organization (ILO, 2011) defined psychosocial risk factors as those characteristics of working conditions that affect people's health through psychological and physiological mechanisms called stress. These interactions can have consequences on the health of workers as they may present anxiety, abuse of toxic substances, cardiovascular diseases, etc. The main risk factors are: 1) Environmental factors and jobs. They include workloads, shifts, ergonomic problems, work pace, etc. 2) Organizational Factors. It involves supervision,

organizational structure, organizational climate and culture, salary level, and discrimination issues. 3) Relationships at work. They are generated through coexistence through the work community and can generate workplace, sexual and violence harassment. 4) Job security and career development. In general, it refers to the perspective that the worker has regarding her future. 5) Workload. The relationship that the worker has in relation to his free time and his family.

As a result of this problem, the Ministry of Labor and Social Welfare of Mexico (STPS) published in the Official Gazette of the Federation the Mexican standard 035, which aims to establish the elements to identify, analyze and prevent psychosocial risk factors, as well as to promote a favorable organizational environment in the workplace (NOM-035-STPS-2018). Although the standard allows flexibility with reference to the parameters established to evaluate psychosocial risks, it provides specific guidelines that help organizations to establish their own criteria on the evaluation of the parameters. Some standards such as COPSOQ (2021) do not allow changes to the questionnaire, since they are the effort of international research groups that are making changes to the parameters of the standard and require that they be made in a uniform manner in order to establish comparisons between countries. The objective of this research is to propose an instrument for the evaluation of psychosocial factors at work based on NOM-035.

Educational reforms in different countries have affected teachers of any educational level, causing them to be more affected by stress levels every day (Dicke et al., 2017). The introduction of new educational models, the diversity of students, the size and number of students attended, budget restrictions, digitization of content, etc., cause teachers to find themselves in an environment of change every day (Salmela-Aro et al., 2019). This affects their levels of psychosocial well-being and has an impact on the quality of life of both the teacher and their quality of teaching (Laurie, Larson, 2020). It is therefore urgent to have an instrument that allows evaluating psychosocial factors in the work of university professors.

According to Mexican regulations, NOM-035, which was published in the Official Gazette of the Federation in October 2018, the standard is mandatory, so the instrument proposed in Mexican legislation for the evaluation of psychosocial aspects is a broad questionnaire that it comprises 5 categories and 10 dimensions in 72 items (Table 2). Next, we will describe each of the categories included in the standard, taking into consideration the studies developed for university professors and from the perspective of organizational psychology studies, but with a focus on university professors.

**Table 2.** Categories, and domains proposed by the standard

Categories	Domains
Work environment	Conditions in the work environment
Factors of the activity	Workload Lack of control over work
Organization of working time	Working day Interference in the work-family relationship
Leadership and relationships at work	Leadership Relationships at work Violence
Organizational environment	Performance recognition Insufficient sense of belonging and instability

Source: STPS (2018)

Next, we will describe each of the categories included in the standard, taking into consideration the studies developed for university professors and from the perspective of organizational psychology studies.

**Work environment**

According to Gil-Monte (2012), psychosocial risks originating in work activity have their origin in: a) The characteristics of the task: amount of work, development of skills, complexity of the task, monotony or repetitiveness, automation, work rate etc. b) The characteristics of the job: the workplace, remuneration, job stability and physical conditions of work (temperature, noise,

lighting, etc.), c) The organization of working time: shifts, breaks, breaks to eat etc. The amount of work that teachers have negatively affects their productivity measured through teaching, fulfillment of research goals and increases the levels of conflict with their co-workers (Gillespie et al., 2001). In a study conducted by Otero-López et al. (2008) in Spanish university professors, showed that workload and seniority, as well as routine inconveniences such as paperwork, filling out reports, etc. correlates with the levels of stress of this type of professional.

#### **Factors of the activity**

According to the standard, the factors of the activity are divided into workload and lack of control over the work. Aspects such as work rhythms, mental loads, autonomy, possibility of development, training, etc. are considered. These processes in most universities were affected taking into consideration that most daily activities were carried out remotely (Orellana et al., 2021). Further, we must consider that the COVID-19 pandemic considerably affected university professors since a transformation was experienced at work during the pandemic crisis that lasted in Mexico from 2020 to 2021, although the World Health Organization has not declared the end. As of 2022, the vast majority of professors were forced to return to work face-to-face from January, resulting in a transition period that affected academic life in every way. Especially the elder university professor was put at risk who, although he already had some type of protection due to vaccination, many of the professors belonging to this age group have comorbidities (high blood pressure, diabetes, etc.). In most universities these risks were not taken into account for the return to face-to-face instruction. According to Garcia et al. (2016), the psychosocial risks of teachers due to job demands are higher in those academics who have higher degrees (doctorate) and who must comply with the required academic productivity (articles, books, etc.). According to their study, they are those who are over 55 years old.

#### **Organization of working time**

The third dimension proposed by the standard includes the duration of the working day and the analysis of the work-family conflict. These two factors are highly interrelated because the time that the worker spends in activities at work (outside or inside the workplace) includes his personal goals and the time he spends with his family. As explained above, especially during the pandemic the boundaries between work and family were severely affected as work was done at home. The conflict has increased due to globalization, the economic situation or to the personal aspirations of mothers, and also, the number of couples where both work is increasing (Bennett et al., 2017). The work-family conflict in general is the interference between the aspirations or needs of the individual who works and his family role and his personal aspirations. Like any person, teachers, doctors or any other professional, they need a time where they can carry out other types of activities, whether sports, cultural, recreational, etc. A very special case occurs, for example, when the worker has children or family members to take care of and who require special attention from the worker. Various authors have shown a relationship between work-family conflict and the intentions to look for another job (Carr et al., 2008; Nohe, Sonntag, 2014). There is also a strong relationship between work-family conflict and organizational commitment (Casper et al., 2002; Talukder, 2019). According to Soomro et al. (2018), in a study carried out on professors in Pakistan at public universities, found that the balance between work and family has a significant positive effect on performance and those individuals who can achieve this balance are committed to the organization.

#### **Leadership and relationships at work**

The fourth category is made up of leadership and relationships at work. This category includes some aspects of leadership, relationships with co-workers and supervisors, and workplace violence. This category is important due to the possible aggressions that could occur at work, especially by students towards teachers. Although the attacks can be of different types (physical, cyber, etc.), one of the most reported is sexual assault, which can occur at any level within the university. In a study conducted at Canadian universities, Bergeron et al. (2019) reported that a third of the surveyed population of employees, teachers and students suffered some form of sexual violence, with minorities being more prone to this phenomenon.

Leadership is a concept that has received wide attention due to its importance in the world of work. One of the authors who has studied this phenomenon in detail is Northouse (2015), who defines it as "A process by which a person influences a group of individuals to achieve a common goal." (p. 5). The leader can have different positions in the university from the rector to the head of the area, but as in general in the academies, the process is participatory and implies that the

professors can express their opinions freely. According to Mefi, Asoba (2021), the relationship between leadership and the satisfaction of university professors is not a linear relationship and has many variables that must be taken into account in the process (such as workload, the relationship with colleagues, work-family conflict, etc.). Other factors such as recognition, autonomy, job security are also associated with leadership. In general, we can say that the leader has the function of managing the teacher's needs and can improve some of the variables that intervene in the satisfaction process (Khan et al., 2020).

Regarding relationships between colleagues, relationships of respect between peers and the behavior of how the person's actions can affect other colleagues is important when a group of people works together in small spaces. This can be grouped in the concept of "organizational citizenship behavior" since it implies a voluntary behavior that goes beyond what is expected by the worker in relation to the behavior that he has with his co-workers for the benefit of the organization. In this sense, it is important to say that in small spaces such as teachers' cubicles, the use of cell phones, student counseling and other types of behavior can affect or interfere with the work of other teachers. There are studies that propose that human resource practices and organizational citizenship behavior facilitate organizational performance (Taamneh et al., 2018). According to Rita et al., (2018), leadership can have an effect on good relations between workers through organizational citizen behavior and its application can increase the motivation of workers.

### **Organizational environment.**

This category includes the domains of performance recognition, belonging to the organization and job instability (intentions to change jobs). Employees put forth effort in return for pay, recognition, and other important work outcomes, but job insecurity introduces a sense of violation of these expectations and leads to worsening attitudes (Mahmoud et al., 2021). In the academic field in Mexico there are multiple types of contracts for university professors that can generally be divided into two full-time and part-time. Full-time professors at public universities can access certain economic incentives according to their academic level and performance, and those who are hired part-time generally do not have any type of economic incentive (Rodríguez-Lagunas et al., 2021). In this last group there are many teachers who have serious salary and social benefit deficiencies.

In a study conducted in Spain by Ozamiz-Etxebarria et al. (2021) in teachers of different educational levels found that there was a high degree of stress among them and those who had job instability had a higher percentage. Therefore, these authors suggest that in order to safeguard the well-being of the students, it is first necessary to safeguard the well-being of the teachers, since the quality of learning depends on them. In relation to organizational commitment, Mwesigwa et al. (2020), found that leadership styles and job satisfaction are related to organizational commitment in African universities; the high demands that universities impose, imply that university authorities must develop the necessary skills to meet the needs of teachers and meet their expectations.

Supporting this notion, the five categories presented above are very broad and each of them could consider various elements to be evaluated different from those proposed in the standard, depending the circumstances and points of view. However, in this study we will proceed to propose essential elements of the domains proposed to advance their validation in the field, and subsequently establishing lines of research that can support the enrichment of this work.

## **2. Method**

To perform an evaluation of the reliability of the questionnaire, an exploratory analysis was carried out with questionnaires previously validated by various authors (not necessarily belonging to the educational sector). A Likert scale from 1 to 5 was used, where 1 indicated totally disagree and 5 totally agree. The exploratory factor analysis technique was chosen because there are practically no previous studies reported on the questionnaire in the literature, as in the case of the COSPSOQ mentioned above. According to Lloret-Segura et al. (2014) both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) are used to evaluate a factorial structure underlying a correlation matrix, but while EFA seeks to build a theory, CFA seeks to confirm a theory. In this case, it is intended to build a theory since, from different authors, a generic guideline that complies with the STPS standard will be proposed.

To determine the adequacy of the EFA test using the principal components method, the KMO (Kaiser, Meyer, Olkin) sample adequacy measure was calculated, which tests whether the partial correlations between the variables are small enough. This test allows to compare the magnitude of

the observed correlation coefficients with the magnitude of the partial correlation coefficients. The KMO statistic varies between 0 and 1. Small values indicate that the factorial analysis is not adequate (de la Fuente-Fernández, 2011). Additionally, Bartlett's sphericity test was calculated to test the null hypothesis that the correlation matrix is an identity matrix, in which case there would be no significant correlations between the variables and the factorial model would not be relevant. The significance value of the test must be close to zero, which means that the variables are highly correlated to provide a basis for factor analysis (Leech et al., 2013). The communalities were also calculated, which is the proportion of the variance that can be explained by the factorial model obtained. To complement the EFA, the eigenvalues, the load of the items and the percentage of explained variance were calculated. To carry out the EFA, SPSS v24 was used.

### Data Analysis

A sample of 300 university professors from the State of Guanajuato and Querétaro was obtained. 52 % were women and 47 % were men. Ages ranged from 25 years to over 66 years. 16 % are between 25 and 35 years old, 27 % are between 36 and 45 years old, 30 % between 46 and 55 years old, 20 % between 56 and 65 years old and the remaining (approximately 6%) are over 66 years old. Most of the teachers are married (63 %) and the remaining 36 % are single. 5 % of those surveyed belong to private universities and the remaining 95 % to public universities. The studies that the professors have are: 19 % bachelor's degree, 48 % master's degree, 28 % doctorate and 4 % post doctorate. The form of hiring of professors is: full-time professors 53 %, ¾-time professors 3 %, part-time professor 2 %, professors by subject 11 % and fee professors 31 %. The experience teachers have varied from less than one year to more than 30 years, distributed as follows: less than one year 3 %, from 1 to 9 years 30 %, from 10 to 19 years, 29 %, from 20 to 29 years old 21 % and more than 30 years old 17 %. It is important to mention that the questionnaires were completed in the first half of 2022, where there was still a high risk of infection by COVID-19 and the highly contagious omicron variant generated the fourth wave in Mexico.

To test each of the categories proposed by the standard, AFEs were carried out and the results were as follows:

a. Work environment. For the category of work environment, the Unda et al. (2016). The same items presented by these authors were taken as they were in Spanish, but only those that were considered best adapted to the study were included. Tables 3, 4 and 5 show the result of the analysis, where only one factor was found, which indicates agreement with the norm. The AFE meets accepted statistical criteria.

**Table 3.** Items evaluated for the work environment category

Items: Work environment conditions (resources).	Communalities
R1 The materials I need for the job are purchased with my own salary.	0.729
R2 It bothers me that I lack resources for research.	0.732
R3 The institution forces me to manage my own resources.	0.798
R4 It annoys me to have to use my own financial resources when I attend a conference.	0.813

Source: SPSS

**Table 4.** AFE of work environment

KMO	Significance of the Bartlett test	Explained variance	Number of factors found
0.70	P < 0.00	59 %	1

KMO = Kaiser, Meyer, Olkin index

Source: SPSS

**Table 5.** Factor loads of the items and Cronbach's alpha

Item	Load	Chronbach's Alpha
R1	0.73	
R2	0.73	
R3	0.80	
R4	0.81	
		0.77

Source: SPSS

b. Factors specific to the activity. According to [Table 2](#) presented above, the aforementioned category has two domains: workload and lack of control over work. The items analyzed were taken from Unda et al. (2016). Next, the analysis carried out is shown where the obtaining of two factors is shown. [Tables 6, 7](#) and [8](#) show the analysis.

**Table 6.** Items evaluated for the category factors of the activity

Items: Workload	Communalities
S1 I have a heavy workload	0.649
S2 Preparing papers for conferences takes a lot of time	0.606
S3 Conducting research takes a lot of time	0.561
S4 I spend a lot of time grading my students' work	0.396
S5 I have little time to attend to the diversity of tasks	0.397
Items: Lack of control over work	
FC1 The laziness of my students bothers me	0.743
FC2 My students are irresponsible	0.454
FC3 The ignorance of my students bothers me	0.647
FC4 I am angry about the students' lack of interest in learning	0.743
FC5 Students do not complete their homework	0.363
FC6 The lack of punctuality of my students exasperates me	0.592

Source: SPSS

**Table 7.** AFE of the category factors of the activity

KMO	Significance of the Bartlett test	Explained variance	Number of factors found
0.84	P < 0.00	56 %	2

KMO = Kaiser, Meyer, Olkin index

Source: SPSS

**Table 8.** Factor loads of the items and Cronbach's alpha

Item	Load	Chronbach's Alpha
Items: Factors of the activity		
S1	0.79	
S2	0.77	

S3	0.75	
S4	0.60	
S5	0.60	0.76
FC1	0.86	
FC2	0.67	
FC3	0.78	
FC4	0.86	
FC5	0.59	
FC6	0.74	0.86

Source: SPSS, using the varimax rotation method

c. Organization of working time. According to the norm, the category has two dimensions: working hours and interference in the work-family relationship. The items related to the working day were taken directly from the NOM-035 and the work-family relationship from the article by Chen et al. (2020). Next, the analysis of the items is shown, the result indicates the obtaining of a single factor. Tables 9, 10 and 11 show the analysis.

**Table 9.** Items evaluated for the category factors of the activity

Items: Organization of working time	Communalities
J1 I work overtime more than three times a week	0.49
J2 My job requires me to work on days off, holidays or weekends	0.38
TF1The workload affects my family life.	0.75
TF2The amount of time my work takes makes it difficult for me to fulfill family responsibilities.	0.76
TF3The workload makes it difficult for me to carry out my personal tasks and/or pursue hobbies.	0.73

Source: SPSS

**Table 10.** AFE of the category factors of the activity

KMO	Significance of the Bartlett test	Explained variance	Number of factors found
0.89	P < 0.00	62 %	1

KMO = Kaiser, Meyer, Olkin index

Source: SPSS

**Table 11.** Factor loads of the items and Cronbach's alpha

Item	Charge	Chronbach's Alpha
Items: Organization of working time		
J1	0.70	
J2	0.62	
TF1	0.70	
TF2	0.62	
TF3	0.86	

TF4	0.88	
TF5	0.66	0.89

Source: SPSS

d. Leadership and relationships at work. Two domains, leadership and violence, were tested in this category. The items analyzed were taken from Unda et al. (2016). The result of the analysis shows that three factors were obtained. In this case, there are five items that, according to the analysis carried out, are perceived by teachers as relationships at work and not as leadership and were taken from the questionnaire proposed by Unda et al. (2016). Tables 12, 13 and 14 show the analysis.

**Table 12.** Items evaluated for the category leadership and relationships at work

Items: Leadership	Communalities
L1 My supervisor is authoritarian	0.71
L2 My supervisor hinders my work	0.74
L3 My supervisor has arrogant attitudes	0.68
L4 I receive little support from my supervisor	0.50
L6 I receive conflicting orders	0.61
Items: relationships at work	
L5 In my institution I am treated unfairly	0.53
L7 My supervisor do not recognize my effort	0.38
L8 I perceive a lack of recognition from my classmates	0.65
L9 My colleagues accept corruption	0.45
L10 Resources are given only to a few	0.55
Items: Violence	
V1 I am afraid of insecurity inside my institution	0.75
V2 An atmosphere of insecurity is perceived in the institution	0.69
V3 I am worried about being assaulted at work	0.60
V4 Security measures are inadequate	0.43
V5 There is excessive noise in the buildings where I teach	0.34

Source: SPSS

**Table 13.** AFE of the category factors of the activity

KMO	Significance of the Bartlett test	Explained variance	Number of factors found
0.90	P < 0.00	57 %	3

KMO = Kaiser, Meyer, Olkin index. Source: SPSS

**Table 14.** Factor loads of the items and Cronbach's alpha

Item	Charge	Chronbach's Alpha
Items: Leadership		
L1	0.74	
L2	0.80	
L3	0.80	
L4	0.52	

L6	0.60	0.88
Items: relationships at work		
L5	0.66	
L7	0.60	
L8	0.75	
L9	0.58	
L10	0.65	0.77
Items: Violence		
V1	0.80	
V2	0.80	
V3	0.65	
V4	0.57	
V5	0.50	0.76

Source: SPSS Note: using the varimax rotation method

e. Organizational environment. The category of organizational environment is made up of the dimensions of recognition of performance and the sense of belonging in the organization. The items were taken from Patlán-Pérez (2021). The corresponding analysis is shown below. The [Tables 15, 16](#) and [17](#) show the analysis.

**Table 15.** Items evaluated for the category organizational environment

Items: Recognition of performance	Communalities
R1 I feel motivated because my supervisor gives me feedback at work	0.66
R2 My supervisor tells me how to improve my work	0.67
R4 I feel satisfied when receiving information about my work performance	0.75
R5 My supervisor informs me about my performance at work	0.52
R1 I feel motivated because my supervisor gives me feedback at work	0.66
Items: Sense of belonging	
PI1 I participate in the decision-making of my work	0.44
PI2 I feel responsible and make decisions at work	0.60
PI3 I feel important because I participate in the decisions that are made at work	0.67
PI4 I have the freedom to make decisions	0.54
PI1 I participate in the decision-making of my work	0.44

Source: SPSS

**Table 16.** AFE of the category factors of the activity

KMO	Significance of the Bartlett test	Explained variance	Number of factors found
0.87	P < 0.00	62 %	2

KMO = Kaiser, Meyer, Olkin index.

Source: SPSS

In relation to the statistical analysis performed, we can conclude that there are categories and domains relevant to the psychosocial risk of teachers according to NOM-035. The result of the AFE shows satisfactory values according to the generally accepted statistical criteria. These results show

that domains were found to evaluate the categories proposed by NOM-035 proposed by the Mexican legislation but it could be used as basis of a general evaluation of psychosocial factors for the academia.

**Table 17.** Factor loads of the items and Cronbach's alpha

Item	Charge	Chronbach's Alpha
Items: Recognition of performance		
R1	0.85	
R2	0.84	
R3	0.80	
R5	0.571	0.86
R1	0.85	
Items: Sense of belonging		
PI3	0.81	
PI4	0.68	
R4	0.65	
PI1	0.62	
PI2	0.49	0.76

Source: SPSS Note: using the varimax rotation method

### 3. Results

Once the criteria for each of the variables had been calculated, the descriptive calculations of each of the domains were carried out to identify the problems associated with the psychosocial factors of the teachers. According to the results, the domain best evaluated by the teachers was the sense of belonging ( $\mu = 3.7, \sigma = 0.75$ ), highlighting that the teacher feels identified with her institution. It was followed by performance recognition ( $\mu = 3.2, \sigma = 1.05$ ), workload ( $\mu = 3.1, \sigma = 0.8$ ), resources ( $\mu = 2.9, \sigma = 0.96$ ), lack of control over work ( $\mu = 2.8, \sigma = 0.96$ ), organization of work time ( $\mu = 2.6, \sigma = 0.9$ ), relationships at work ( $\mu = 2.2, \sigma = 0.81$ ) and violence at work ( $\mu = 2.1, \sigma = 0.74$ ) and leadership ( $\mu = 1.9, \sigma = 0.85$ ). According to the results, we must analyze point by point what is happening with each domain and identify the domains that are being poorly qualified, since there are some that are in a negative sense and look for strategies to improve the work of professors within the universities.

### 4. Discussion

The circumstances detonated by the sanitary contingency showed that the work done by all kind of workers must be reevaluated taking in account the risk. Our results show that psychosocial factors must be included in the university context to identify the risk levels that professors have at work.

We performed a series of exploratory factor analyses (EFA) to test the factor structure of the categories proposed in the Mexican law. We found that the questionnaires selected to measure the five categories proposed by STPS are adequate for evaluating the psychosocial factors. These categories and items could be used to evaluate the risk that professors have at universities during critical times as the one we have in recent years but also, in a post pandemic situation.

According to our results the worst evaluated domains were leadership and violence. Leadership should be improved to manage the complex conditions that the post pandemic situation has detonated. Thus academic leaders have to adapt to the environment and provide guidance to their personnel and to students to meet academic goals. The violence problem in university in Mexico is a challenge that needs to be attended by federal and local authorities. Students, academic and in general all the personnel need safe conditions to ensure that the environment fosters the conditions to achieve academic performance.

The conditions of the post pandemic crisis are still emerging. The economic situation is becoming critical as the inflation rate is not under control in many countries (Ciravegna, Michailova, 2022). Also, political factors as the war in Europe and the confrontation between China and USA are promoting an extremely complex world with repercussions for the more vulnerable. In these sense, universities are not excluded. Many students won't find the way to finance their studies and professors must afford a continuous decrease in resources for the academia. This will propitiate an increase in stress and work conditions for academic personnel.

### **5. Conclusion and Recommendations**

NOM-035-STPS-2018 is a recently created standard in Mexico that must evolve over time to be perfected and find the parameters that meet the statistical criteria recommended by experts. The norm, as its text mentions, allows adaptations and in this case one proposed for this purpose is presented. In this sense, we must take into account that the questionnaire proposed in Denmark (COPSOQ), which already has a solid evolution, is not only an information collection instrument, but also an organizational intervention instrument for continuous improvement.

This article presents a valid instrument for the evaluation of psychosocial risk factors for university teachers and can be used anywhere in the world. In reality, there are few questionnaires that have been tested for these characteristics after the pandemic and in the most critical period when most of the universities began to work with active cases. University professors, like any worker, have the right to be treated according to the ILO guidelines proposed in international treaties. The proposed instrument can contribute to the literature in proposing new questionnaires and dimensions to assess working conditions for university professors. Also, as mentioned before, in countries with high risk of violence, the university authorities need to know how the professors feel.

University authorities should provide to the university community a learning environment that meets the highest requirements that young people deserve. Also, the professors or researchers should be supported in their efforts to contribute to science and technology. In developing countries, the need of competent professionals and the increase of the development of science and technology should be a priority for education as for politicians. These goals can't be achieved without the adequate academic personnel.

The present proposal for an instrument to assess the risks of psychosocial factors at work for university professors could serve as a basis for later work where other types of countries can be integrated in addition to Mexico. It is necessary to clarify that the university contexts are not the same in the various countries of the world and depend on the system that each country has. However, university professors are continually under the scrutiny of society without taking into account that this type of work also presents risks that must be evaluated.

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## Depressive Symptoms among Medical Students: A Cross-Sectional Study of Prevalence and Sociodemographic Determinants in Ghana

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### Abstract

Depression is a global public health burden and affects all populations, especially students. Several studies worldwide have indicated depression among medical students as a significant concern, often leading to adverse effects on their quality of life, training and future practice. As part of academic and clinical training, medical students are usually exposed to daily academic and clinical demands significantly associated with depressive symptoms. In Ghana, where mental health is less prioritised and stigmatised, many citizens, including students, suffer without support. This study aimed at identifying the prevalence of depressive symptoms and associated demographic factors among medical students using a public university's medical school in Ghana. We selected two hundred thirty-two participants and screened them with the Beck Depression Inventory. The participants were across all the six year-levels of the medical school. The results showed that about 30 % of the students experience moderate to severe depressive symptoms. Also, female medical students experienced significantly higher depressive symptoms ( $M = 18.69$ ) than male medical students ( $M = 12.82$ ). Furthermore, students under 25 years of age experienced higher levels of depressive symptoms ( $M = 16.49$ ) than those 25 years and above ( $M = 9.52$ ). Besides, fee-paying medical students experienced higher depressive symptoms ( $M = 16.28$ ) than regular students ( $M = 11.69$ ). In conclusion, the prevalence of depressive symptoms screened among the medical students in our study was quite alarming. Thus, there is an urgent need to implement various mental health promotion interventions, policies, and stakeholder engagements

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to address depression among medical students in Ghana. Our findings have implications for research, medical training, and policy.

**Keywords:** depression, prevalence, sociodemographic factors, medical students, Ghana.

## **1. Introduction**

In Ghana, students' mental health is least considered as the country has given very little attention to mental health in general over the years. Meanwhile, the World Health Organisation (WHO, 2008) indicated that depression is the leading cause of disability worldwide. Unfortunately for medical students in Ghana, they are perceived as most privileged or rather endowed, and many will not be expected to experience mental difficulties. Meanwhile, evidence abounds that the nature of the programme in medical school, the demands and student life, in general, have substantial implications for mental health (Basnet et al., 2012; Jadoon et al., 2010).

Depression is a typical result of the pressures students face in medical school (Shaikh et al., 2004), as the condition has been prevalent among students in general (Kugbey et al., 2015; Peltzer et al., 2013). This situation has been observed in many countries across the globe. In Egypt, for example, according to Ibrahim and Abdelreheem (2015), the prevalence rate of depression among medical students compared to their colleagues studying Pharmacy at the University of Alexandria was 57.9 % and 51.1 %, respectively. Depression among medical students has been linked to several factors, including gender and years of study. For example, Ihab Wafaa Hafez et al. (2020) noted among medical students in Egypt that moderate to severe depression is predicted by the female gender, presence of mental illness, not having someone to talk to when under stress, stressful life events, socioeconomic level, poor learning environment, and poor grades. Female medical students have been found to experience higher levels of depression than males (Jadoon et al., 2010; Shabbir, Bashir, 2016), and this has been consistent across the literature.

Another study by Inam (2007) comparing the prevalence of depression among male and female medical students in the pre-clinical years in medical colleges in Saudi Arabia showed that the prevalence of anxiety and depression in female students is 60.6 % and in males is 44.4 %. His study also showed that pre-clinical year 1 records higher depression, followed by year 3 before year 2. However, Ghana remains one country with little information on the prevalence of depression and other mental health challenges among medical students. There is a need for scientific investigations in Ghana to explain why students in medical school may need mental health attention throughout their study period. In the current study, the extent to which students in a medical school in Ghana suffer depression are examined, and recommendation is made. In Ghana, medical students are held in high esteem, neglecting the peculiar challenges they may face. Thus, the study answers two main questions: 1. What is the prevalence of depressive symptoms among medical students at the University of Health and Allied Sciences? and 2. What demographic factors are associated with depression among medical students?

## **2. Method**

### **Study Design**

We used a cross-sectional survey design to reach out to a good section of medical students on the subject matter. With this, we selected students from all levels in the school of medicine for the study.

### **Population and sample**

The study population was the students of the School of Medical at the University of Health and Allied Sciences, Ho, Ghana. This population comprised medical students (MBChB) from levels 100 to 600. The University of Health and Allied Sciences has the youngest medical school in Ghana, with its first batch of medical students to graduate in the year of this study. Therefore, the entire population of the university's medical school was the population for the survey (Sarfo et al., 2022). Thus, we selected 232 participants (146 males and 86 females) for the study. Also, our participants comprised 119 and 113 from the pre-clinical and clinical years, respectively.

### **Data collection tools**

The twenty-one-item Beck Depression Inventory (BDI) (Beck et al., 1996) was used to measure the depressive symptoms of the students. Responses were rated on a scale of zero (0) to three (3), with higher ratings indicating higher severity of depression. Items one to thirteen measure psychological symptoms, while items fourteen to twenty-one measure more physical

symptoms. Responses were added up to get a total score. Scores were categorised into normal (1–13), mild mood disturbance (14–19), mild depression (20–28), moderate depression (29–63), and severe depression.

**Data collection procedure**

Ethical approval was obtained from the University of Health and Allied Sciences Research Ethics Committee to gather data for the study. Permission was obtained from the School of Medicine to conduct the survey among the students. Various course/level representatives were contacted and arranged to meet students before their lectures began. The purpose of the study was discussed with each class visited, and the research consent forms were distributed alongside the questionnaire. Students who completed the consent form and the questionnaire were selected for the study. Moreover, students who were not available when the class was engaged in the study were not considered for the study.

**Data Analysis**

The data collected was organised in Excel spreadsheets and imported into the Statistical Package for the Social Sciences (SPSS), version 20.0, for analysis. Data were analysed using independent t-tests, ANOVAs and descriptive statistics.

**3. Results**

The study’s results are presented in line with its aims. These include the levels of depression and the factors associated with depression among medical students. Table 1 shows the demographic information of participants in the study, where more males (146) than females (86) were obtained for the study, with 182 falling under the age of 25. Most participants are also full-fee-paying students (72 %) since the school generally has more fee-paying medical students than regular-fee students. Most participants are also funded by their parents (75.9 %), with a few (2.2 %) funding their medical school education.

**Table 1.** Demographic characteristics and levels of depressive symptoms

Demographics	Categories	Frequency (n)	Percent (%)
Sex	Female	86	37.1
	Male	146	62.9
Age	<25 years	182	78.4
	≥ 25 years	50	21.6
Admission type	Regular	65	28.0
	Fee-paying	167	72.0
Year of study	Year 1	29	12.5
	Year 2	48	20.7
	Year 3	42	18.1
	Year 4	42	18.1
	Year 5	36	15.5
	Year 6	35	15.1
Funding source	Self	5	2.2
	Guardian	18	7.8
	Scholarship	33	14.2
	Parent	176	75.9
Level of depressive symptoms	Normal	71	30.6
	Mild	91	39.2
	Moderate	47	20.3
	Severe	23	9.9

In Table 1, the frequencies/percentages of students at various levels of screened depressive symptoms are presented. It is observed that 30 % and 39.2 % experience normal and mild depressive symptoms. On the other hand, 20.3 % and 9.9 % experience moderate and severe depressive symptoms. These figures suggested that many medical students experienced depressive symptoms since about 30 % showed moderate to severe levels of the condition. A cross-tabulation of the depressive symptoms and demographic factors such as gender, age, level of study, and admission type is presented in Table 2. The results in Table 2 indicated that for moderate to severe depressive symptoms screened, the prevalence rate for students in pre-clinical years was 22.5 % against 7.8 % for clinical years. Fee-paying students reported 25 % moderate to severe depressive symptoms against 5.1 % for regular students. Besides, gender and age disparities in prevalence also showed 16 % females compared to 14.2 % males, and those below 25 years have 27.6 % and 2.6 % for those aged 25 years and above reporting moderate to severe symptoms. These differences in scores were further subjected to independent t-testing (see Table 3 for details).

**Table 2.** Cross-tabulation of levels of depressive symptoms and demographic factors

Demographics	Categories	Levels of depression			
		Normal	Mild	Moderate	Severe
Year of study	Pre-clinical	22 (9.5 %)	45 (19.4 %)	34 (14.7 %)	18 (7.8 %)
	Clinical	49 (21.1 %)	46 (19.8 %)	13 (5.6 %)	5 (2.2 %)
Admission type	Fee-paying	40 (17.2 %)	69 (29.7 %)	39 (16.8 %)	19 (8.2 %)
	Regular	31 (13.4 %)	22 (9.5 %)	8 (3.4 %)	4 (1.7 %)
Gender	Male	54 (23.3 %)	59 (25.4 %)	25 (10.8 %)	8 (3.4 %)
	Female	17 (7.3 %)	32 (13.8 %)	22 (9.5 %)	15 (6.5 %)
Age	<25 years	42 (18.1 %)	76 (32.8 %)	43 (18.5 %)	21 (9.1 %)
	≥ 25 years	29 (12.5 %)	15 (6.5 %)	4 (1.7 %)	2 (.9 %)

The results in Table 3 showed that female medical students experienced a significantly higher level of depressive symptoms ( $M = 18.69$ ) compared to their male colleagues ( $M = 12.82$ ), [ $t(230)=4.28, p=.001$ ]. Furthermore, students under 25 years of age reported higher depressive symptoms ( $M = 16.49$ ) than those 25 years and above ( $M = 9.52$ ), [ $t(230)=4.33, p=.001$ ], while fee-paying medical students had higher levels of symptoms ( $M = 16.28$ ) than regular students ( $M = 11.69$ ), [ $t(230)=3.05, p=.001$ ]. It is further shown in the results that pre-clinical year medical students experienced higher levels of depressive symptoms ( $M = 18.24$ ) than those in their clinical years ( $M = 11.58$ ), [ $t(230)=5.102, p=.001$ ]. In effect, females, students under 25 years, fee-paying medical students and pre-clinical year students in our study experienced higher levels of depression than their counterparts.

**Table 3.** Independent t-test showing differences between demographic variables on depressive symptoms

Demographics	Categories	N	Mean	SD	t	p
Gender	Male	146	12.82	9.262	4.280	.000
	Female	86	18.69	11.368		
Age	<25 years	182	16.49	10.472	4.332	.000
	≥ 25 years	50	9.52	8.488		
Admission type	Fee-paying	167	16.28	10.606	3.050	.003
	Regular	65	11.69	9.382		
Study level	Pre-clinical	119	18.24	10.690	5.102	.000
	Clinical	113	11.58	9.079		

Note. Degree of freedom = 230, Bonferroni adjustment = .012

Following our findings in [Table 3](#), it was essential to identify the specific year of medical school study associated with a higher level of depression. Also, funding poses a challenge to many students in Ghana. Thus, it is vital to examine how these factors influence depressive symptoms among medical students. Therefore, a two-way ANOVA was conducted to compare the six different medical school years and the various funding sources on the severity of depression. The result is presented in tables ([Table 4](#) – mean and standard deviation scores of the funding sources and years of study and [Table 5](#) – the ANOVA results).

**Table 4.** Descriptive statistics showing the means scores of sources of funding and year of study on depressive symptoms

Source of funding	Year of Study	N	Mean	Std. Deviation
Parent	Year 1	21	24.29	15.222
	Year 2	39	16.67	8.161
	Year 3	30	18.03	10.427
	Year 4	35	15.11	8.917
	Year 5	24	11.12	9.190
	Year 6	27	9.00	8.762
	Total	176	15.57	10.805
Guardian	Year 1	2	27.00	14.142
	Year 2	3	7.00	3.464
	Year 3	1	33.00	-
	Year 4	2	2.50	2.121
	Year 5	5	11.00	12.884
	Year 6	5	10.60	6.841
	Total	18	12.28	11.478
Self	Year 3	1	4.00	-
	Year 4	2	5.50	.707
	Year 5	2	8.50	10.607
	Total	5	6.40	5.683
Scholarship	Year 1	6	17.33	8.595
	Year 2	6	12.67	6.501
	Year 3	10	17.70	6.237
	Year 4	3	10.67	15.144
	Year 5	5	14.20	6.419
	Year 6	3	8.33	4.619
	Total	33	14.70	7.756
Total	Year 1	29	23.03	13.968
	Year 2	48	15.56	8.100
	Year 3	42	17.98	9.784
	Year 4	42	13.74	9.435
	Year 5	36	11.39	9.169
	Year 6	35	9.17	8.115
	Total	232	14.99	10.463

Findings in [Table 5](#) indicated that the funding source has no significant effect on depressive symptoms among medical students [ $F(3, 232)=1.73, p=.16$ ]. However, the study year significantly affected participants' depressive symptoms [ $F(5, 232)=1.73, p=.00$ ]. Multiple comparisons are conducted, and the result is presented in [Table 6](#).

A comparison of the years of the study presented below showed that year 1 differed significantly from year 2, year 4, year 5 and year 6. The result also revealed that year 3 differed considerably from years 5 and 6. This finding indicated that medical students in year 1 experienced higher levels of depressive symptoms compared to years 2, 4, 5, and 6. Also, those in year 3 experienced higher symptoms than participants in years 5 and 6 since year 1 recorded the highest mean, followed by year 3 (see [Table 4](#)).

**Table 5.** Two-Way ANOVA showing the effects of source of funding and year of study on depressive symptoms

Source	Sum of Squares	df	Mean Square	F	p
Intercept	8861.923	1	8861.923	94.678	.000
Funding source	486.083	3	162.028	1.731	.162
Year of Study	1844.086	5	368.817	3.940	.002
Funding source * Year of Study	1110.762	12	92.563	.989	.461
Error	19749.687	211	93.600		
Total	77428.000	232			

**Table 6.** Bonferroni Multiple Comparisons

(I) Year of Study	(J) Year of Study	Mean Difference (I-J)	p
Year 1	Year 2	7.472*	.019
	Year 3	5.058	.480
	Year 4	9.296*	.001
	Year 5	11.646*	.000
	Year 6	13.863*	.000
Year 2	Year 3	-2.414	1.000
	Year 4	1.824	1.000
	Year 5	4.174	.787
	Year 6	6.391	.051
Year 3	Year 4	4.238	.700
	Year 5	6.587*	.047
	Year 6	8.805*	.001
Year 4	Year 5	2.349	1.000
	Year 6	4.567	.615
Year 5	Year 6	2.217	1.000

#### 4. Discussion

The current study aimed to establish the levels and factors associated with depression among medical students. The results showed that females, medical students under 25, fee-paying students, and pre-clinical years especially years 1 and 3, experienced higher depression levels. These findings are essential as little is known about the mental health of medical students in Ghana. The prevalence of depression established in the study shows that about 30 % of the students experience moderate to severe depression. This significant proportion requires attention as these can affect their training and general well-being.

Over the years, it has been evident in the literature that depression is prevalent among medical students (Anderson et al., 2022; Basnet et al., 2012; Pham et al., 2019; Tam et al., 2019). The journey to entering medical school in itself is stressful and depressing for many (Shabbir, Bashir, 2016). Unfortunately, little is known about this situation in Ghana. However, a study among medical students at the University of Cape Coast in Ghana revealed that students experienced stress from their academic work (Forde et al., 2015). Indeed, academic demands in medical schools globally are challenging, posing a serious threat to their mental health. According to Kugbey et al. (2015), students in Ghana generally experience mental health challenges such as depression and anxiety. Therefore, this situation requires attention, especially for medical students who complete and attend to the country's health needs.

Apart from academic workload, several other factors related to individual students account for the level of depression among medical students. Gender is one such factor observed in this study. It was observed that the female gender is more susceptible to depression than the males. Gender differences in depression are common knowledge in mental health due to several differences between males and females (Goodwin, Gotlib, 2004; Hou et al., 2020; Sagud et al., 2002). It must interest

university counsellors to pay extra attention to females in universities, especially medical schools to assist such students with their academic challenges (Alharbi et al., 2018).

Age is a significant factor observed in this study to impact depression among medical students. Medical students below age 25 were found to experience a higher level of depression than those aged 25 and above. This finding on the impact of age on depression contradicts Jadoon et al. (2010) and Shabbir and Bashir (2016), who found no association between age and depression among medical students. However, the age of medical students can be related to their years of study. The current study's year of study significantly affects depression among medical students.

It was observed that those in their pre-clinical years experienced higher levels of depression than those in their clinical years. A further analysis comparing the individual years of the study indicates that those in year 1 recorded the highest level of depression, followed by years 3 and 2. This finding is similar to Inam's (2007) and Alharbi et al.'s (2018) studies. Typically, the pre-clinical years of medical school require students to successfully pass several courses, especially in the basic sciences, which can be challenging and stressful. Evidently, the fear of failure, increased workload, and adjustment challenges, especially for those in the early years, are expected more than those in the clinical years.

The type of admission of medical students is another significant factor observed in this study to influence depression among medical students. Medical schools in Ghana admit students on two statuses: full fee-paying and regular students. For the average Ghanaian, full-fee paying is an expensive option for a child's education. Currently, that option is becoming the norm in all medical schools in Ghana. As such, students may experience delays in paying their fees from their parents or any funding source. This challenge in funding medical education in Ghana needs to be examined, as it could add to students' stress and exacerbate their levels of depression.

## **5. Conclusion**

Our study noted an alarming risk for depression among our participants. Clearly, in this study, it can be concluded that depression is a relatively common challenge among medical students. Individual sociodemographic factors and the general nature of the medical training programme and funding were crucial determinants of depressive symptoms among participants. We also noted that the pre-clinical years in medical school are critical. Currently, the fee-paying policy introduced into medical education in Ghana should be expected to complicate the mental health of students and their parents. Ghana's mental health predicament is yet to be fully recognised at the policy level, although some remarkable transformations have been achieved so far. Depression has globally been reeking havoc for years. Though the situation may not differ in Ghana, data on current affairs is scarce. This situation is a wake-up call for school counsellors and university managers to institute measures that will cater to the mental health needs of students in Ghana. Parents must also intensify support for their wards regardless of their academic achievements. Future qualitative research should look at the lived experiences of medical students regarding funding their education and its implication on their mental health in Ghana. Policies on medical training in Ghana must consider the mental health needs of students and should ensure access to assessment and management services.

## **6. Acknowledgments**

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## **7. Conflict of interest**

The authors report no conflict of interest.

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## Problems of Student Communication in Online Learning

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### Abstract

Despite the lifting of epidemiological restrictions, online learning has not lost its relevance. There are noted the development of hybrid forms of education, the integration of traditional and remote work formats. In this regard, the relevance is the study of the communication process, which becomes a predicate of many dysfunctions in the education system. It is the communication between students and the teacher that is subject to the greatest transformations in the conditions of online learning. The purpose of the author's research is to analyze the experience of online learning for students of Russian universities, to identify the problems of communication between participants in the educational process in the new conditions. The authors used a set of general scientific research methods and analytical procedures (document analysis, comparative analysis, analysis of arbitrary contingency tables using the  $\chi^2$  criterion, etc.). A questionnaire survey of students of Russian universities was chosen as the key research method. Empirical data are presented by the results of two measurements:  $N_1 = 1553$  (2020) and  $N_2 = 1107$  (2021). The results of the study showed that in the conditions of online learning, students for the most part highlight such negative trends as “deterioration of communication skills” and “decrease in skills for live communication with a teacher”. The personal experience of students during the pandemic led to a decrease in “technological optimism” and increased the importance of personal interaction with the teacher. Respondents who rated the quality of teacher feedback excellently feel less of such online learning problems as “routine” and “heavy workloads”. The authors established the relationship between the choice of the form of education (online or traditional) and the assessment of feedback between students and the teacher. In the course of the study, an inverse relationship was established between the involvement of students in the educational process and the opportunity to ask a question (or make a comment during the lesson). Students with a high level of involvement in

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the learning process were in the most vulnerable position in terms of maintaining communication. It is concluded that communication dysfunctions are the main limitation of the effectiveness of online learning, reducing student satisfaction from the educational process.

**Keywords:** higher school, online education, communications, feedback, students, digitalization of education.

### **1. Introduction**

Digitalization has become an integral part of everyday life today. Its wide distribution has affected all areas of social interaction, leaving a significant imprint on the specifics of not only receiving certain services, but also on the communication processes of key actors. The conducted studies illustrate the propensity of young people to transfer communication to online Internet communities, social networks and instant messengers. Youth use of these digital tools is observed in both informal and formal communications (Wood, Wheatcroft, 2020).

The education sector has not remained aloof from these trends. The transformation of approaches to solving educational problems and the transition to the active use of information and communication technologies in education are associated by Russian scientists with the globalization of the economy, the development of remote employment and epidemiological threats. All this in general imposes new requirements on the competencies and skills of future specialists (Eremeev et al., 2022; Reilly, Reeves, 2022). On the one hand, there is a need for changes in the training of personnel in accordance with the requirements of digitalization, on the other hand, educational practices themselves are actively changing under the influence of new conditions. In particular, learning technologies, teaching methods, criteria for assessing the quality of education are changing, which, in general, causes the transformation of communication processes in higher education.

As the results of studies conducted in 2020 by S. Sobko, D. Unadkat, J. Adams and G. Hull showed, students and digital technologies have a mutual influence on each other, as they function as elements of the "network of actors". This means that online learning in the context of digitalization has significant potential, since, according to foreign colleagues, synchronous online interaction with several digital technologies contributes to the successful formation of students' knowledge and improving the quality of task content analysis (Sobko et al., 2020). Expanding these findings, we can see that the socio-demographic characteristics of students leave their mark on the choice of digital tools and forms of communication in online learning. So, according to Ü. Çakiroğlu and M. Atabay, the exchange of information with adult students in the course of solving educational problems requires more effort on the part of the teacher. This category of students is required to review behavior patterns, bringing them into line with the characteristics of the online environment of the educational institution (Çakiroğlu, Atabay, 2022). Materials of studies conducted by L.A. Fiorini, A. Borg and M. Debono showed that online lectures were generally positively evaluated by adult part-time students, as they had a number of advantages important for balancing work, homework and study. At the same time, the issue of transforming communications for this category of students is not quite acute, although there were problems associated with the low skills of students working with digital technologies, the complexity of interaction with the teacher. A big advantage that allows students to come to terms with problems of a communicative nature is the ability to listen to lectures at a convenient time and place (Fiorini et al., 2022).

In a number of studies, these conclusions do not find sufficient confirmation. In particular, according to a number of scientists, students in online learning experience problems with time management, which leads to a decrease in self-organization, motivation, and, as a result, affects the points received (Keis, 2017). At the same time, if the teacher has established effective communications within the group, the possibility of teamwork has been built, then students will be interested in obtaining high results. It can be concluded that the digital tools used to build communication, both between teacher and student and within student groups, are of paramount importance today (Lee et al., 2019).

It is also noted that a change in the context of the teacher's work can lead to the loss of the teacher's professional identity. This dysfunction, according to M.K. Christensen, KJ.S. Nielsen and L.D. O'Neill is related to the fact that external conditions and factors of the educational process implementation transform the teacher's behavior. For example, the scaling of digitalization processes has led to a change in the very approach to organizing feedback between a teacher and a

student. There is a difficulty in using the “feeling of the class” in the work of the teacher, a decrease in mutual visual contact and the absence of non-verbal communication from students. The research results allow us to conclude that the digitalization of education actualizes the problems associated with the teacher’s inability to fully adapt their work to the needs of students, which also reduces their motivation and job satisfaction (Christensen et al., 2022). The development of the digital industry has also contributed to the professionalization of the development of online courses. In particular, the teacher today can access online educational marketplaces and purchase educational materials. This approach differentiates educators into entrepreneurs (producers) and consumers of educational content (Shelton, Archambault, 2020). The results of studies conducted on the basis of Thai educational institutions showed that most teachers have the necessary knowledge to develop educational content for online learning. However, the formation of its communication elements requires them to develop administrative and leadership skills (Wetcho et al., 2022).

In this regard, of interest are studies that reveal the stereotypes of perception of the digitalization of education, their impact on the formation of digital trust and loyalty of teachers to the introduction of digital technologies into the educational process (Matsiola, 2019). According to Nazarov, the effectiveness of these processes is associated with the development of the information and communication infrastructure of educational institutions, the reduction of the technological and competence digital inequality of the subjects of the educational space (Nazarov, 2021). It can be added that the formation of integrated educational resources and high-quality digital content can be a condition for increasing the effectiveness of the digitalization of education.

The development of online learning, an increase in the amount of remote interaction between a student and a teacher requires close attention of researchers to the communication component of this process. The experience of Chinese schools has shown that feedback during online interaction in the context of a pandemic and the transition to a remote format was not sufficiently developed. In particular, online learning used relatively simple digital methods to support the educational process, which became an obstacle to the introduction of creative approaches to learning and taking into account the individual needs of students (Shi, Fan, 2021). The experience of US educational institutions, in turn, showed cognitive tension in the perception of online communications by students. Thus, educational institutions focused on ensuring the diversity and safety of interaction, while the request of the students themselves lies in the plane of establishing clear norms of interaction, expectations in terms of reducing communication barriers (Pham et al., 2022). According to L.S. Neuwirth, S. Jović and B.R. Mukherji higher education institutions have provided training for teachers to maintain the quality of education through virtual classrooms during the pandemic, but little attention has been paid to student adaptation. It requires scientific understanding of the forced transition to virtual classrooms, the creation of etiquette in online learning, which will maintain the effectiveness of the educational process (Neuwirth et al., 2021). Developing these ideas, N. Alsuwaida emphasizes that the COVID-19 pandemic has created a need to quickly adapt to the online group work environment. This approach required educators to develop a clear plan and use forms of communication that would help keep students motivated to interact and collaborate successfully in an online learning environment (Alsuwaida, 2022).

Despite the removal of pandemic restrictions in the education system, the request for the development of hybrid forms of education and the expansion of the online component of the educational process has been updated. These trends require a more detailed study of communication processes, as an element that is undergoing the greatest transformation.

The purpose of the study was to analyze the experience of online learning for students of Russian universities, to identify communication problems for participants in the educational process in the new conditions. The following research tasks have been set:

Analysis of students' assessments of the characteristics of the educational process in the context of online learning;

Identification of positive and negative recent digitalization in terms of its impact on the communication process of students;

Assessment of the quality of feedback between the subjects of the educational process in the context of online interactions.

Research hypothesis: communication dysfunctions are a key limitation to the effectiveness of online learning, the lack of communication with the teacher significantly reduces student satisfaction with the conditions of the educational process.

Additional research hypotheses were:

- Maintaining a stable student-teacher feedback increases the effectiveness of online learning, reduces the risks of the destructive consequences of digitalization.
- Students with a low level of involvement in the learning process experience the greatest difficulties in communicating in an online learning environment.

## **2. Methods**

The authors used a set of general scientific research methods (systematization, generalization, etc.) and analytical procedures (document analysis, comparative analysis, analysis of arbitrary contingency tables using the  $\chi^2$  criterion, etc.). A questionnaire survey of students of Russian universities was chosen as the key research method. The survey was conducted online using a google form.

Empirical data are presented by the results of two measurements:  $N_1 = 1553$  (2020) and  $N_2 = 1107$  (2021). The tools of the first wave included blocks of questions that related to students' perception of the digitalization of education, assessments of the negative and positive consequences of this process. The tools of the second wave duplicated the basic part of the questionnaire, which made it possible to conduct a comparative analysis of students' assessments. In addition, the questionnaire was expanded in terms of analyzing the dysfunctions of communication, control and assessment of knowledge in the context of digitalization.

This article presents a description of the second wave of the study, the materials of the first are used to compare and clarify some data, reflect the dynamics or changes in students' value judgments on issues that are significant for the study. Although the use of non-probability samples makes comparisons over time difficult, a number of relationships were nonetheless identified across the results of the two waves of the study. In both cases, respondents were recruited using two strategies:

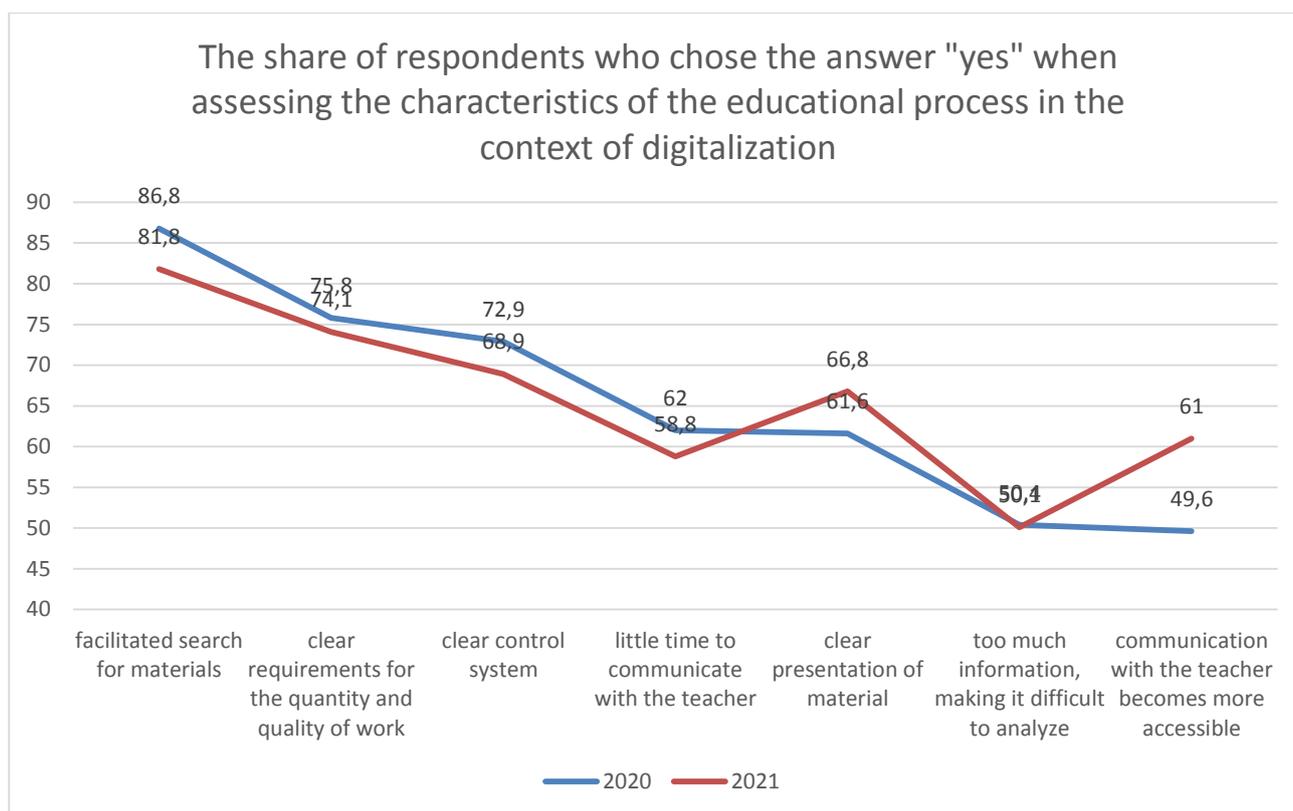
- A personal invitation to participate in the survey was sent out among students with a high degree of activity in social networks and communities. They were also asked to send a link to the questionnaire to their friends and acquaintances, which made it possible to form a chain of respondents passing the invitation to each other (snowball method)
- A "linear" sampling was carried out with an impersonal invitation of respondents (a link to the survey was posted in student social networks and communities).

When developing the survey methodology, the authors focused on studying the opinions of students in the humanities. This is due to the fact that STEM students have a higher level of development of digital competencies and knowledge in the field of digital technologies, and higher educational institutions with a technical profile use more modern digital technologies and teaching methods. At the same time, the spontaneous nature of the selection of respondents could contribute to the distortion of the original sample, which can be considered as some limitation of this study. In the socio-demographic block of the questionnaire, the authors deliberately omitted the question of the student's specialty.

The distribution of respondents by courses of study (survey 2022) is as follows: bachelor's / specialist's degree – 81.2 % (of which: 1st year – 19.1 %; 2nd year – 15.3 %; 3rd year – 18.3 %, 4 course – 20.0 %, 5 course – 8.5 %); magistracy - 10.3 % (of which: 1st year - 3.7 %; 2nd year – 5.2 %; 3rd year – 1.4 %); other (postgraduate, residency, college, vocational school) – 8.5 %.

## **3. Results**

As the results of the study showed, most students positively perceive various aspects of the educational process in the context of digitalization. However, questions of communication with the teacher are assessed by students ambivalently. On the one hand, the vast majority of respondents (61.0 %) believe that communication with the teacher is becoming more accessible, on the other hand, approximately the same proportion of respondents (58.8 %) believe that there was "not enough" time to communicate with the teacher (Figure 1).



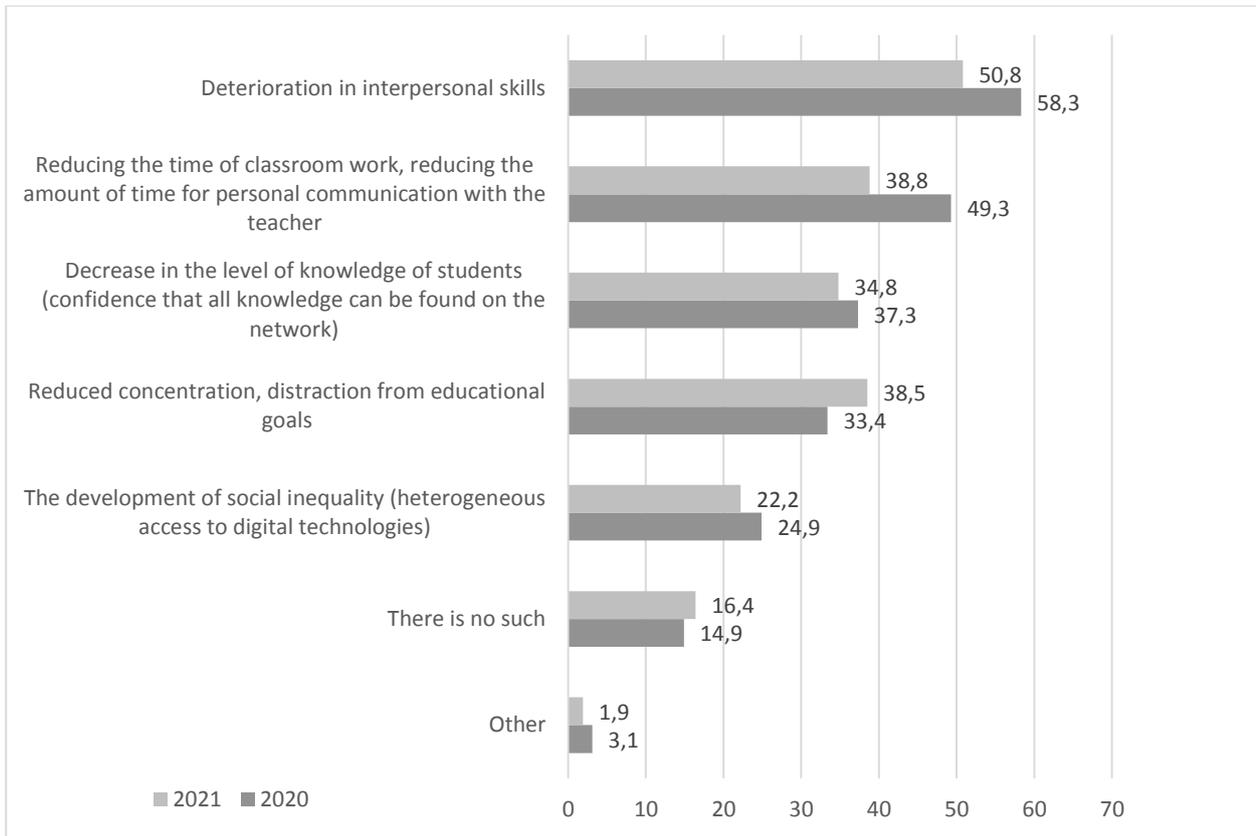
**Fig. 1.** Distribution of answers to the question: “Evaluate the characteristics of the educational process in the context of digitalization using a personal example?”, %

At the same time, a comparison of the two waves of the study illustrates the growth in the number of students who are more optimistic about a number of characteristics of the educational process in 2021. For example, the proportion of students who believe that in the context of digitalization, communication with a teacher is becoming more accessible (49.6 % in 2020 and 61.0 % in 2021), and the presentation of materials is understandable (66.8 % – 2021 and 61.6 % in 2020). At the same time, the materials of the study of two waves showed the absence of significant discrepancies in the students' assessments of the "new digital" characteristics of the educational process. Both in 2020 and 2021, based on personal experience, students quite optimistically describe such aspects as clear requirements for the quantity and quality of work, a clear control system, and facilitated material search. It can be assumed that the intensive introduction of digital technologies into the educational process during the pandemic contributed to the creation of an electronic educational environment at universities, within which it became possible to systematize materials and ensure transparency in the control of assignments.

An analysis of arbitrary contingency tables using the  $\chi^2$  criterion showed that when the number of degrees of freedom is 6, the value of the  $\chi^2$  criterion is 23.036. The critical value of  $\chi^2$  at the significance level  $p=0.01$  is 16.812. The relationship between factor and resultant signs is statistically significant at a significance level of  $p < 0.01$  (Figure 2).

The pandemic and its accompanying online learning have not made significant changes in the specifics of the perception of the digitalization of education. Despite the fact that the majority of students perceive digitalization as a generally positive phenomenon (83.9 % in 2021), nevertheless, respondents identified a number of its negative consequences (Figure 2). The data obtained allows us to conclude that "deterioration in interpersonal skills" remains the most pronounced problem for the majority of students (50.8 % in 2021 and 58.3 % in 2020).

In the second wave, there is an increase in the share of respondents who single out as a negative consequence of the development of digitalization – “a decrease in concentration of attention, distraction from educational goals” (up by 5.1 %). However, there is no negative trend in other indicators.



**Fig. 2.** Distribution of answers to the question: “Negative consequences of the development of digitalization can be ...?” (multiple choice answers) in 2020 and 2021, %

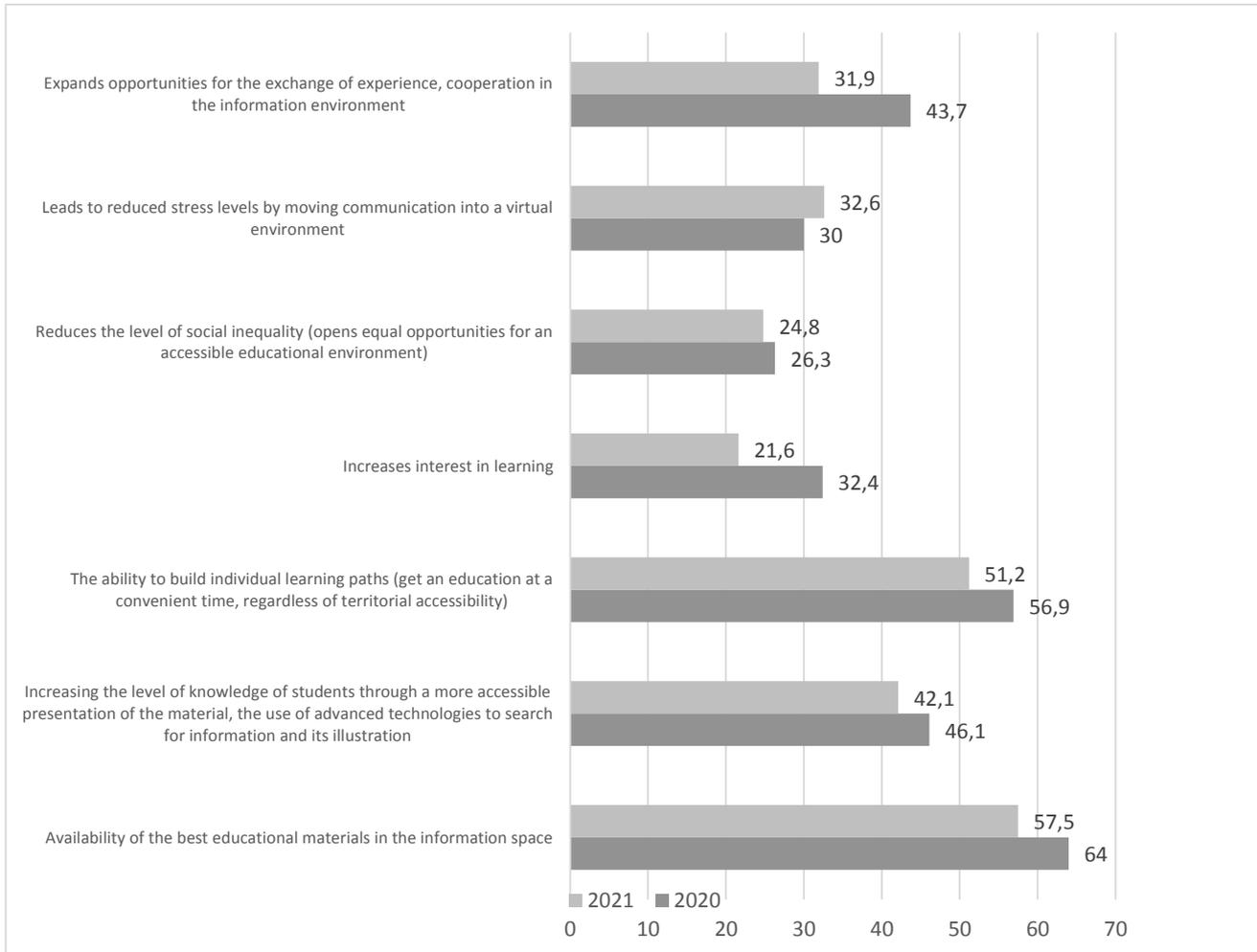
The analysis of the research materials illustrates some disappointment of students in the positive consequences of the digitalization of education after gaining the experience of online learning during the pandemic (Figure 3). In particular, in the second wave, there is a decrease in the share of respondents who share the opinion about the growing interest in learning in the context of digitalization (less by 10.8 percentage points), the possibility of exchanging experience, cooperation in the information environment (less by 11.8 percentage points).

Of interest is the fact that in 2021 there is a slight increase in the proportion of students who believe that there are no positive consequences of digitalization (6.1 % in 2020 and 8.9 % in 2021). In general, it can be seen that in a larger number of respondents' answers, the obvious technical aspects of digitalization are noted, which are more likely to be related to the informatization of the educational space (accessibility of educational materials, the opportunity to study regardless of the territorial location). The benefits in the content aspect of digitalization are less reflected in the respondents' answers. This may be a consequence of the low focus of universities on resource support for digital innovations that affect the tools and technologies of the educational process.

An analysis of arbitrary contingency tables using the  $\chi^2$  criterion showed that when the number of degrees of freedom is 6, the value of the  $\chi^2$  criterion is 31.283. The critical value of  $\chi^2$  at the significance level  $p = 0.01$  is 16.812. The relationship between factor and resultant signs is statistically significant at a significance level of  $p < 0.01$  (Figure 3).

Taking into account the fact that the majority of students see the deterioration of communication skills and the reduction of time for live communication with the teacher as negative consequences of digitalization, the respondents' assessments in terms of detailing this aspect are of interest (Table 1). In particular, among the respondents who rated the quality of feedback from the teacher excellently, the share of those who single out “routine” (14.5 %) and “heavy workloads” (15.2 %) as factors reducing the effectiveness of online learning is smaller (below average values in the sample by 4.8 percentage points and 2.9 percentage points, respectively). Ambiguous results were obtained in terms of students' assessment of the lack of

personal communication with the teacher. Among respondents who rated the quality of feedback from the teacher as "bad", the proportion of those who note the lack of personal communication as a factor in reducing the effectiveness of online learning is higher (38.7 %, which is 7.8 percentage points higher than the average values for the sample). At the same time, among the students who rated the quality of feedback from the teacher as "excellent", there is also an excess of the proportion of respondents who noted the lack of personal communication as an influence factor (35.9 %, which is 5.0 percentage points higher than the average values for the sample).



**Fig. 3.** Distribution of answers to the question: "Positive consequences of the development of digitalization can be..." (multiple choice answers) in 2020 and 2021, %

An analysis of arbitrary contingency tables using the  $\chi^2$  criterion showed that with the number of degrees of freedom equal to 20, the value of the  $\chi^2$  criterion is 181.122. The critical value of  $\chi^2$  at the significance level  $p = 0.01$  is 37.566. The connection between the factorial and effective signs is statistically significant. The results of the study showed an inverse relationship between involvement in the educational process and the opportunity to ask a question/make a comment. In particular, among those students who are not involved in the educational process and consider lectures and seminars as a background for everyday activities, the proportion of respondents who experience difficulties in communicating with a teacher is significantly lower (33.3 %, which is lower than the average values for the sample by 21.9 percentage points). At the same time, among students who demonstrate a high degree of involvement in the educational process, the proportion of those who experience difficulties with commenting and asking a teacher with a question is 68.4 % (above the average values for the sample by 13.2 percentage points).

**Table 1.** The relationship between the assessment of the quality of feedback and the reasons for the decline in the effectiveness of online learning, pers

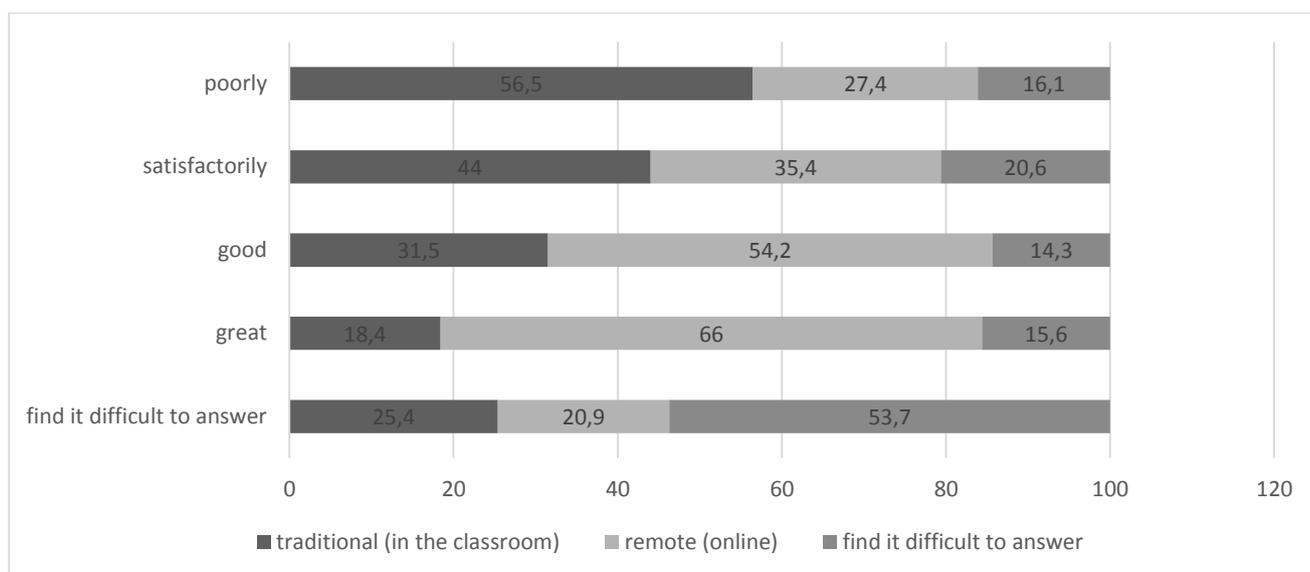
How would you rate the quality of feedback between teacher and student in online learning?	What, in your opinion, reduces the effectiveness of online learning?					
	lack of personal communication	lack of interactivity	routine	heavy loads	other	difficult to answer
great	92	42	37	39	16	30
good	118	64	102	71	21	30
satisfactorily	104	51	56	69	20	16
poorly	24	8	12	11	7	0
difficult to answer	4	4	7	10	7	35

**Table 2.** The relationship between the level of involvement in the learning process in an online format) and the perception of the complexity of communication with the teacher (“ask questions or make comments”), pers.

How involved are you in the learning process during online classes?	Is it more difficult to ask questions or make comments during online classes compared to face-to-face training?			
	Yes, much harder	Kind of harder	Nothing changed	It became easier
I always listen carefully and ask questions, make comments	56	68	95	34
I listen carefully, but I rarely or never make comments and questions	57	138	122	45
Partially involved, sometimes I can afford to be distracted by work/personal affairs	68	130	91	27
Often have to take a break	25	39	25	7
Not involved due to being busy at work/at home, the lecture/seminar is included in the background	15	34	25	6

An analysis of arbitrary contingency tables using the  $\chi^2$  criterion showed that when the number of degrees of freedom is 12. The value of the  $\chi^2$  criterion is 26.343. The critical value of  $\chi^2$  at the significance level  $p = 0.01$  is 26.217. The relationship between factor and performance characteristics is statistically significant at a significance level of  $p < 0.01$  (Table 2).

Thus, a relationship has been established between the student's involvement in the educational process and the difficulties in maintaining communications during online learning. However, this dependence is inverse, which did not allow us to confirm the hypothesis put forward. As the results of the study showed, students with a high level of involvement in the learning process experience the greatest difficulties in communicating in an online learning environment (they always listen carefully, ask questions, make comments). Most of the respondents (48.9 %) prefer to study remotely, online. During the study, it was found that the choice of the form of education is determined by the assessment of the quality of feedback between the student and the teacher (Figure 4).



**Fig. 4.** Dependence of students' assessments on the quality of feedback between the student and the teacher on the choice of the form of education, %

Among those who rated the quality of feedback as excellent, the proportion of students who prefer distance learning is significantly higher (66 %, which is 17.1 percentage points higher than the average). Poor communication with the teacher in the online learning mode forms the student's refusal of remote education, this group of respondents, for the most part, opted for traditional study in the classroom (56.5 %, which is 22.9 percentage points higher than the average values).

An analysis of arbitrary contingency tables using the  $\chi^2$  criterion showed that when the number of degrees of freedom is 8, the value of the  $\chi^2$  criterion is 136.295. The critical value of  $\chi^2$  at the significance level  $p = 0.01$  is 20.09. The relationship between factor and resultant signs is statistically significant at a significance level of  $p < 0.01$  (Table 3).

**Table 3.** The relationship between the choice of the form of education and the assessment of the quality of feedback between the teacher and the student in online learning, pers.

What form of education do you prefer: traditional (in the classroom) or remote (online)?	How would you rate the quality of feedback between teacher and student in online learning?				
	great	good	satisfactorily	poorly	difficult to answer
traditional (in the classroom)	47	128	139	35	17
remote (online)	169	220	112	17	14
difficult to answer	40	58	65	10	36

An analysis of the research materials allows us to conclude that the attitude to online learning is based on the personal experience of the student and, first of all, on the assessment of the quality of communications with the teacher. With a certain degree of probability, we can assume that the personal contribution of the teacher, his desire and ability to maintain stable feedback with students determines the effectiveness of online learning.

#### 4. Discussion

The results of the study showed an ambiguous perception of the quantitative and qualitative characteristics of the communication process between a student and a teacher in the context of digitalization. Despite the availability of communication, which is achieved through the active introduction of information technologies into everyday life (gadgets, instant messengers, etc.), almost  $\frac{2}{3}$  of students note that there is not enough time for personal interaction with the teacher. Considering the qualitative characteristics of the communication process in the context of

digitalization, students note their concreteness, severity and certainty (“a clear control system”, “clear presentation of the material”, “formation of requirements”, etc.).

An optimistic tone in the overall perception of online learning is typical for many foreign studies. At the same time, the possibility of continuing communications becomes an important predicate for the formation of successful adaptation strategies in the transition to a new learning format. D. Homer notes that “peer relationships and collaborative learning are the key to success” (Homer, 2022).

Despite the positive tone taken by students in assessing communication processes in the context of digitalization, the negative consequences of introducing digital technologies into the educational process were highlighted. Communication dysfunctions were in the top lines of the conditional anti-rating of students. In the answers of the respondents, there is an appeal to both objective factors of the deterioration of the communication process (“decrease in the time of classroom work, live communication”), and to subjective ones (“deterioration of interpersonal communication skills”, “decrease in concentration”). This problem is also typical for foreign countries, scientists pay attention to the lack of social-emotional interactions during online learning (Kalmar et al., 2022).

In a study by R. Koris, F.J. Mato-Díaz, N. Hernández-Nanclares concludes that limited social interaction in online learning is becoming a key problem not only in the education system, but in the sociocultural context of communications (Koris et al., 2021). In continuation of this topic, N. Kilinc and K. Buyuk draw attention to the fact that increasing the efficiency of communication processes in the context of digitalization of education can be achieved by reducing the number of students in groups, overcoming the “mass character” in the course of training. Researchers conclude that the “presence effect” has a positive effect on learning satisfaction (Kilinc, Buyuk, 2022). Therefore, according to experts, preference should be given to such pedagogical forms, in which the personal aspect is paid more attention than the technological one (Davidovitch, Yossel-Eisenbach, 2019).

However, having experienced the practice of distance learning first hand, students in 2021 year are no longer so afraid of “deteriorating interpersonal skills” (a decrease of 7.5 % compared to 2020 year), « reducing the time of classroom work, personal communication with the teacher» (a decrease of 10.5 %). The results obtained are confirmed by other studies that illustrate the transformation of student assessments: the share of those students who considered online learning to be untenable is narrowing; there has been an increase in trust in online practices in education (Agarkov et al., 2021).

As the results of the study showed, the excellent quality of feedback from the teacher and students eliminates such limitations of online learning as “routine” and “heavy workloads”. At the same time, the establishment of effective feedback does not guarantee the absence of student dissatisfaction with the decrease in time for live communication. The problems of effective feedback are also actualized in foreign studies. In particular, E. Tualalelei, K. Burke, M. Fanshawe and C. Cameron, C. draw attention to the need for strategic planning of pedagogical touch points as a mechanism for maximizing the potential for student engagement in learning (Tualalelei et al., 2022).

Dysfunctions of communication in the context of online learning mostly affected those students who are interested in education. The vulnerability of their position, in our opinion, is due to higher requirements for themselves and the educational process. Those students who listen carefully, strive to gain knowledge, and are oriented to study are more likely to feel the need to ask a question or clarify the material. However, for them, the opportunity to do this in an online learning environment is significantly limited. Among such students, the answer option “yes” was chosen by 68.4 %, which is 13.2 percentage points higher than the average values for the sample.

Summarizing the above, we note once again that student assessments are distinguished by an optimistic tone of statements: digitalization is seen as a technology of the future, which allows the use of previously inaccessible learning tools, network forms of interaction in the educational environment. This circumstance has left its mark on the responses received. Among the advantages of digitalization, students during the first wave of the survey more often chose the answer option “increases interest in learning”, “provides an opportunity to exchange experience, cooperate in the information environment”. Optimism during the second measurement is shared by a smaller proportion of respondents, as well as fears that the time for classroom work and live communication with the teacher is decreasing. The study notes a general decrease in the demand

for contact work with a teacher after gaining online learning experience during a pandemic. This trend can have far-reaching consequences, as it involves a change not only in the communication process, but also transforms the landscape of higher education itself. The authors believe that a further direction of research in the context of analyzing the consequences of digitalization should be the study of the practices of narrowing the communication space, distorting the roles of communicators, and modernizing the forms and methods of teacher contact work.

A comparative analysis of the materials of the first and second waves of the study revealed a decrease in students' assessments of the benefits of digitalization of education. It can be assumed that the experience of online learning during the pandemic left its mark on the perception of such aspects of digitalization as: "the possibility of exchanging experience, cooperation in the information environment", "growing interest in learning". As the negative consequences of digitalization, students identify: "deterioration of interpersonal communication skills", "decrease in the level of knowledge of students" and "concentration of attention, distraction from learning goals", "reduction of study time".

Thus, the main hypothesis of the study was confirmed. Communication dysfunctions are a key limitation to the effectiveness of online learning, the lack of communication with the teacher significantly reduces student satisfaction with the conditions of the educational process. In the course of two waves of the study, students singled out "deterioration in interpersonal communication skills", "reduction in the time of classroom work, live communication with the teacher" as the most significant negative consequences of digitalization. The hypothesis is proved that students with a low level of involvement in the educational process experience the greatest difficulties in implementing communications in the conditions of online learning. It is concluded that maintaining a stable feedback with students by the teacher ensures an increase in the efficiency of the educational process in the context of online learning. The development of hybrid forms of education, the integration of online and traditional forms of education is becoming a new trend in the development of higher education today, which increases the availability of education, provides flexible educational trajectories for students. Under these conditions, research aimed at finding mechanisms that increase the effectiveness of online communications is becoming highly relevant.

## **5. Limitations**

The limitations of this study include the use of a random sample, which does not fully reflect all categories of students. Although the use of non-probability samples makes comparisons over time difficult, a number of relationships were nonetheless identified across the results of the two waves of the study. When developing the survey methodology, the authors focused on studying the opinions of students in the humanities. This is due to the fact that STEM students have a higher level of development of digital competencies and knowledge in the field of digital technologies. However, further analysis of communication processes requires coverage of a wider range of respondents, taking into account all the characteristics of representativeness.

In addition, the study was conducted using a questionnaire, so it is likely that social desirability may have influenced the responses.

## **6. Declaration of competing interest**

The manuscript's authors declare that there is no interest in conflict, and all reference materials were dully acknowledged.

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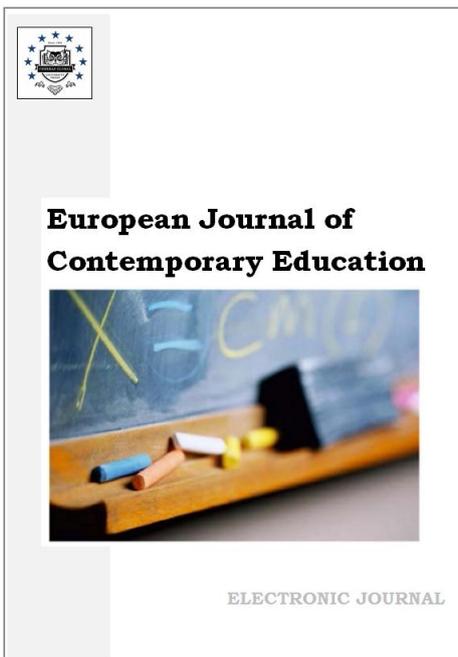
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## **Intra-University Mediation on the Road to the Sustainable Development Goals: A Systematic Review**

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### **Abstract**

Mediation as a formula for resolving conflicts is becoming increasingly relevant internationally as a mechanism for a peaceful conflict resolution. In Europe, many countries are enacting legal regulations, and European directives promote the use of mediation to resolve disputes between individuals, companies, institutions, etc.

Mediation has a wide range of possibilities in terms of fields of action: family, judicial, school, community, etc. One of those becoming increasingly relevant is intra-university mediation, as a mechanism for resolving conflicts between the people/agents involved, among the students themselves and their peers. Moreover, mediation is related to education and the culture of peace, which are critical aspects of a more autonomous and independent society that can solve conflicts.

Bearing in mind the possibilities provided by mediation and as a horizon for intra-university mediation, we propose a systematic review that pivots on three axes: a) conflict and mediation as a means to resolve dissent; b) intra-university mediation, experiences, and possibilities; c) intra-university mediation and its relationship with the Sustainable Development Goals.

To do so, a systematic review has been carried out in scientific databases using a qualitative methodology in order to identify the role of mediation in the university environment and the benefits that the university community and society can obtain. Among the main findings is the evidence that educational mediation at the university level is viable and is widely developed internationally.

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**Keywords:** Conflict, educational mediation, collaborative university, SDGs, education for peace.

### 1. Introduction

The present research work is the result of the Erasmus+ LIMediat – Licence Européenne en Médiation pour l'Inclusion Sociale (European Degree in Mediation for Social Inclusion) project, involving: the University of Minho (Portugal), the University of Murcia (Spain), Conservatoire National des Arts et Métiers (CNAM) (France) and the University degli Studi di Cagliari (Italy).

Mediation in the educational context can accompany any student from school to university. In a transcendental sense, it could also be said that "mediation" is a historical sociological constant. It is a crucial element of civilization, as evidenced in the French historian Georges Dumézil's studies, specialized in Comparative Mythology, on the trifunctional architecture of societies from India to the confines of Europe (Dumézil, 2002). It is not, therefore, an end in itself. However, we speak of mediation as a structuring sociological category or mediation in the broad sense, i.e., "a hermeneutic principle that can be usefully applied to an infinite number of domains" (Simmel, 1981: 164).

Ibn Jaldun (2008). Six (1997) considers that there are four types of mediation:

1. "Creative mediation" that aims to foster new links between individuals or groups.
2. "Renewing mediation," which reactivates relationships in conflict.
3. "Preventive mediation" to avoid the explosion of conflict; and
4. "Curative mediation" to help the parties to find a solution.

Among the entities that have favored its dissemination is the Mediation Forum, which held its first congress in Havana (Cuba, 1998); Sardinia (Italy, 2000), Buenos Aires (Argentina, 2003); Switzerland (2005), and a long etcetera, bringing together scholars and professionals who carry out practices for a global culture of peace (Castanedo, 2020: 96).

Sustainable Development Goal (herein SDGs) number 16 on peace, justice, and strong institutions in the (United Nations, 2015) focuses on promoting peaceful and inclusive societies for sustainable development, providing access to justice for all and building accountable and effective institutions at all levels. This goal should be seen as transversal to all the proposed goals, as its existence promotes the rest of the goals through its ten targets. These goals relate to the four approaches proposed by Baruch and Folger in 1996: stories of satisfaction, social justice, oppression and transformation.

The culture of peace is defined by the United Nations Educational, Scientific and Cultural Organization (herein, UNESCO) as a set of values, attitudes, traditions, behaviors and lifestyles based primarily on respect for life, an end to violence and the promotion and practice of non-violence through education, dialogue and cooperation; total respect for and promotion of all human rights and fundamental freedoms; commitment to the peaceful settlement of conflicts and respect for and promotion of equal rights and opportunities for women and men. The aforementioned finds in mediation an effective tool for the achievement of this laudable goal. The culture of peace proposed by the UN is based on education, sustainable economic and social development, democratic participation, understanding and tolerance. In this sense, the new Spanish law 3/22, in Article 5, contemplates alternative means of resolving conflicts of coexistence, indicating that: "Without prejudice to the development that the Autonomous Communities may carry out within the scope of their competencies, the universities will develop in their Norms of Coexistence alternative means of resolving conflicts of coexistence based on mediation, be applied before and during the disciplinary procedure." This text opens up the use of alternative means of dispute resolution (herein, ADR) in a positive way, including mediation, intending to promote a peaceful, inclusive and diverse society where full respect for and promotion of all human rights and fundamental freedoms prevails.

#### **Mediation and Conflict: two inseparable and complementary phenomena**

Mediation is understood as an ethical communication process based on the participants' responsibility and autonomy. There have always been experiences of "mediation," although it has not always been mediated or theorized about. It is precisely in this sense that we can speak of an "implicit or unspoken mediation theory" that runs through the history of conflict resolution.

We are at a time when it has been shown that punishment and other options are not the best way to resolve existing conflicts. Conflict in the University is a complex reality that sometimes goes

beyond the teaching authorities to resolve, despite existing legislation. This legislation, which is designed to sanction or discipline conflictive behavior, does not originate in the behavior of the student body but rather in the poor functioning of the University itself and the absence of positive conflict management strategies. The lack of respect for the diversity of cultures and people in the university community is another source of conflicts that mediation can manage positively. In the educational institution, it can, within the framework of its socializing faculties and transfer to society, put an end to symbolic violence understood as: those "acts that harm the cultural integrity of an individual or collective actor, which have as their prototypical procedure discrimination, stigmatization, or the degradation of what is different for unfounded or arbitrary reasons" (Míguez, 2006: 10).

The conflict "ends in one of the usual ways -by victory and defeat, by reconciliation, by compromise – this structure is transformed into that of the state of peace; the central point communicates to the other energies the transformation that has occurred in it, passing from excitement to calm" (Simmel, 1926: 346). Baruch and Folger link mediation to the story of transformation that involves changing people, and thus society as a whole, to create change. This goal is concretized in transforming people from being dependent beings interested only in themselves (i.e., weak and selfish people) to being secure and self-confident individuals, willing to be sensitive towards others (strong and considerate people). The achievement of this transformation promotes the manifestation of the intrinsic good, at the highest level, in human beings (Baruch, Folger, 1996).

### **Conflicts in the university environment**

Universities have unique characteristics that differentiate them from other settings where conflicts arise. The University is characterized by interdependence among its members, heterogeneity, scarce resources, and hierarchization (Barsky, 2002). In addition to the bureaucratic structure, "the vertical and horizontal relationships that overlap and change with different academic, organizational and power objectives are together a favourable field for the emergence of existing conflicts. In other words, conflicts in the University are inevitable" (Holton, Phillips, 1995: 79). They occur within and between the different strata that are part of its organization (Baldrige, 1971). The parties involved in the conflict are: students, lecturers, service managers, or administrators and can arise due to external factors (Etim, Okey, 2013; Adeyemi, Ademilu, 2012). Situations that may give rise to conflict include:

a. Between teachers, government officials, and students: 1. Complaints about examination dates and times. It is incompatible for a student to attend two exams of enrolled subjects on the same day and at the same time; 2. Discriminatory rules, capricious evaluations, awarding of courses or grants without objective criteria; 3. Teaching load over their recruitment; 4. Lack of transparency in the awarding of curricular internships; 5. Situations of social, cultural, religious, or sexual discrimination; and, 6. Situations of undervaluing or sexual harassment (Warters, 1995: 73).

b. Student-to-student conflict: Difficulties in teamwork, lack of coordination and respect for group work deliverables; Difficulties in living together in shared flats; Confrontations over ideological, religious, cultural, etc. issues (Gibson 1995: 27).

c. Conflict between teachers: Use of offices, distribution of resources, etcetera.; Situations of bullying or harassment at work; Violent communication; Discriminatory and abusive rules in allocating teaching or academic responsibilities.

d. Organisational conflicts, where interpersonal relationships are often intertwined with teaching tasks (Hearn, Anderson, 2002). These include: The department's structure, organization, and relationships (Gmelch, Carroll, 1991); Conflict between departments due to ideological differences between teachers; Scheduling of classes, allocation of positions, etcetera; Discriminatory allocation of resources or allocations.

Situations of harassment of students are exceptional cases that can be referred to the courts with the consequent administrative sanctions and psychological treatment (Knight, 1995), as well as the harassment of employees (Briefs, 1993).

### **Intra-university mediation and its connection with the Sustainable Development Goals.**

In the year 2000, the United Nations Millennium Declaration was signed in New York, where 8 Goals were established to be achieved by 2015 to reduce world poverty. These 8 Goals were not achieved; years ago, the United Nations began working on the SDGs, whose leaders signed a

commitment to achieve them by 2030 (UN, 2015). We have gone from 8 to 17 goals that seek to improve the world, eradicate poverty, and protect our planet from its natural risks. The 17 SDGs are heterogeneous, referring to social, economic, political, ecosystemic, and community spaces. One of the most important is SDG 4: Quality Education, the backbone of a critical and constructive society towards our planet and society as a whole.

According to the United Nations, Goal 4 aims to ensure inclusive and equitable access to quality education. This goal promotes acquiring the knowledge, skills, and values needed to function well and contribute to society. The targets of this goal range from ensuring universal numeracy and basic literacy for youth, expanding the overall number of scholarships available to developing countries, and ensuring equal access to affordable, quality technical, vocational and tertiary education. Specifically, its target 4.7 is fully linked to the academic sphere as it seeks to ensure, from 2015 to 2030, "that all learners acquire the knowledge and skills needed to promote sustainable development, including through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and the contribution of culture to sustainable development" (UN, 2015). Thus, guaranteeing and improving coexistence and developing a culture of peace are the University's duty and responsibility within the SDGs' framework to promote just, peaceful and inclusive societies.

This goal, the inspiring principles, and values it pursues are not only connected to mediation but also play a crucial role as a driver of social change. This is where the possibilities of education and the SDGs emerge, both in learning and in acquiring competencies related to knowing how to be and be. For UNESCO, education's commitment to the SDGs and the 2030 Agenda means "achieving social well-being, sustainable development, and good governance" (UNESCO, 2014: 2).

Nevertheless, another SDG is closely linked to mediation: Promoting just, peaceful and inclusive societies (SDG 16). Mediation seeks to resolve and mitigate the effects of conflict, making it a tool for social change, removing blockages from people or social agents, and facilitating autonomy in peaceful decision-making. Intra-university mediation presents this opportunity, that of transferring the possibility of resolving conflicts peacefully to society. This spirit should permeate disagreements in the academic sphere, as well as in the private sphere and, of course, with any social agent: company, neighbors, and Etc. Based on the information searches carried out, the following Table 1 shows the potential of mediation from the perspective of SDGs 4 and 16:

**Table 1.** Possibilities and challenges offered by intra-university mediation in the face of conflicts

<b>SDGs</b>	<b>Target by 2030</b>	<b>Potential conflicts</b>	<b>Opportunities from the use of mediation</b>
4	Ensure equal access for all men and women to quality technical, vocational and higher education, including university education	Difficulties of coexistence	Collaborative governance universities
4	Ensure that all learners acquire the knowledge and skills necessary to promote sustainable development, including through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and the contribution of culture to sustainable development.	Discrimination and confrontation in the classroom on different grounds. Transgression of human rights (freedom, equality, etcetera.)	Collaborative governance in universities Implementation of mediation services and/or positive conflict management in universities Training in Appropriate Means of Dispute Resolution

SDGs	Target by 2030	Potential conflicts	Opportunities from the use of mediation
4	Build and adapt education facilities that are sensitive to the needs of children and persons with disabilities and gender differences, and that provide safe, non-violent, inclusive and effective learning environments for all.	Exclusion of students on the basis of gender, sexual orientation, religion, culture, disability, etc.	Training in Appropriate Means of Dispute Resolution
16	Significantly reduce all forms of violence and related death rates worldwide	Existence of violent communication in society	Coexistence programmes in universities
16	Promote the rule of law at national and international levels and ensure equal access to justice for all	Lack of confidence in people's capacity and ability to respect rights	Promote mediation as an Appropriate Means of Dispute Resolution in universities
16	Ensuring inclusive, participatory and representative decision-making at all levels that responds to the needs of the community	Lack of a culture of dialogue in society	Training and awareness-raising of the university community through coexistence projects in universities

Source: Own elaboration

## 2. Methodology

A systematic review was carried out in scientific journal databases to answer the following questions. Has there been any research on the effectiveness of mediation in universities? Are there any previous experiences? Questions connected with the objective of determining the viability of intra-university educational mediation and its connection with the SDGs. The aim of this axis is to articulate measures for the peaceful resolution of conflicts within the framework of quality education and the eradication of social inequalities.

### Inclusion criteria

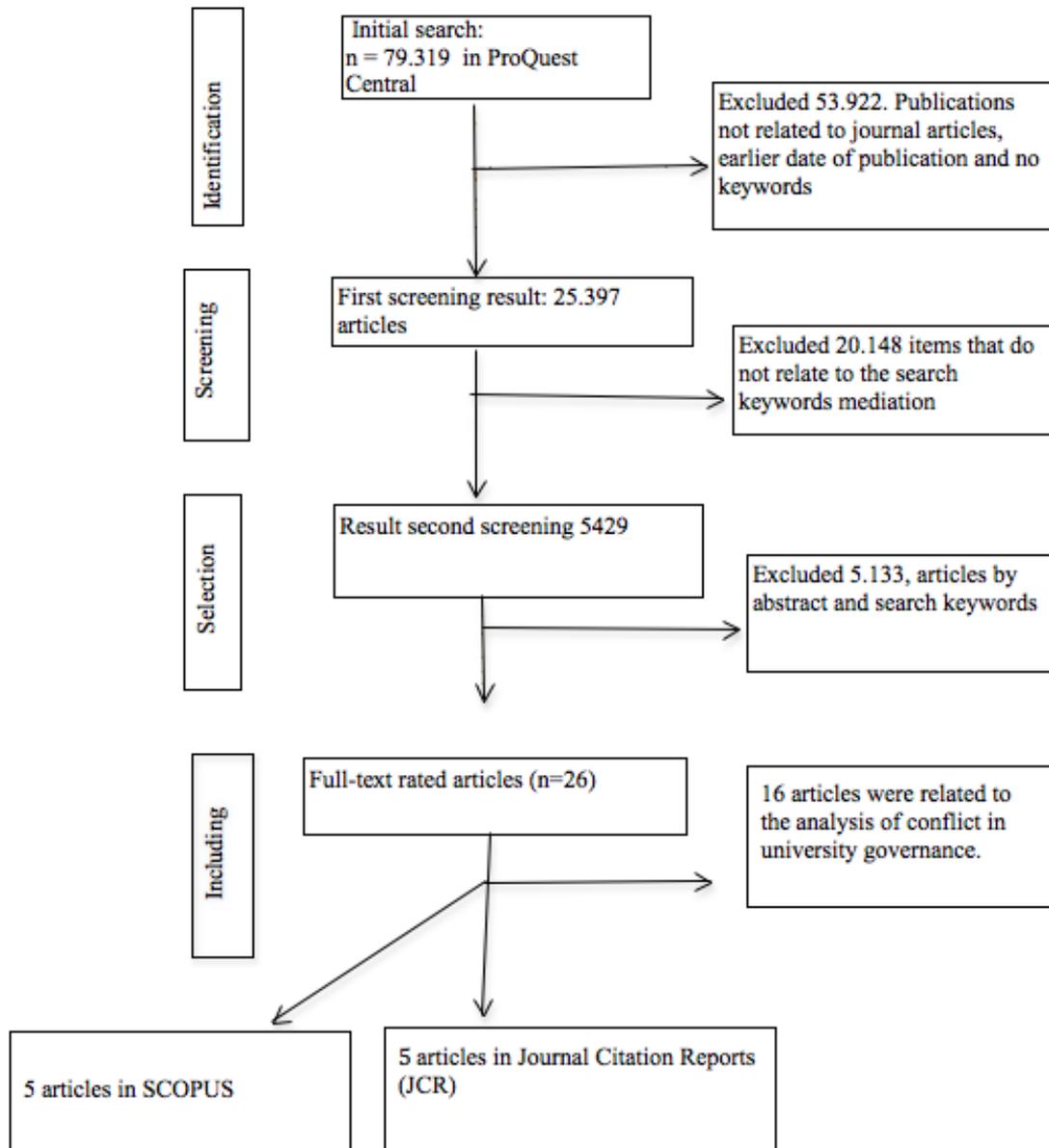
This general objective is broken down into three specific objectives: a) to analyse the theoretical bases of conflict and mediation as an instrument for conflict resolution, b) the possibilities of implementing intra-university mediation in the higher education system, c) the inclusion of intra-university mediation and its connection with the SDGs. The verification system was based on PRISMA guidelines and Cochrane Handbook for Systematic Reviews of Interventions to ensure transparent and complete reporting in our study. For this purpose, the PRISMA protocol (Urrútia, Bonfill, 2010) and the indications of a systematic review (Moher et al., 2016) were applied. Data extraction was carried out by two researchers and reviewed by two others. Our strategy included three phases. First, potentially valuable articles were identified by their titles and abstracts. In a second phase, their contents and results were analysed and finally rated for review.

Each publication was analysed considering keywords, type of research, analysis of results and conclusions, and guidelines were used to analyse quality, transparency and replicability (Díaz-Iso et al., 2020).

The inclusion criteria were: 1) studies published between 1971 and June 2022; 2) articles in journals indexed in Scopus, WoS (Web of Science), SciELO, LATINDEX, DIALNET, MEDLINE, ELSEVIER and Google Scholar. 3) Publications dealing with the search keywords conflict, educational mediation, collaborative university, SDGs, peace education. 4) Articles written in English or Spanish and 5) peer-reviewed publications. The exclusion criteria: 1) Not having the established search keywords. 2) Not related to the object of study. 3) Date of publication.

The boolean operators used were ("and" and ";"). In total, there was a sample of 116 articles, of which 27 remained after a thorough evaluation, which allowed us to confirm the viability of mediation in the university.

**Procedure for the selection of articles according to PRISMA protocol**



**Fig. 1.** PRISMA flow diagram of study selection

**3. Results**

It should be noted that in this selection process, a wide-ranging screening of publications unrelated to our object of study and did not respond to our research question was carried out. In the SCOPUS database, of 118 articles obtained in the first search, only the following publications, shown in [Table 2](#), met the inclusion criteria.

**Table 2.** SCOPUS publications meeting the search criteria

	<b>Article title</b>	<b>Author</b>	<b>Year</b>	<b>Journal</b>	<b>Citations</b>
1	Analysis of the causes of conflicts at universities and alternative methods of resolving them. Part I: Mediation in academic disputes	Gmurzyńska, E.	2021	Studia Iuridica Lublinensia 30(1), pp. 55-101	1
2	The effect of psychological capital between work-family conflict and job burnout in Chinese university teachers: Testing for mediation and moderation	Pu, J., Hou, H., Ma, R., Sang, J.	2017	Journal of Health Psychology, 22(14), pp. 1799-1807	41
3	Developing and testing a scale to assess Teachers' attitudes toward peer mediation of student disputes	Gunduz, N., Uzunboylu, H. and Ozcan, D.	2017	Social Behavior and Personality, 45 (10), 1745-1760	9
4	Theoretical guidelines on persuasive communication and its relation to organizational conflict mediation at national experimental universities in the state of Zulia	Basanta Zamudio, G.J., Romero Parra, R.M.	2010	Revista de Ciencias Sociales 16(1), pp. 28-38	3
5	'If your only tool is a hammer, any issue will look like a nail': Building conflict resolution and mediation capacity in South African universities	Harris, G.	2008	Higher Education 55(1), pp. 93-101	

Source: Own elaboration

Other relevant articles by Barsky (2002), with the title: Structural sources of conflict in a university context, have been published in journals that entered SCOPUS in later years, which is why they do not appear in the table but do appear in our analysis given their impact. The following articles were found in the Journal Citation Reports (herein JCR) and are presented in [Table 3](#).

**Table 3.** Publications in the JCR that meet the search criteria

	<b>Article title</b>	<b>Author</b>	<b>Year</b>	<b>Journal</b>	<b>Citations</b>
1	Sustainability and Conflict Management in the University Environment. Analysis of Students of the Degrees in Labour Relations and Human Resources, and Social Work at the University of Granada (Spain)	Martínez, R. and Lozano, A.M.	2021	Sustainability, 13, 13431. Q2	1
2	Conflict and health: a paradigm shift in global health and human rights.	Singh, S., Orbinski, J.J., & Mills, E.J.	2007	Conflict and health, 1(1), 1-2. Q2	16
3	Sources of Japanese University Conflict: Organizational Structure and Issues.	Marsh, R.M.	1982	Journal of Conflict Resolution, 26(4), 730-756.	8

4	Review Section: Mediation: An Analysis, Review, and Proposed Research.	Wall Jr, J.A.	1981	Journal of conflict resolution, 25(1), 157-180.	310
5	ICPSR: Resources for the Study of Conflict Resolution: The Inter-University Consortium for Political and Social Research.	Beattie, R.	1979	Journal of Conflict Resolution, 23(2), 337-345	2

Source: Own elaboration

#### 4. Discussion

Universities cannot merely act as distributors of knowledge and training students from a professional orientation. However, they must develop a critical nature and construct alternatives to the current problems and challenges of the society in which we find ourselves. In the analysis of the publications found, four lines of research can be seen in response to the conflicts that it has, which we shall now analyze.

##### Collaborative paradigm versus collaborative governance in the University

The first line of research that can be systematized is the proposal for a collaborative organization. Conflicts have been part of academic life since antiquity (Holton, 1995). The cooperative paradigm has been developed in the university community to use the approach to conflicts that arise within it and avoid the judicial route. This is precisely where José Ortega y Gasset subtly calls "integrating talent" (Ortega y Gasset, 1940: 119) has to be brought to bear. This process will make it possible to construct a social perception and representation of the cooperative way of dealing with conflicts at the University. The effectiveness of the construction of these social representations is more significant than any training program Ortega y Gasset stated in his lecture Mission of the University "to know is not to investigate. To investigate is to discover the truth or its inverse: to demonstrate an error. To know is simply to become well aware of that truth, to possess it once it has been made, achieved [...] science is creation, and pedagogical action aims only to teach that creation, to transmit it, inject it and digest it" (Ortega y Gasset, 1940: 98-99). At the same time, the function of the University appears to be subordinate to the transmission of culture, which is the natural organ. In this context, the "Orteguian" notion of "culture" refers to the system of vital ideas that mark the level of time, that is, a repertoire of "clear and firm ideas about the Universe, positive convictions about what things and the world are" (Ortega y Gasset, 1940: 74). In its most excellent sense, "general culture", the content of the famous "Faculty of Culture" initiated by Ortega in his famous lecture and later recurrently proposed as a pedagogical model by his disciples and readers (Jiménez, 1971; Fernández, 1994: 95-122), is nothing else.

In this sense, collaborative governance in university centers has been favored in American universities. This process was developed in American colleges and universities between 1970 and 1980 (Kriesberg, Neu, 2018), thanks to the funding of studies on the benefits of positive conflict management and mediation training for the members of these centers to resolve their conflicts collaboratively. In this way, recourse to judicial proceedings was avoided, as well as the economic and social cost entailed. This line is in parallel with the paradigm of restorative justice, and its emerging practices constitute a new and promising area of study for the social sciences, where three themes must be taken into account:

(a) The window of the social discipline. This image is related to Johari's window by presenting the potentialities in a graphic form. It states that the therapeutic strategy is the most socially controlled and supported practice, enabling collaborative problem solving (Wachtel, 2000; Wachtel, McCold, 2000).

b) The role of stakeholders (McCold, 1996; McCold, 2000), who participate and reflect in the search for the best way to redress the harm caused, based on a collective commitment.

c) The typology of restorative practices (McCold, 2000; McCold, Wachtel, 2002) extends responsibility to stakeholders and the community.

The emphasis on lifelong learning would be reflected in the humanistic theory of Carl Rogers (1982), which has influenced teaching practice through, above all, one essential key:

the importance of individualization of teaching. These principles of the teaching-learning process are as follows:

1. The human being possesses a natural potential for learning, an ambivalent need to learn and evolve, to expand knowledge and experience, and an innate curiosity for his world that the educational system must not stifle.
2. The student learns when he perceives study as necessary to his own goals, as an enrichment of himself.
3. Learning that involves changes in the organization of the "Self" is less well assimilated, and there is a tendency to reject it.
4. Most meaningful learning is achieved through practice and when the learner participates responsibly in the learning process.
5. Learning that embraces the whole person, his or her affectivity and intellect, is the most enduring.
6. Independence, creativity, and self-confidence are facilitated by self-evaluation and self-criticism, leaving the evaluation of others in second place.
7. The most valuable learning in the modern world is "learning the learning process," which means a continuous attitude of openness towards experiences and incorporating the change process (Rogers, 1982) – not forgetting that the achievement of learning is related to an environment that positively stimulates the teaching-learning process. Therefore, speaking of a program referring only to formal theoretical contents is impossible.

#### **Intra-university mediation services. International perspective.**

The second line of research relates to the commitment to mediation in the university context. More and more universities are using Alternative Dispute Resolution, including mediation, to deal with conflicts between individuals and groups (Doelker, 1989; Harrison, 2007).

Various forms of conflict resolution for students, academics, and administrative staff have been implemented at the University (Barsky, 2002). These services have different modalities: 1. They are exclusive to resolving the conflicts of the components of the University where they are located; 2. They are a public service to which all citizens have access; and 3. These are programs to improve university coexistence.

States that different figures have incorporated mediation in Spanish universities. The mediation process is committed to a specific intervention focused on the interests of each party, giving real protagonism to the actors in the conflict, providing the participants with a great deal of learning throughout the process, among many other advantages, including confidentiality, speed, control of the process, monitoring, proposals aimed at improving coexistence in the specific case and towards the future, etcetera.

This is reinforced by the publication of Law 3/2022, of 24 February, on university coexistence, which aims to bring about essential changes in the university environment towards creating a culture of dialogue and peace in the academic environment. At the same time, training has been developed through different courses, masters or postgraduate courses in mediation (Rosales, García, 2019). In Spain, this movement began in 1999 at the University of Murcia. In the United Kingdom, universities such as Durham University; Cambridge; University Leeds; The University of Manchester; Bristol; St. Andrews; Oxford; University College London; University of York; the University of Sussex, and the University of Dundee, among others, have a mediation service that is sometimes open to the general public. The United States has the following universities: the University of Washington, Indiana University Bloomington, The University of Memphis, and The University of Alabama, among others, also have these mediation services.

In Canada, there are different universities such as the University of Ottawa (Office for the Prevention of Discrimination and Harassment of the University of Ottawa, University of Ottawa Faculty Association, Office of the Ombudsman), the University of St. Paul (Canadian Institute for Conflict Resolution), Carleton University, which offer different mediation services, in different modalities through professionals trained in mediation.

These proposals have spread internationally, reaching Mexico at the University of Guanajuato; the Faculty of Law of the National University of Cuyo (Argentina), a country that has a Degree in Conflict Resolution and Mediation at the National University of Tres de Febrero (Argentina); Otago University (New Zealand), and Australia (Gmurzyńska, 2021).

### **Promoting just, peaceful and inclusive societies and inclusive quality higher education (SDGs 4 and 16).**

In this line, there is a previous movement in the University for the achievement and development of the goals, SDG-4 and SDG-16, as there are previous experiences that fight for quality and inclusive education and that, at the same time, seek the promotion of societies and citizens that use dialogue and a culture of peace.

In Spain, most mediation services are linked to services or units that favor coexistence and conflict resolution, strengthening the culture of peace. Among these units are the Conflict Mediation and Advice Unit (UNIMAC) of the University of La Laguna (Tenerife), created during the 2011/12 academic year. This unit is followed by the other coexistence and positive conflict resolution services that have been implemented in other Spanish universities, such as the University of Las Palmas de Gran Canaria, University of Vigo, University of Barcelona, León, University Rey Juan Carlos, Granada, the Faculty of Education of the University of Alicante (Grau et al., 2016). In addition, there is also the University Community Attention Service (SACU) of the University of Huelva, the UC3M Mediation Group of the University Carlos III of Madrid, and the University Centre for Conflict Transformation (GEUZ) of the University of the Basque Country (Grau et al., 2016).

The United Nations University of Peace (UPEACE) in Costa Rica was created by the United Nations (UN) General Assembly simultaneously with autonomous management. Its objectives include the promotion of peace through education, fundamentally through training at the postgraduate level, and it is hoped that in the future, it will have exchange programs with undergraduate and graduate students—secondly, the UNESCO Chair for Peace Studies at the University of Innsbruck in Austria.

Along these lines, certain Spanish universities have set up research institutes. These include The University Institute for Peace and Conflict Research of the University of Granada, which brings together professors from the University of Granada to analyze the causes of violence as well as the conditions for peace to seek alternatives in behavior that lead to a model of society and national and international relations based on cooperation, respect for human rights and the existence of material and social conditions for peace. This institute runs masters and doctoral courses with agreements with Latin American universities (Mexico and Colombia). It is responsible for the *Revista de Paz y Conflictos* (Journal of Peace and Conflict). Another center with a similar activity is the Inter-University Institute for Social Development and Peace (IUDESP), which are linked to the University of Alicante and the Universitat Jaume I. This center carries out research and teaching activities on issues related to peace. These topics are direct violence, inequality, poverty, social justice, culture and education for peace, etcetera. The Doctoral Programme in International Studies in Peace, Conflict, and Development is linked to this institute.

#### **The figure of the University Ombudsman**

This figure of the University Ombudsman has an autonomous character in defending the rights and freedoms of all those who request his or her service. Mediation is not always used and is often confused with conciliation or arbitration. In Spanish universities, these services carry out extraordinary work to resolve complaints and conflicts that request this service in the university environment. It is not easy to establish the limits of their services, as they suggest, recommend and establish a solution without a mediation process from a guaranteeing position (Rowe, 1995).

#### **Intra-university mediation: an alternative to the judicial route**

Conflicts in the University may lead the parties to seek a judicial solution. The use of mediation can avoid the judicialization and excessive confrontation that this entails. Incorporating this form of conflict resolution in the university institution's heart will favor the teaching staff's feeling of belonging, who are often distanced from other colleagues or students as a consequence of the development of their lines of research or professional promotion. The University must be an example of peaceful conflict resolution and a culture of peace, and its staff must therefore be among the first bodies and individuals to become aware of this.

In summary, the study presented has rigorously followed the criteria established by (Moher et al., 2016; Urrutia, Bonfill, 2010), favouring other researchers to repeat these results. The relevance of some publications is evidenced by the impact of the journal in which they are published and by the number of citations received by other researchers.

The limitations of this study reside in the criteria established for the selection of the articles. Although it is true that scientific production on intra-university mediation is currently increasing, it is still limited compared to other scientific fields of education. For this reason, the articles selected are reduced. However, it is a starting point for further research on this subject of study.

## **5. Conclusion**

The analysis of the publications carried out allows us to establish that mediation in the University is the strategy that allows the development of competencies and skills in its components and that its use will favor the construction of a more egalitarian, inclusive society in line with SDGs.

The development of the cooperative paradigm is necessary to establish a collaborative perspective in the university organization to address the conflicts that occur within it. Educational mediation is a way of establishing positive management of existing conflicts at the university level.

Experiences developed in countries such as the United States since 1970, thanks to research and training projects funding, attest to its effectiveness. It is widely developed internationally, in the United States, the United Kingdom, Canada, and New Zealand. In Spain, some experiences are beginning to develop and are awaiting implementation thanks to the recent publication of Law 3/2022, of 24 February, on university coexistence.

In Spain, the existing experiences can be framed within the five established lines of analysis, although their implementation has not been developed to the same extent. The creation of standardized centers and services is pending in most universities to achieve SDGs 4 and 16.

The consolidated experiences of mediation in universities make it possible to establish that mediation in this educational context is a viable process for conflict resolution. This ADR favors academic freedom and the empowerment of teachers in a process that generates personal and institutional growth. Existing mediation services in universities allow for managing and resolving conflicts before going to court and confrontation between the parties. Mediation allows for the empowerment of the opposing parties by listening to each other and establishing a satisfactory agreement.

Mediation guarantees the rights of all the parties that make up the University, strengthening the link between Education and Justice in line with the 2030 Agenda. Raising the university community's awareness, including students, teachers, and administrative and service staff, through courses on conflict management skills and techniques allows for promoting a culture of dialogue and peace.

With all this, the University becomes the driving force behind promoting the culture of peace in society through training in ADR and in training students in mediation qualifications, etcetera, to reduce existing conflicts and inequalities. Students, for their part, contribute the role of agents of change to achieve a society of dialogue and democracy in which a culture of peace prevails, as they have been protagonists in the positive management of their conflicts.

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## Factors Affecting the Undergraduate Student's Satisfaction in Short-Term Online Courses: A Case Study of Vietnamese Pedagogical Students

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### Abstract

Studies on short-term online courses in form of the massive open online course have become an e-learning trend in higher education institutions to transfer a sufficient amount of credits' knowledge in a short period. This article focused on exploring the factors that affected undergraduate students' satisfaction when participating in a short-term online course at a key pedagogical university in the South of Vietnam. This was a cross-sectional study with 1720 pedagogical students. The study aimed to explore and understand the factors affecting the satisfaction when studying online courses of pre-service teachers to prepare them with experience and knowledge for future online teaching. The results showed a positive correlation between perceived ease of use; perceived usefulness, information quality; system quality; instructors dimension; support service; subjective norm; perceived behavior control with students' satisfaction when participating in a short-term online course. This is the basis for research team to continue to develop and improve the quality of online courses and provide a theoretical framework on factors affecting learners' satisfaction when participating in a short-term online course for students in countries with higher education online education systems similar to Vietnam. In addition, this study expanded our understanding of the factors that influence the preparation of pre-service teachers to meet the requirements of digital transformation and international integration in e-learning educational trend from a developing country's perspective.

**Keywords:** higher education, massive open online course, pedagogical student, pre-service teachers, short-term online course.

### 1. Introduction

Since 2010, online training with short courses in the form of Massive Open Online Course (MOOC) is gradually becoming popular and constantly growing with familiar platforms such as

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Topica, Khan Academy, Udemy, and Coursera. MOOCs are courses that carry the idea of open learning with information and communication technologies support in the form of distance learning/full e-Learning (Aparicio et al., 2019; Kiselev, Yakutenko, 2020). The open learning model of MOOCs makes knowledge-based content available online to everyone, and there is no limit to the number of participants. MOOCs provide opportunities for cooperation and information exchange among learners to acquire knowledge and discuss learning topics; and MOOCs also open a 'door of knowledge so that anyone around the world can self-study/research through Internet access (Le, 2014). The many benefits of MOOCs' flexibility through their open and massive nature of many online training programs, from undergraduate/graduate training to internal training, especially the exploitation of short-term online courses (SOC) – a course with a small number of credits/training duration, or with several study topics. Studies focused on SOCs in the form of MOOCs aims to reflect the concept of e-Learning design towards the trend of transporting enough amount of knowledge of a module or a subject in a suitable study period. One of the biggest limitations of MOOCs is the low completion rate (2~5 %) (Gütl et al., 2014). Therefore, improving the effectiveness and satisfaction of learners in SOCs is a problem that attracts a lot of attention to e-Learning studies (Wang et al., 2010).

SOCs were born to allow instructors to save training time, update training content more often, and control the amount of knowledge that learners receive through lessons. By the self-assessment system, learning materials are sent in different file formats compared to traditional teaching. This form is being applied quite popularly in many developed and developing countries such as the US, the UK, Korea, China, Japan, and India (Cole et al., 2021; Harasim, 2006; Kentnor, 2015; Mandasari, 2020; Rizvi et al., 2019). Especially in the context of the COVID-19 pandemic, countries in general and Vietnam, in particular, are taking tightening measures such as limiting direct contact, social distancing, and suspending school time. To prevent the spread of the disease, SOCs are considered an effective and necessary solution for learners to both ensure the learning progress but not too much pressure (short time), and ensure the safety of the students (Duc-Long et al., 2021).

In the context of the outbreak of COVID-19 in Vietnam from 2020, learning activities at higher education institutions must continuously switch between online and face-to-face, including a completely online learning phase (Dinh et al., 2021; Duc-Long et al., 2021; Nguyen, 2022). In particular, SOCs have been produced and tested by many universities in Vietnam to lay the foundational steps for the development of full-time online training in the future (Dinh et al., 2021; Duc-Long et al., 2021). From this context, besides the design and implementation of SOCs, it is necessary to pay attention to the feedback, perception, assessment, and satisfaction of learners for this form to improve the quality of training services and overcome existing limitations. In this respect, some scholars have also conducted research on which factors will affect learners' satisfaction with SOCs (Chiu et al., 2005; Masrom, 2007; Sun et al., 2008; Tarhini et al., 2013; Mohammadi, 2015; Granić, Marangunić, 2019; Pham et al., 2019; Duc-Long et al., 2021; Nguyen, 2022). These studies are done mostly in developed countries such as Taiwan, the USA, Korea, China, Spain, etc. The theories applied by the authors explained in several previous studies include Expectancy Disconfirmation Theory (EDT), Technology Acceptance Model (TAM), and Information Systems Success (ISS). In Vietnam, there are researchers focusing on the combined application of the ISS and TAM to consider learners' satisfaction based on their impressions from experiencing SOCs; but no studies has focused on pedagogical students – the future teachers who will teach online or SOCs. Therefore, this study will examine which factors affect pedagogical students' satisfaction when participating in SOCs based on the two models mentioned above. In addition, several proposals were also made to help higher education institutions in Vietnam improve and enhance the quality of e-Learning training services.

## **2. Theoretical framework**

The Technology Acceptance Model (Marangunić, Granić, 2015) and the Information Systems Success (DeLone, McLean, 2003) are applied to frame the background of this study. Accordingly, perceived ease of use and perceived usefulness in the TAM are two important factors affecting the acceptance of using electronic information systems. These two factors are also used by many researchers to measure learner satisfaction with e-Learning such as Chiu et al. (2005), Masrom (2007), Sun et al. (2008), Wu et al. (2008), Tarhini et al. (2013), Marangunić and Granić, (2015),

Mohammadi (2015), Granić and Marangunić (2019). Along with that, the ISS model has shown different views on the evaluation of information systems. Specifically, six factors in the model are (DeLone, McLean, 2003): system quality, information quality, service quality, intention to use, user satisfaction, and subjective norm. Therefore, when considering the context of implementing e-Learning or SOCs in Vietnam along with inheriting previous studies of Pham et al. (2019), Dinh et al. (2021), Duc-Long et al. (2021), Nguyen (2022), this study proposes basic assumptions that learners' satisfaction will be affected by factors such as perceived ease of use; perceived usefulness, information quality; system quality; instructors dimension; support service; subjective norm; perceived behavior control.

#### **Perceived ease of use**

Perceived ease of use (PE) is the level to which an individual believes that using a particular system will not require too much effort (Marangunić, Granić, 2015). Previous mentioned researchers studied and mentioned the PE of an e-Learning system for students through how to use the system, how to control functions or operations on the system which have a positive impact on student satisfaction when studying online.

#### **Perceived usefulness**

Perceived usefulness (PU) is an individual's belief that using a particular system will enhance its effectiveness (Marangunić, Granić, 2015). Studies by Masrom (2007) and Granić & Marangunić (2019) mentioned the PU factor and the results obtained through the study are that user has the greatest impact on satisfaction. Tarhini et al. (2013) and Mohammadi (2015) also mentioned that usefulness has a positive influence on behavioral intention to use a web-based learning system. When users find SOCs to help them acquire desired knowledge and skills, they are more likely to use the system.

#### **Information quality**

Information quality (IQ) is concerned with the quality of output. IQ usually involves the timeliness, scope, relevance, and accuracy of the information generated by an information system (DeLone, McLean, 2003). Pham et al. (2019) reported that IQ is a factor to evaluate the service quality of a system that affects user satisfaction through the quality of course materials and learning materials. The quality of information will assess whether the amount of knowledge that students have after each course is appropriate, timely, and meets the students' purposes, so it is closely related and meaningful between IQ and student satisfaction (Chiu et al., 2005; Sun et al., 2008).

#### **System quality**

This factor is related to whether there are bugs in the system, consistency of user interface, ease of use, response rate in interactive systems, quality of documentation, quality, and maintainability (DeLone, McLean, 2003). Masrom (2007) and Mohammadi (2015) indicate that system quality (SQ) has a positive effect on user satisfaction. Pham et al. (2019) argue that the quality of the e-Learning system is reflected in the universities' e-Learning websites. In addition, students also have a sensitivity to the technology tools used in the system during the learning process. The students give a sense of the appropriateness of the platform and its design, including its features such as content access, presentations, download speed, and videos (Martín-Rodríguez et al., 2015).

#### **Instructors dimension**

Instructors are the lecturers who communicate with students in the classroom, manage the course and students in the class; also compile lectures and exercises (Huynh, 2019). In addition, they are the facilitators and supporters of students in the learning process (Bui, 2016). Therefore, instructors must have both theoretical and practical knowledge, be attentive to students' interests, and foster ongoing student interaction (Pham et al., 2019). At the same time, instructors are considered the most important human resource to provide students with a whole new quality of education (Cheok, Wong, 2015). Studies by Masrom (2007) and Granić and Marangunić (2019) also mentioned that instructors have an impact on satisfaction.

#### **Support service**

Support services (SS) are a part of service quality. Service quality does not focus solely on the assessment of the teaching and learning process, but also on the evaluation of administrative services and other complementary services (Martínez-Argüelles, Batalla-Busquets, 2016). According to Pham et al. (2019), the quality of SOCs is assessed through the aspect of support services or administrative services and considers a factor that has a positive influence on student

satisfaction when studying online. Managing aspects of the SS is integral to ensuring student loyalty (Martínez-Argüelles, Batalla-Busquets, 2016).

**Subjective norm**

Subjective norm (SN) is an individual's perception that most important people think they should or should not do something (Ajzen, 2020). Masrom (2007) introduced this SN factor into the model to explain the influence of external factors from others when participating in e-Learning or SOCs. In addition, Tarhini et al. (2013) also mentioned the positive influence of SN on satisfaction.

**Perceived behavior control**

Perceived behavior control (PB) is considered in two aspects: the efficiency of the computer and the efficiency of the internet. It is the fact that an individual believes that he or she is capable of self-use and finds that the ease of use of computers and the internet will have a positive impact on satisfaction when using e-learning (Masrom, 2007; Granić, Marangunić, 2019). The efficiency of the computer is confirmed to be the determining factor in the acceptance and use of the system (Wu et al., 2010).

**3. Methods**

**Study design**

This is a quantitative cross-sectional survey study among Vietnamese undergraduate students which aims to explore the factors affecting satisfaction when taking SOCs at a key pedagogical university in Vietnam. Therefore, the research hypothesis is proposed that the proposed 8 factors (PE, PU, IQ, SQ, ID, SS, SN, PB) have a positive influence on student satisfaction when participating in a short-term online course.

**Instrument**

The hypothesis is tested through a primary data set with 300 valid observations collected by the convenience sampling method. The participants are pedagogical students at a key pedagogical university in the South of Vietnam who has been studying online through the SOCs for their learning and research. The official questionnaire includes 45 items inherited and adjusted from previous studies (see Table 1).

**Table 1.** Designing the questionnaire for research factors

Coding	Factors	Sources
<b>PE</b>	<b>Perceived Ease of Use</b>	
PE1	Learning how to use e-learning is easy for me	Masrom (2007), Granić & Marangunić (2019) , Wu et al. (2008)
PE2	I easily do what I want to do on the SOC system	Wu et al. (2008), Sun et al. (2008)
PE3	My interaction with the e-learning service is clear and understandable	Tarhini et al. (2013), Masrom (2007), Granić & Marangunić (2019)
PE4	I found the SOCs easy to use	Tarhini et al. (2013), Sun et al. (2008)
PE5	The course website allows me to find information easily	Pham et al. (2019)
<b>PU</b>	<b>Perceived Usefulness</b>	
PU1	Taking this course can improve my academic performance	Masrom (2007), Granić & Marangunić (2019), Tarhini et al. (2013)
PU2	I found this course useful for my studies	Masrom (2007), Granić & Marangunić (2019)
PU3	Taking the course allows me to finish my studies faster	Tarhini et al. (2013)
PU4	Taking a short online course saves my time	Mohammadi (2015)
PU5	Taking this course helps me save money	Mohammadi (2015)
<b>IQ</b>	<b>Information Quality</b>	
IQ1	The course provided me with confusing information	Masrom (2007), Granić & Marangunić (2019)

IQ2	Information from the course is always updated for my purposes	Masrom (2007), Granić & Marangunić (2019)
IQ3	The reliability of the output information from the course is high	Masrom (2007), Granić & Marangunić (2019)
IQ4	The course provided the information I needed promptly	Masrom (2007), Granić & Marangunić (2019)
IQ5	The course does not provide enough information for my purposes	Masrom (2007), Granić & Marangunić (2019)
IQ6	The course website provides me with valuable information	Pham et al. (2019), Dinh et al. (2021), Duc-Long et al. (2021), Nguyen (2022)
<b>SQ</b>	<b>System Quality</b>	
SQ1	The course allows me to take control of my learning activities	Wu et al. (2008)
SQ2	The course system has a quick response during peak times	Masrom (2007), Granić & Marangunić (2019)
SQ3	The arrangement of the information displayed on the interface of the e-learning system is clear	Masrom (2007), Granić & Marangunić (2019)
SQ4	The steps to complete my studies on the e-learning system are not simple	Masrom (2007), Granić & Marangunić (2019)
SQ5	I feel safe when providing confidential information to my university e-learning website	Pham et al. (2019), Dinh et al. (2021), Duc-Long et al. (2021), Nguyen (2022)
<b>ID</b>	<b>Instructors dimension</b>	
ID1	My course instructors are knowledgeable	Pham et al. (2019), Dinh et al. (2021), Duc-Long et al. (2021), Nguyen (2022)
ID2	My course instructors provide great lectures	Pham et al. (2019), Dinh et al. (2021), Duc-Long et al. (2021), Nguyen (2022)
ID3	My course instructors provide a learning environment that encourages interactive engagement	Pham et al. (2019), Dinh et al. (2021), Duc-Long et al. (2021), Nguyen (2022)
ID4	I receive timely assessments of assignments or tests for the course from my instructors	Sun et al. (2008)
ID5	Instructors are well prepared and have a teaching method suitable for learners	Masrom (2007), Granić & Marangunić (2019)
<b>SS</b>	<b>Support Service</b>	
SS1	My university has a first-time e-learning support service	Pham et al. (2019), Dinh et al. (2021), Duc-Long et al. (2021), Nguyen (2022)
SS2	The staff at the university will let me know exactly when my requests will be fulfilled.	Pham et al. (2019), Dinh et al. (2021), Duc-Long et al. (2021), Nguyen (2022)
SS3	The staff at the university gives me quick support service	Pham et al. (2019), Dinh et al. (2021), Duc-Long et al. (2021), Nguyen (2022)
SS4	The staff at the university always understands my specific needs	Pham et al. (2019), Dinh et al. (2021), Duc-Long et al. (2021), Nguyen (2022)
SS5	My university support service has convenient hours of operation	Pham et al. (2019), Dinh et al. (2021), Duc-Long et al. (2021), Nguyen (2022)

<b>SN</b>	<b>Subjective Norm</b>	
SN1	My friends think I should take a SOC	Masrom (2007), Granić & Marangunić (2019), Tarhini et al. (2013)
SN2	I have read the reports that taking a SOC is a good method of learning	Masrom (2007), Granić & Marangunić (2019)
SN3	My instructor thinks I should take a SOC	Masrom (2007), Granić & Marangunić (2019), Tarhini et al. (2013)
SN4	My family thinks I should take a SOC	Masrom (2007), Granić & Marangunić (2019)
<b>PB</b>	<b>Perceived Behavior Control</b>	
PB1	I can complete my learning activities in this course if I only have a study guide for reference	Masrom (2007), Granić & Marangunić (2019)
PB2	I can complete my learning activities in this course if I have never taken a similar course before	Masrom (2007), Granić & Marangunić (2019)
PB3	I can take and complete the course without anyone's help	Wu et al. (2008)
PB4	I feel confident when exchanging information with others in e-learning discussion forums	Masrom (2007), Granić & Marangunić (2019)
PB5	I feel confident downloading the materials from this course	Sun et al. (2008)
PB6	I feel confident when attaching files in the course	Masrom (2007), Granić & Marangunić (2019)
<b>SAT</b>	<b>Satisfaction</b>	
SAT1	I am satisfied with the achievement gained from the SOC	Masrom (2007), Granić & Marangunić (2019)
SAT2	My decision to take the course was a wise one	Masrom (2007), Granić & Marangunić (2019)
SAT3	I am satisfied with the experience when taking the course	Masrom (2007), Granić & Marangunić (2019)
SAT4	I am very satisfied with the SOC	Masrom (2007), Granić & Marangunić (2019)

### Participants

Participants are pedagogical undergraduate students from 18 to 22 years old. The participants are from a key pedagogical university in Southern Vietnam. The authors choose a key pedagogical university because this university has training in pedagogical students and the output standard is that graduates can teach online, as well as be able to apply information technology in teaching. This is a critical requirement to innovate Vietnamese education, when the future teachers are capable enough to approach technology change, towards the development of smart education in Vietnam. In addition, the research team is also a lecturer in charge of developing a training program for pedagogical students of this university. In the context of the COVID-19 outbreak and teaching activities moving online, the team's implementation of this research is meant to make a positive contribution to the student's output standards, research, and national report because the pedagogy sector in Vietnam does not have to pay tuition fees when studying at university, to the development and improvement of SOCs for students; and ensuring the appropriateness of the team's ability to conduct research due to the limitation of research scope when social distancing takes place.

A letter was designed for students to introduce the project, explain the purpose of the survey, and get the university's permission to participate in the study. The survey process took place online by Google Form. Surveys were either sent to the participants during the online class time or

conducted directly by the co-authors. Participants were informed about the study via an information sheet, which was attached to every single questionnaire. The information sheet provided details about the study aims, the questionnaire content, confidentiality, choice of participation, and withdrawal, as well as the contact details of the research team. Completion of the questionnaire indicated implied consent on the part of the student. Only fully completed questionnaires were included in the final analysis.

After the necessary ethical preparations were obtained, the sampling process took place. We conduct sampling with a minimum sample size to use for EFA exploratory factor analysis according to Murtagh and Heck (2012) is  $n = 5 \times 45 = 225$  to ensure a minimum sample size with 45 observed variables. According to Chatterjee and Simonoff (2013), the minimum sample size for regression analysis with 8 independent variables is calculated as  $n = 50 + 8 \times 8 = 114$ . In this combination, the required sample size is 300 in case of invalid answer sheets, they will be discarded after screening. Convenience sampling and snowball sampling methods were applied to collect primary data. The participants are those who have or are taking a SOC for the selected university. The content of the filtered questions is included in the questionnaire to identify the right participants to collect information. The survey took place entirely online from October 2021 to December 2021. The Google Form link is sent via email, thanks to the support and recommendation of some lecturers - currently the academic advisors of students participating in the courses, then we ask the students to introduce the next survey through the sharing form. The results obtained received many positive responses with 1800 answer sheets. After data collection was processed, there were 1720 valid and 80 invalid answer sheets.

#### Data analysis

After screening and obtaining the official data, the research team used descriptive statistics by SPSS software (version 22.0) to summarize the data and information of the sample such as gender, and academic year. Out of a total of 1720 participants, 1066 female students (62 %) and 654 male students (38 %) have been/are taking a SOC organized by the university. The participants included 520 freshmen (30.2 %), 385 sophomores (22.4 %), 412 seniors (24 %) and 403 juniors (23.4 %). Then, several analytical techniques were used include: testing the reliability of the scale by Cronbach's Alpha coefficient, exploratory factor analysis, and linear regression analysis to know whether there is a linear correlation with the dependent variable, whether the correlation is positive or negative and it is statistically significant in the population.

## 4. Results

### Cronbach's Alpha reliability test

Except for the questions IQ1 and PB6 with a total correlation coefficient of less than 0.3, the analysis results show that the items in the same scale all have a total correlation coefficient greater than 0.3, achieving the desired results and the total Cronbach's Alpha coefficient is greater than 0.7 (see Table 2). Therefore, the independent and dependent scales used in this study are appropriate and creditable, these observed variables are used in the next exploratory factor analysis (EFA).

**Table 2.** Scale reliability test results

Scale	Items	Cronbach's Alpha
PE	5	0,764
PU	5	0,772
IQ	5	0,785
SQ	5	0,761
ID	5	0,733
SS	5	0,743
SN	4	0,717
PB	5	0,778
SAT	4	0,792

### Exploratory factor analysis

We used EFA for the independent variables' scale, the final results showed that all statistical parameters were significant (see Table 3). Specifically, the coefficient  $KMO = 0.817 > 0.5$  shows that the analysis is appropriate and statistically significant.  $p$  (Bartlett's test)  $< 0.05$  shows that the items are correlated with each other. Factor loading coefficients are higher than 0.5 (except for IQ1 and PB6 which have been removed).

The Eigenvalue value is  $1.231 > 1$ , so the 8 extracted factors have the best information summary meaning. At the same time, the total variance extracted of 70,969 indicates that 8 factors (PE, PU, IQ, SQ, ID, SS, SN, PB) explain 70.969 % of the variation of the data.

**Table 3.** Independent variable factor analysis results

Sources	Factors							
	X1	X2	X3	X4	X5	X6	X7	X8
SQ1	0,812							
SQ2	0,803							
SQ3	0,792							
SQ4	0,778							
SQ5	0,775							
PB2		0,806						
PB3		0,801						
PB1		0,795						
PB4		0,790						
PB5		0,781						
SN2			0,778					
SN3			0,773					
SN4			0,768					
SN1			0,759					
PE1				0,869				
PE2				0,858				
PE3				0,855				
PE4				0,834				
PE5				0,812				
IQ2					0,821			
IQ3					0,817			
IQ4					0,797			
IQ5					0,793			
IQ6					0,784			
PU3						0,759		
PU2						0,756		
PU5						0,749		
PU1						0,745		
PU4						0,743		
ID1							0,800	
ID2							0,791	
ID3							0,786	
ID4							0,780	
ID5							0,777	
SS1								0,811
SS2								0,807
SS3								0,799
SS4								0,793
SS5								0,767
KMO								0,817
Barlett's Test of								0.002

Sphericity								
Eigenvalues	12.884	5.164	3.774	2.711	1.623	1.586	1.472	1.231
Explanatory level of the factor	11.395	9.693	9.018	8.764	8.755	7.981	7.835	7.528
Cumulative level of explanatory	11.395	21.088	30.106	38.870	47.625	55.606	63.441	70.969

The questionnaire items of the dependent variable after being tested for the reliability of the scale by Cronbach's Alpha coefficient were also carried out factor analysis with the results showing that: Barlett's test with  $p < 0.05$  shows that the items in the observed variable are correlated with each other. KMO coefficient  $> 0.5$  shows that factor analysis is suitable for data. The extracted variance value = 79.237 and all questions have factor loading coefficients higher than 0.5. Thus, the 'Satisfaction' scale achieves a convergent value.

**Table 4.** Dependent variable factor analysis results

Source	Loading factor coefficient
SAT3	0,793
SAT4	0,791
SAT2	0,786
SAT1	0,777
KMO	0,782
Bartlett's Test of Sphericity	0,000
Eigenvalues	3,232
Level of explanation	79.237%

**Linear regression analysis**

In Table 5, all 8 factors have  $p < 0.05$ , so there is a correlation with satisfaction when the reliability is 95 %. Adjusted  $R^2$  is 0.667, which means that 66.7 % of the change in satisfaction is explained by 8 independent factors in the research model, the remaining 33.3 % is due to the effects of other factors. The F test used in the analysis of variance (ANOVA) of the regression analysis reached  $p < 0.05$ , which indicates that the theoretical model is consistent with the actual data.

**Table 5.** Model test results of factors affecting the students' satisfaction when participating in a short-term online course

Factors	Beta	p	VIF
SQ	0,124	0,000	1,876
PB	0,298	0,002	1,923
SN	0,233	0,001	1,765
PE	0,267	0,023	1,787
IQ	0,156	0,000	1,656
PU	0,345	0,011	1,864
ID	0,104	0,004	1,576
SS	0,182	0,012	1,249
$R^2$			0,783
Adjusted $R^2$			0,773
F (p)			0,001

Based on the regression equation, shows that the regression coefficients are all higher than 0 so it is concluded that all independent factors included in the analysis have a positive impact on the dependent variable (SAT). Independent factors include PE, PU, SQ, PB, SN, IQ, ID, SS has a positive and significant impact on the students' satisfaction. From here, we give the regression equation predicting the satisfaction of pedagogical students when taking a SOC as:

$$SAT = 0.124SQ + 0.298PB + 0.233SN + 0.267PE + 0.156IQ + 0.345PU + 0.104ID + 0.182SS$$

## 5. Discussion

To discover the factors affecting satisfaction when participating in a SOC of pedagogy students at a key pedagogical university in Vietnam, we discovered the positive impact of 8 factors on student satisfaction. These are important findings to improve the experience and quality of teacher training in the future so that they can both teach online and inspire students to learn online and self-improve regularly through SOC. Based on the results of the regression analysis, we make the following discussions:

The PU factor has the greatest influence among the eight factors. This is consistent with previous research showing that perceived usefulness is more important than perceived ease of use when considered in the context of online learning. Specifically, users are interested in how an online learning system provides information and how effective it is (Masrom, 2007; Granić, Marangunić, 2019; Sun et al., 2008). This result also reflects that pedagogical students are aware of the importance of fully experiencing these online courses to improve their knowledge and skills. This is a big change in the perception of pedagogical students in the context that many Vietnamese lecturers and teachers are currently facing many difficulties in their competence to apply information technology in teaching (Dinh et al., 2021; Nguyen, 2022), as well as barriers to traditional teaching perception, which are still quite heavy in Vietnamese education (Duc-Long et al., 2021). This finding proves that Vietnamese pedagogical students in the new era have prepared themselves for the digitalization process of education.

The second influential factor after PU is PB. This result is also supported by studies by Masrom (2007), Granić and Marangunić (2019), Sun et al. (2008), and Wu et al. (2008) when there is a positive correlation to satisfaction. When a student attends a SOC, there will be worries about interacting with computers and online learning websites/platforms. The higher the anxiety, the more students cannot process information or requests well when using it, so the fact that students are aware of their behavioral abilities or confidently exchange information, will give students a more positive attitude towards the online learning system (Granić, Marangunić, 2019). Compared with the study of Duc-Long et al. (2021) when learning about the online-learning perception of pedagogical students, we found that there is a similarity when students are fully informed as well as guided on how to participate. Effective course participation and lecturers who know how to take care of students' mental health during the learning process will increase their satisfaction, especially when the students take part in the courses during the COVID-19 pandemic outbreak.

Next, the PE factor had the third strongest and most significant impact on students' satisfaction. From a practical perspective related to online learning, the easy access, ease of use by students of the system, and ease of finding information will stimulate and bring positive emotions, thereby encouraging learners to be more interested in taking the course. This result was also verified in the study of Masrom (2007). In particular, the study of Tarhini et al. (2013) shows that PE has the strongest influence on satisfaction. Ease of use will help users focus on information more effectively creating high efficiency. However, the results on the correlation between subjective normative factors and satisfaction are inconsistent compared with the study of Granić and Marangunić (2019). We found that the influence of family, friends, relatives, and mentors is really meaningful for strengthening trust, especially seeing the benefits from technology leading to the use of images in the context of the complicated COVID-19 pandemic in Vietnam. This finding reinforces the view that social relationships are a powerful mental resource that influences pedagogical students' perceptions of online learning. If these resources are perceived to be limited in terms of online learning, they will negatively affect their satisfaction with the course. This is an important consideration for online education program designers when it comes to emphasizing and incorporating social media measures of online learning to improve user experience.

The ID factor is assessed as influencing pedagogical student satisfaction. For the traditional form of learning, most of the interaction between the instructors and the learners is mainly face-to-face communication, while for the online learning form, this communication is indirect through the virtual environment by using tools and electronic equipment connected to the internet. This interaction is somewhat limited if the connection is unstable or encounters unexpected problems when connecting. Therefore, in addition to good professional knowledge, instructors play an important role in encouraging the interactive participation and active learning of learners through teaching methods, lesson organization, exercises, and tests (Pham et al., 2019; Nguyen, 2022). Studies on student satisfaction when participating in SOCs, or online classes in the context of the

COVID-19 outbreak in Vietnam, confirm the importance of lecturers to a positive classroom atmosphere (Dinh et al., 2021; Nguyen, 2022). If the lecturer effectively applies online teaching tools or has an active learner-centered online teaching method, the student's excitement, expectation, and satisfaction with that course will increase significantly.

In addition, the SS factor is also assessed to have a positive correlation with pedagogical students' satisfaction. In the process of using the online learning system, learners will inevitably encounter problems that they cannot solve themselves. This requires timely support from the administrator. Meeting the needs of course selection, security, troubleshooting or administrative procedures quickly will increase student satisfaction with the online learning system. This result again supports the view of Pham et al. (2019). Once students are supported quickly and promptly in the process of using, it will create trust and satisfaction when the benefits of students are all concerned by the university. IQ and SQ factors are two important factors. Learners themselves not only pay attention to what information the learning system provides, whether that information is clear, understandable, and relevant, but also pay special attention to the ability to respond quickly in the learning process during peak times, the arrangement of the information displayed and information security issues. Online learning is based on electronic devices and media with network connection, it is indispensable for the system features, and a service system is a place for learners to study and complete the assigned exercises. SQ is all worthy of attention. Information technology develops strongly, and the requirements from users are increasing, so the SQ is more and more concerned to improve user needs. This is completely consistent and has also been supported in several studies by Pham et al. (2019), Mohammadi (2015), and Masrom (2007).

## **6. Conclusion**

This study results have discovered and tested the relationship between the factors affecting the satisfaction of pedagogical students when participating in SOCs. Accordingly, there is a positive correlation between PE, PU, SQ, PB, SN, IQ, ID, and SS with students' satisfaction. This result allows us to conclude about the acceptance of the proposed research hypothesis. This result also shows the initial psychological preparation of pedagogical students for online teaching, they are ready to experience these courses to form their knowledge, skills, and experience for their future teaching professionals. In addition, our findings confirm that the SOCs applied in the undergraduate credit training system of the key pedagogical university selected in this study have initially met the requirements of learners' satisfaction. This is the basis for the research team to continue to adjust and improve the quality of the online course from the system to the content, and the teaching scenario towards the satisfaction and happiness of the learners in the future. For developing countries, or with higher education systems (mainly pedagogical universities) similar to Vietnam, these results provide a theoretical and empirical framework for SOCs and factors affecting learners' satisfaction when participating in SOCs.

## **7. Recommendation**

After combining theory and data analysis results, the authors have suggestions on management and quality improvement to help educational institutions that have been implementing SOC to improve the service quality and student satisfaction as follows:

Firstly, educational institutions need to have documents and videos on how to access, manipulate and use the functions in the service system before users start the course. In addition, the university needs to pay attention to reducing the complexity of the system when users interact, such as: arranging the displayed information reasonably and easily; reducing the display of unnecessary images in the system; simplifying assignment submission; looking up; searching information. The information displayed on e-learning systems or websites/platforms should be accurate and easily accessible.

Secondly, educational institutions need to promptly respond to requests for information, course selection, system failure issues, logins, class access, and other administrative procedures before, during, and after the learning process through the form of online learning quickly, accurately, and flexibly. In addition to general guidance documents and common troubleshooting notes, training units also need to maintain support throughout to avoid students having difficult problems that cannot be solved.

Thirdly, educational institutions need to ensure fast and accurate information through the system's notification feature sent via email and SMS to learners. Develop and regularly update the e-learning system to ensure its relevance to the context as well as innovation. At the same time, this helps learners to be able to access it anytime, anywhere, increasing the initiative in the teaching and learning process. In online lectures, it is recommended to record the lecture so that after the lesson, learners can listen again by accessing the authorized and decentralized system in case the learners do not or do not understand all the information due to problems of line speed, audio signal and some unexpected arising from the outside environment.

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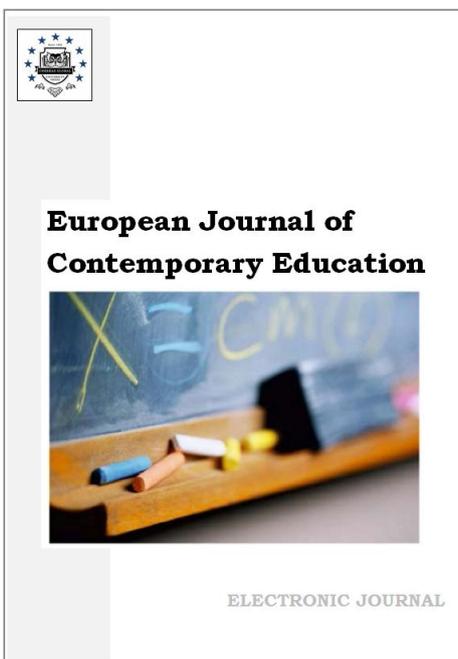
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## **Does School Principals' Leadership Vary Vis-A-Vis Cultural Differences from West to East or South to North?**

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### **Abstract**

The aim of this study was to investigate the extent to which the country's societal cultural values and well-being predict school principals' instructional leadership in different regions of Europe. The secondary data analysis using several different recourses such as the Organisation for Economic Co-operation and Development (OECD) Teaching and Learning International Survey (TALIS) 2018, the Country Comparison tool of Hofstede's six-dimensions model, and the Eurostat database for the data on the Government expenditure on education as a percentage of gross domestic product (COFOG) 2019 was employed in this study. A sample of 22 countries of Europe was included in the final analysis. First of all, multiple linear regression models with and without controlled dummy variables for the regions of Europe were implemented in the analysis of the data. Secondly, the one-way ANOVA with post hoc Tukey's honestly significant difference (HSD) analysis was employed. The regression analysis indicated that the country's societal cultural dimensions have significant predictive power for principals' instructional leadership presented in the TALIS 2018 results. The results indicated that Individualism dimensions have a positive relationship with instructional leadership. More specifically, the regression analysis with controlled dummy variables for the regions of Europe revealed that in the countries of Northern Europe, Individualism and Uncertainty Avoidance are strong significant predictors of school principals' instructional leadership. Meanwhile, in Southern, Western, and Eastern Europe, only Individualism is a significant predictor. This study uncovered that the country's well-being, measured by COFOG, is a strong, but negative predictor only in the countries of Northern Europe. In the countries with higher COFOG, school principals' instructional leadership is lower. This study has added new evidence with a particular interest in the effects of contextual influence on principals' leadership in international surveys such as the TALIS.

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**Keywords:** societal culture, cultural values, principals' leadership, TALIS, Hofstede's model.

## 1. Introduction

We live under the conditions of globalization and competition, which are changing the lives of societies. Globalisation makes the recognition of societal culture and cross-cultural similarities and differences more, not less, important (Dimmock, Walker, 2000). Recently, national policy-making has been increasingly influenced by the findings and recommendations of international studies and/or organizations. Such major organizations as the Organisation for Economic Co-operation and Development (OECD), the World Bank, the United Nations Educational, Scientific and Cultural Organization (UNESCO), and others play a major role in national decision-making in the education sector (Sahlberg, 2016; Steiner-Khamsi, Waldow, 2018). Recent studies (e.g., Jakupec et al., 2019) have increasingly recognized that the OECD seeks to standardize and universalize education systems while ignoring local contexts and national curricula.

Literature on management has provided strong evidence of the relationship between societal culture and organizational outcomes (Konrad, 2000). Research (e.g., Belchetz, Leithwood, 2007) has shown that leadership is context-dependent. Konrad (2000) argues that "culture affects the kinds of leader behaviours that are considered desirable and are accepted" (p. 346). Most of the leadership characteristics and/or behaviors have been culture-specific, and their desirability has been significantly related to the culture of the country (Dorfman et al., 2012). The importance of the country's societal cultural context has also been highlighted in international research on student achievement (Minelgaite et al., 2018). The research carried out by the authors revealed that the country's societal cultural domains and well-being (GDP) are predictors of educational leadership index in the OECD PISA 2015. The inclusion of societal culture as a factor in investigations covering such themes as the curriculum, teaching and learning as well as leadership and school-based management has been seen as an imperative for the future development of comparative education (Dimmock, Walker, 2000).

Another important aspect affecting education is the country's well-being. One direction of research focuses on how the country's well-being depends on education and the quality of education (e.g., Hanushek, Wößmann, 2010). Another focus is on how the national well-being and the size of investment in education at the national level (GDP per capita) affect different areas of education (e.g., Hanushek et al., 2013). The study conducted by Hanushek, Link, and Woessmann (2013) showed that in the case of the OECD PISA research, autonomy over academic content, personnel, and budgets exerts a positive impact on student achievement in developed countries but has a negative effect in developing countries.

For the above-mentioned reasons, this article aims to reveal how the sociocultural context is related to the results of school principals' instructional leadership in the Teaching and Learning International Survey (TALIS), taking into account the different regions of Europe. The idea of carrying out the analysis on a non-national basis but by the regions of Europe is based on insights from the science of leadership, stating that there are differences between "cultural clusters" and leadership styles (House et al., 2004). The results of the well-known GLOBE project show that leadership styles in Eastern Europe (in the GLOBE project, it includes such countries as Hungary, Albania, Slovenia, Poland, Russia, Georgia, Greece, and Kazakhstan) differ most from those in the Nordic countries. However, there is a paucity of research analyzing school-based leadership. Therefore, this study provides new insights into the education sector by conducting international research, highlighting the importance of societal cultural dimensions, and recognizing regional differences of Europe.

## 2. Literature review

### Societal cultural dimensions

Research focusing on societal culture and its affect in different fields is gaining increasing attention. As Dimmock and Walker (2000) argue, in the context of globalization, countries' socio-cultural differences are more important than ever. In this article, we follow Hofstede's (2011) concept of societal culture defined as "the collective programming of the mind distinguishing the members of one group or category of people from another" (p. 3). Meanwhile, the cultural dimensions are understood as "core axes around which significant sets of values, beliefs and practices cluster" (Dimmock, Walker, 2000).

Although recently, other dimensions of societal cultural values based on research have been emerging with increasing frequency (e.g., [Dimmock, Walker, 2000](#)). In literature on management, the dimensions identified during the GLOBE project have attracted considerable scholarly attention ([House et al., 2004](#)). Hofstede's 6-D model of societal cultural values is probably the most widely used model in the research field. Even though there are studies (e.g., [Williamson, 2002](#); [Fang, 2003](#); [McSweeney, 2002](#)) that criticize Hofstede's 6-D model, Societal cultural dimensions proposed by Hofstede's are considered to be sufficiently justified and are used in cultural evaluations, in various international marketing studies on cultural and school-based values, in intercultural management of organizations as well as in intercultural situations in general ([Çağatay, et al., 2022](#); [Thien, Chen, 2022](#)); they are also used to interpret results ([Çağatay et al., 2022](#); [Sasson et al., 2022](#); [Thien, Chen, 2022](#)).

To take advantage of Hofstede's paradigm of cultural dimensions and to link it to the extent to which the cultural values and well-being of the country's society provide for the leadership of principals, we employed the 6-dimensional model with the following dimensions:

- Power distance. Inequality exists in every society: some have more power to make decisions and influence others; some accumulate more wealth, are of higher status or are more respected by others. In reality, there is almost always an obvious gap between those who do not have and those who have one or another power: political power, wealth power, status-related power, or even the power of physical force. Hofstede's Power Distance Index makes it possible to measure and reveal this gap in different countries. In other words, it allows for comparisons between countries ([Ugrin et al., 2018](#)).

- Individualism versus collectivism shows whose interests are more important in society – those of an individual or a group ([Ugrin et al., 2018](#); [Hofstede, 2011](#)). This index does not show how much power a state has; it, however, reveals how much power is exercised by groups. Collectivist culture focuses more on the group than the individual. It is based on the attitude that the well-being of the group or society is more important than personal needs. Organizational goals are more important than personal ones. A strong sense of belonging requires the employee to be loyal to the group, to avoid open confrontation of opinions, since it is believed that the opinion of the group is more important than that of individuals ([Mooij, Hofstede, 2011](#)).

- Masculinity versus femininity. This indicator shows the distribution of dominant roles between the genders. A high or low indicator of masculinity shows whether society is dominated by a traditional male role or not. In countries with a high level of masculinity, gender differentiation prevails, and male society defines gender roles quite strictly. In such cultures, it is the male role that dominates in society, while women play a secondary role. In countries with lower levels of masculinity, gender differentiation and discrimination are very low. In such cultures, women are equal to men in any situation in society. According to Hofstede (2011), feminine culture is more characterized by compassion and sympathy for weaker members of the group, mutual assistance, social contacts, emphasis on warm relationships with each other, and rejection of values such as business relationships.

- Uncertainty avoidance. This characteristic defines the tolerance of ambiguities and spontaneous ideas in society and how members of society feel in the face of completely new and unexpected conditions. A low level of uncertainty avoidance indicates that society is more receptive to spontaneous ideas. Such society is more flexible, less controlled by various rules; it adapts more quickly to innovations and is prone to making risky decisions ([Hofstede, 2011](#)). In high uncertainty avoidance cultures, people are expressive, active, emotional, and aggressive.

- Long term orientation versus short term normative orientation. The indicator of the long-term goal orientation shows whether society is inclined to be guided by long-term commitments and respect for traditions. In such society, there is a strong work ethic and the belief that hard work will be well rewarded in the future. The indicator of the short-term orientation of goals suggests that society is reluctant to support a long-term strategy, i.e., it is not constrained by any commitments in the future and can accept societal change at any time ([Mooij, Hofstede, 2011](#)).

- Indulgence versus restraint. The indulgence index is higher in those societies that generally support the free satisfaction of basic natural human needs and desires. Restraint prevails in societies in which reward and satisfaction are tightly controlled and regulated by a variety of social norms and rules ([Hofstede, 2011](#)). Since this dimension has been established recently, there are still few interpretations, and it is not easy to find data by country.

Hofstede (2011) confirmed his theoretical insights into cultural differences through extensive research. The six dimensions of culture proposed by the researcher are considered to be sufficiently justified and are used in cultural evaluations, in various international marketing studies on cultural and school-based values, in intercultural management of organizations as well as in intercultural situations in general; they are also used to interpret results. Although in his theoretical insights, Hofstede (2011) does not pay special attention to the problems of intercultural communication, he inevitably touches on this aspect when discussing ways of expressing different dimensions and problems resulting from the clash of cultures (e.g., international management of organizations, cooperation, negotiation, acculturation, etc.).

#### School principal's instructional leadership

Research (Leithwood et al., 2008; Louis et al., 2010; Robinson, 2006) shows that the school principal's leadership has an indirect impact on student achievement. In other words, the quality of teachers' work directly depends on the school principal's leadership, which (along with other factors) determines student achievement. It is recognized that in the context of changes, school principals' orientation towards the improvement of teaching and learning processes in organizations is important. In other words, in addition to managerial processes, the school principal must understand educational processes in order to be able to ensure the improvement of these processes at the organizational level. The role of the principal as an instructional leader is thus highlighted. In addition, studies show that school principals' instructional leadership has greater effects on student outcomes than transformational (Robinson et al., 2008) or distributed (Hattie, 2009) leadership.

Many authors have linked instructional leadership to classroom processes, active student learning, and the strong influence of the school leader (Alsaleh, 2022; Walker, Qian, 2022; Shaked, 2022). Research (e.g. Blasé, Blasé, 1999) show that when a school principal is characterized by instructional leadership, teachers are more likely to apply self-reflection and improve teaching practice on its basis; they are not afraid to take risks and apply new teaching strategies; they are more responsive to the diversity of their students; and they plan and prepare lessons more carefully.

Instructional leadership describes the scope of the concept, the role of the leader, and the outcome of instructional leadership. Such concept of instructional leadership includes improving students' learning in and out of the classroom, fostering moral values, promoting entrepreneurship, and shaping national values (Sharma, 2012). However, at the instructional leadership level, it is not only the academic performance of students that is important. Great attention is also paid to the development of values, responsibility, sustainable leadership, nationality, emotional intelligence, entrepreneurship, employee involvement, process evaluation, and the use of data for feedback (Çağatay et al., 2022; Sasson et al., 2022; Thien, Chan, 2022). Instructional leaders monitor and evaluate teacher achievement, conduct and organize mentoring and educational leadership, plan teacher professional development, and organize group work and collaborative training (Hallinger, Lee, 2013; Alig-Mielcarek, Hoy, 2005). As a result, this would lead to a shift in focus from administrative and management functions to leadership functions aimed at academic vision, strategic planning, the formation of deeper layers of leadership, and the creation of a learning culture and community.

In fact, it is important to understand that it is school leadership that creates a safe and well-equipped working environment for teachers, helps to find out what impact their professional activities have on student achievement, and outlines the general direction for improving the school education process. Teachers' activities are characterized by reflective dialogue, instructional leadership, and interpersonal relationships. Instructional leaders focus on improving curricula and the learning process as well as on assessing the school environment and the achievement of its goals.

## **2. Materials and methods**

### Data and Sample

The secondary data analysis was carried out using several different recourses. Firstly, the data from the results of the recent Teaching and Learning International Survey (OECD TALIS, 2018) was employed. For the scope of this research, only the school-level (specifically, from the Principal Questionnaire) data was included in the analysis. A total of 48 countries and economies around the world participated in the TALIS 2018. Secondly, the quantitative measurement of societal cultural dimensions based on Hofstede's model was employed in the analysis. These data

are available at <https://www.hofstede-insights.com/country-comparison/>. Government expenditure on education as a percentage of gross domestic product (COFOG) 2019 was chosen. Data from 29 countries are available. The data were retrieved from the Eurostat database.

Based on the availability of data (excluding those countries where data were missing) from different recourses, a total of 22 countries of Europe were included in the final analysis. In this research, multi-country (22 countries) and cluster-country (4 clusters) datasets were used. In this study, country clusters (see [Table 1](#)) were coded on the basis of EuroVoc, the official thesaurus of Europe (<https://eur-lex.europa.eu/browse/eurovoc>).

**Table 1.** Country Clusters

Cluster	Countries
Northern Europe	Norway, Sweden, United Kingdom, Denmark, Estonia, Finland, Latvia, Lithuania
Eastern Europe	Slovak Republic, Hungary, Czech Republic, Bulgaria
Southern Europe	Spain, Portugal, Italy, Malta, Slovenia, Croatia
Western Europe	Austria, Belgium, France, the Netherlands

#### Variables

For the purpose of the research presented in this article, principals' instructional leadership (T3PLEADS) was chosen as a dependent variable. This scale represents a leader-centric approach as it is built on the answers of school principals.

The instructional leadership scale in OECD TALIS includes three items assessed through a 4-point Likert-type scale ranging from 1 (rarely or never) to 4 (very often) (see [Table 2](#)).

**Table 2.** Items From the TALIS 2018 Principal Questionnaire (PQ) Used to Measure Leadership

T3PLEADS	
TC3G22D	I took actions to support co-operation among teachers to develop new teaching practices
TC3G22E	I took actions to ensure that teachers take responsibility for improving their teaching practices.
TC3G22F	I took actions to ensure that teachers feel responsible for their students' learning outcomes.

The scale represents the factor scores calculated in the Confirmatory Factor Analysis (CFA) framework and already available as part of the OECD TALIS database ([OECD TALIS, 2018](#)).

The main independent variables in this study include the country's societal cultural values and economic well-being. For the investigation of societal cultural values, Hofstede's six dimensions, i.e., Power Distance, Individualism, Masculinity, Uncertainty Avoidance, Long-term Orientation, and Indulgence (Hofstede, n.d.), were chosen based on the rationale outlined in the literature review. As can be seen in [Table 3](#), the six cultural dimensions are on a scale from 0 to 100, with a mean close to 50.

**Table 3.** Descriptive Statistics

Variables*	N	Min.	Max.	Mean	Std. Deviation
ILEAD	22	10.13	11.30	10.954	0.273
PDI	22	11	100	49.95	20.544
IDV	22	27	89	60.45	17.898
MAS	22	5	100	41.05	26.943
UAI	22	23	99	68.32	21.643
LTO	22	28	82	58.27	15.926
IND	22	13	78	44.00	20.436
COFOG	22	3.90	6.90	5.118	0.816

\*ILEAD – Instructional Leadership; PDI – Power Distance; IDV – Individualism; MAS – Masculinity; UAI – Uncertainty Avoidance; LTO – Long-term Orientation; IND – Indulgence; COFOG – Government expenditure on education as a percentage of gross domestic product

To investigate whether school principals' instructional leadership (ILEAD) can be related to economic well-being, COFOG on education in 2019 was chosen. The data are presented as a percentage of gross domestic product (GDP). The data are loaded into the Eurostat Reference Database once validated by Eurostat ([https://ec.europa.eu/eurostat/cache/metadata/en/gov\\_10a\\_exp\\_esms.htm](https://ec.europa.eu/eurostat/cache/metadata/en/gov_10a_exp_esms.htm)). As shown in Table 3, the percentage of the GDP on education in our sample ranges from 3.90 % to 6.90 %.

#### Analyses

The data analysis was performed using IBM Statistical Package for the Social Sciences (IBM SPSS), version 23.0. The skewness and kurtosis of the distribution were used to check the normality of the variables. Parametric statistics were calculated for variables with skewness  $< -1$  or  $> 1$  and kurtosis  $< -3$  or  $> 3$ . The analysis of the research data indicated that all variables were distributed normally.

The multiple linear regression was employed in this study as the primary data analysis method. In order to conduct multiple regression analysis, multicollinearity was checked by correlation matrix and variance inflation factor (VIF). High correlation values (greater than  $+0.8$ ) and  $VIF > 4$  indicate multicollinearity. Autocorrelation in the residuals of a linear regression model was checked with the Durbin-Watson test. The test statistic ranges from 0 to 4. A value near 2 indicates no autocorrelation (Hair et al., 2019).

Before proceeding to the main data analysis, the Pearson's correlation was conducted as a preliminary analysis to look at the relationships between all the variables. Then, linear regressions were conducted to examine whether and how societal cultural dimensions and the country's well-being (COFOG) predict principals' instructional leadership. At this stage, a multi-country (22 countries) dataset was used. For this purpose, the following linear models (Field, 2009) without the effect dummy variables for the regions were used:

Model:

$$ILEAD_i = \beta_0 + \beta_1 PN1 + \beta_2 IDV + \beta_3 MAS + \beta_4 UAI + \beta_5 LTO + \beta_6 IND + \beta_7 COFOG$$

At the second stage of the analysis, multiple indicator variables were created. The country clusters (see Table 1) were coded as dummy variables. In the regression analysis, the effect size of the predictor variables is given by the beta loadings. In interpreting the effect, size gives the following guidance: 0 – 0.1 weak effect, 0.1 – 0.3 modest effect, 0.3 – 0.5 moderate effect, and  $> 0.5$  strong effect (Cohen et al., 2018).

Means for societal cultural values between different regions of Europe were compared by one-way ANOVAs followed by Tukey's post-hoc tests. The Brown-Forsythe (B-F) test was used for testing the equality variances (homogeneity of variances) among different regions of Europe. The homogeneity of variance results among different regions of Europe showed that data is valid for the one-way ANOVA test. Moreover, the effect size coefficient of societal cultural values were assessed using partial eta squared ( $\eta_p^2$ ). The calculated  $\eta_p^2$  values of 0.01, 0.06, and 0.17 can be interpreted as small, moderate, and large effects, respectively (Lakens, 2013).

To determine significance, an alpha level of 0.05 was used for all analyses.

### 3. Results

First of all, a Pearson's correlation was conducted as a preliminary analysis to look at the relationships among all the variables included in the multiple linear regression models (see Table 4).

As seen in Table 4, correlations among dependent and independent variables vary. The analysis showed a significant correlation between instructional leadership and several country's societal cultural values. More specifically, it was found that there is a positive significant correlation between principals' instructional leadership and Long-term Orientation ( $r = .468$ ,  $p < 0.05$ ), while Indulgence has a negative correlation with principals' instructional leadership ( $r = -.500$ ,  $p < 0.05$ ). The data analysis also revealed a strong significant correlation between

instructional leadership and the country's well-being, measured by COFOG ( $r = -.525$ ,  $p < 0.05$ ). Moreover, there are strong significant correlations between independent variables. The country's societal cultural values such as Masculinity ( $r = -.540$ ,  $p < 0.01$ ), Uncertainty Avoidance ( $r = -.429$ ,  $p < 0.05$ ), and Indulgence ( $r = .467$ ,  $p < 0.05$ ) have statistically significant relationships with the country's well-being (measured by COFOG).

**Table 4.** Correlations among dependent and independent variables

Variables	ILEAD	PDI	IDV	MAS	UAI	LTO	IND	COFOG
<b>ILEAD</b>	1							
<b>PDI</b>	0.228	1						
<b>IDV</b>	0.142	-.505*	1					
<b>MAS</b>	0.385	0.329	0.079	1				
<b>UAI</b>	0.369	.534*	-.513*	0.242	1			
<b>LTO</b>	.468*	0.294	0.130	0.273	0.093	1		
<b>IND</b>	-.500*	-.448*	0.382	-0.143	-0.370	-.488*	1	
<b>COFOG</b>	-.525*	-0.417	0.345	-.540**	-.429*	-0.087	.467*	1

Note: ILEAD – Instructional Leadership; PDI – Power Distance; IDV – Individualism; MAS – Masculinity; UAI – Uncertainty Avoidance; LTO – Long-term Orientation; IND – Indulgence; COFOG – Government expenditure on education as a percentage of gross domestic product

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

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

To investigate whether the country's societal cultural values and economic well-being predict school principals' instructional leadership, the main analysis in this study employed a multiple linear regression model with/without the country effect controlled. The results of correlation (Table 4) and VIF (Table 5) shows that there is no multicollinearity between the predictors. Thus, multiple linear regression is possible. As shown in Table 5, Model indicates that school principals' instructional leadership is significantly predicted by societal cultural dimensions. The first model was an unconditional model without the country effect controlled.

**Table 5.** Results of the regression analysis

	Unstandardized Coefficients		Standardized Coefficients	t	p	VIF
	B	SE	$\beta$			
(Constant)	10.945	0.490		22.326	0.0001	
PDI	-0.001	0.003	-0.049	-0.222	0.827	2.008
IDV	0.009	0.003	0.559	2.465	0.027	2.152
MAS	-0.001	0.002	-0.093	-0.432	0.672	1.952
UAI	0.005	0.003	0.376	1.873	0.082	1.682
LTO	0.004	0.004	0.223	1.054	0.310	1.877
IND	-0.004	0.003	-0.278	-1.200	0.250	2.239
COFOG	-0.160	0.078	-0.479	-2.061	0.058	2.255
<i>F</i> -Statistics	3.975				0.013	
R	0.665					
R <sup>2</sup>	0.498					

Note: ILEAD – Instructional Leadership; PDI – Power Distance; IDV – Individualism; MAS – Masculinity; UAI – Uncertainty Avoidance; LTO – Long-term Orientation; IND – Indulgence; COFOG – Government expenditure on education as a percentage of gross domestic product

Multiple regression analysis shows that the country's societal cultural values and economic well-being, as predictors, explain 49.8 % of the variance ( $R^2 = .498$ ,  $F = 3.975$ ,  $p < 0.05$ ). The assumption that the residuals are uncorrelated with the independent variable is satisfied

because the Durbin–Watson value ( $d = 1.941$ ) is close to 2. The model does not have any autocorrelation problem. The results indicated that only Individualism is a strong significant predictor of school principals' instructional leadership ( $\beta = .559$ ,  $p < 0.05$ ). Meanwhile, the country's economic well-being, measured by COFOG, is not a predictor of school principals' instructional leadership.

The following multiple regression analysis was based on the country effect controlled (see Table 6) using controlled dummy variables for the regions of Europe. As seen in Table 4 and Table 6, the multicollinearity is therefore not a concern in the regression analysis. As well as all models do not have any autocorrelation problem (the Durbin–Watson value are close to 2). The first model was created to examine which societal cultural values and whether economic well-being predict school principals' instructional leadership in the countries of Northern Europe. The results indicated that such societal cultural values as Individualism ( $\beta = .477$ ,  $p < 0.05$ ) and Uncertainty Avoidance ( $\beta = .675$ ,  $p < 0.05$ ) are significant predictors of instructional leadership. COFOG is also a significant factor in principals' instructional leadership ( $\beta = -.658$ ,  $p < 0.05$ ); with higher COFOG, countries score lower in leadership. Societal cultural values and COFOG explain 72.2 % of the variance ( $R^2 = .722$ ,  $F = 4.228$ ,  $p < 0.05$ ) in principals' instructional leadership in the countries of Northern Europe.

**Table 6.** Results of the regression analysis with dummy variables

	Unstandardized Coefficients		Standardized Coefficients	t	p	VIF
	B	SE	$\beta$			
<b>Model 1 (Northern Europe) (<math>R^2 = 0.722</math>; <math>F = 4.228</math>, <math>p &lt; 0.05</math>; <math>d = 1.627</math>)</b>						
(Constant)	10.540	0.525		20.067	0.0001	2.255
PDI	0.001	0.003	0.070	0.319	0.755	2.271
IDV	<b>0.007</b>	<b>0.003</b>	<b>0.477</b>	2.166	0.049	2.169
MAS	0.000	0.002	0.018	0.084	0.934	3.248
UAI	<b>0.009</b>	<b>0.003</b>	<b>0.675</b>	2.561	0.024	2.120
LTO	0.006	0.004	0.341	1.603	0.133	3.747
IND	0.000	0.004	0.016	0.056	0.956	2.818
COFOG	- <b>0.220</b>	<b>0.082</b>	<b>-0.658</b>	-2.681	0.019	2.255
<b>Model 2 (Southern Europe) (<math>R^2 = 0.673</math>; <math>F = 3.348</math>, <math>p &lt; 0.05</math>; <math>d = 2.090</math>)</b>						
(Constant)	11.023	0.521		21.138	0.0001	2.106
PDI	0.000	0.003	-0.021	-0.090	0.930	2.192
IDV	<b>0.008</b>	<b>0.004</b>	<b>0.541</b>	2.307	0.038	2.005
MAS	-0.001	0.002	-0.114	-0.507	0.621	2.058
UAI	0.005	0.003	0.430	1.892	0.081	2.211
LTO	0.003	0.004	0.172	0.728	0.479	2.288
IND	-0.003	0.003	-0.258	-1.075	0.302	2.392
COFOG	-0.171	0.082	-0.512	-2.086	0.057	2.106
<b>Model 3 (Western Europe) (<math>R^2 = 0.672</math>; <math>F = 3.333</math>, <math>p &lt; 0.05</math>; <math>d = 2.077</math>)</b>						
(Constant)	11.097	0.581		19.112	0.0001	2.122
PDI	0.000	0.003	-0.020	-0.088	0.931	2.165
IDV	<b>0.008</b>	<b>0.004</b>	<b>0.550</b>	2.353	0.035	1.979
MAS	-0.001	0.002	-0.079	-0.355	0.728	2.352
UAI	0.004	0.003	0.307	1.261	0.229	3.182
LTO	0.002	0.005	0.128	0.451	0.659	3.971
IND	-0.005	0.004	-0.388	-1.225	0.242	2.312
COFOG	-0.153	0.081	-0.459	-1.899	0.080	2.122
<b>Model 4 (Eastern Europe) (<math>R^2 = 0.690</math>; <math>F = 3.616</math>, <math>p &lt; 0.05</math>; <math>d = 1.856</math>)</b>						
(Constant)	11.010	0.494		22.298	0.0001	2.122
PDI	0.000	0.003	0.004	0.019	0.985	2.173
IDV	<b>0.008</b>	<b>0.003</b>	<b>0.536</b>	2.357	0.035	2.491

MAS	0.000	0.002	0.022	0.091	0.929	1.879
UAI	0.004	0.003	0.306	1.445	0.172	1.878
LTO	0.004	0.004	0.217	1.025	0.324	2.480
IND	-0.005	0.003	-0.355	-1.459	0.168	2.257
COFOG	-0.158	0.078	-0.471	-2.031	0.063	2.122

Note: ILEAD – Instructional Leadership; PDI – Power Distance; IDV – Individualism; MAS – Masculinity; UAI – Uncertainty Avoidance; LTO – Long-term Orientation; IND – Indulgence; COFOG – Government expenditure on education as a percentage of gross domestic product

As shown in Table 6, other created models (Model 2, Model 3, and Model 4) revealed quite interesting tendencies. Firstly, the regression analysis indicated that school principals' instructional leadership is not predicted by COFOG, as it is in Northern Europe. Meanwhile, it was found that only Individualism in Southern ( $\beta = .541$ ,  $p < 0.05$ ), Western ( $\beta = .550$ ,  $p < 0.05$ ), and Eastern ( $\beta = .536$ ,  $p < 0.05$ ) Europe is a significant predictor to school principals' instructional leadership. Moreover, in all regions this predictor has a strong positive effect. The results of this study suggest that societal cultural values in different regions of Europe have an effect on school principals' instructional leadership. Therefore, an analysis of variance (ANOVA) was employed. The results of the one-way ANOVAs (between the regions of Europe) are summarized in Table 7.

**Table 7.** Results of one-way ANOVA analysis

Variables		Descriptive statistics				ANOVA			Tukey's post-hoc test ( $p < 0.05$ )
		Mean	SD	95 % CI interval		F (3, 18)	p	$\eta_p^2$	
				Lower	Upper				
PDI	Northern Europe	<b>34.25</b>	8.242	29.13	39.25	5.440	0.008	0.476	Northern Europe vs. Eastern Europe and Southern Europe
	Eastern Europe	<b>68.25</b>	23.329	51.50	89.25				
	Southern Europe	<b>61.67</b>	9.026	55.00	68.16				
	Western Europe	45.50	26.665	24.50	66.50				
IDV	Northern Europe	69.50	9.457	63.75	75.88	3.546	0.035	0.371	
	Eastern Europe	55.00	20.559	35.54	73.00				
	Southern Europe	45.50	19.917	32.00	60.83				
	Western Europe	70.25	10.813	61.25	77.75				
MAS	Northern Europe	<b>22.38</b>	19.690	11.75	37.13	4.588	0.015	0.433	Northern Europe vs. Eastern Europe
	Eastern Europe	<b>71.25</b>	27.609	44.36	96.92				
	Southern Europe	41.50	17.097	29.17	55.00				
	Western Europe	47.50	26.938	24.00	66.50				
UAI	Northern Europe	<b>48.00</b>	16.639	37.38	58.62	8.551	0.001	0.588	Northern Europe vs. Eastern Europe, Southern Europe, Western Europe
	Eastern Europe	<b>73.00</b>	15.384	58.75	83.50				
	Southern Europe	<b>87.33</b>	9.158	80.67	94.33				
	Western Europe	<b>75.75</b>	18.154	61.25	90.00				

LTO	Northern Europe	55.63	19.856	43.88	68.63	2.194	0.124	0.268
	Eastern Europe	68.50	7.853	60.75	75.00			
	Southern Europe	48.50	11.572	38.53	56.17			
	Western Europe	68.00	9.764	61.50	77.25			
IND	Northern Europe	46.75	9.651	27.88	62.99	2.099	0.136	0.259
	Eastern Europe	26.00	6.782	19.01	30.25			
	Southern Europe	42.33	13.574	33.33	53.33			
	Western Europe	59.00	8.602	51.75	65.50			

Note: ILEAD – Instructional Leadership; PDI – Power Distance; IDV – Individualism; MAS – Masculinity; UAI – Uncertainty Avoidance; LTO – Long-term Orientation; IND – Indulgence; COFOG – Government expenditure on education as a percentage of gross domestic product

As shown in Table 7, there is a significant variation among three out of six societal cultural values and conditions. More specifically, there are significant variations among Power Distance ( $F(3, 18) = 5.440, p < 0.01, \eta_p^2 = 0.476$ ), Masculinity ( $F(3, 18) = 4.588, p < 0.05, \eta_p^2 = 0.433$ ), and Uncertainty Avoidance ( $F(3, 18) = 8.551, p < 0.01, \eta_p^2 = 0.588$ ) between different regions of Europe, and the effect sizes are large ( $\eta_p^2 > 0.17$ ). Further investigation using Tukey's HSD post hoc analysis revealed several statistically significant differences ( $p < 0.05$ ) between the regions of Europe. In particular, the Power Distance domain in Northern Europe ( $M = 34.25 \pm 8.242$ ) is statistically significantly different from the Power Distance domain in Eastern ( $M = 68.25 \pm 23.329$ ) and Southern ( $M = 61.67 \pm 9.026; p < 0.01$ ) Europe. Masculinity in Northern Europe ( $M = 22.38 \pm 19.690$ ) statistically significantly differs from Masculinity in Eastern Europe ( $M = 71.25 \pm 27.609; p < 0.05$ ). Finally, a post hoc Tukey's test showed that the Uncertainty Avoidance domain in Northern Europe ( $M = 48.00 \pm 16.639; p < 0.001$ ) is statistically significantly different from the Uncertainty Avoidance domain in other regions of Europe. No difference was found between the regions of Europe in the following societal cultural domains: Individualism, Long-term Orientation, and Indulgence ( $p > 0.05$ ).

Overall, it was found that the societal cultural dimensions of the countries measured by Hofstede's 6-dimensional model predict principals' instructional leadership presented in the TALIS 2018 results. More specifically, in the countries of Northern Europe, Individualism and Uncertainty Avoidance are strong significant predictors of school principals' instructional leadership. Meanwhile, in Southern, Western, and Eastern Europe, only Individualism is a significant predictor. Moreover, only in Northern Europe, the well-being of the country, measured by COFOG, is a strong, but negative predictor.

#### 4. Conclusion

The aim of this article was to reveal whether the societal culture and well-being of the country affects the results of school principals' instructional leadership in the OECD TALIS 2018. The distinctive feature of this study is that it sought to reveal this relationship by focusing on different clusters of the regions of Europe. With this aim in mind, the OECD TALIS 2018 school-level dataset including 22 countries of Europe was analyzed.

The first stage of our research (in the total sample of countries) revealed that only Individualism is a strong predictor of the results of school principals' instructional leadership in the OECD TALIS 2018. Meanwhile, the country's economic well-being (measured by COFOG) did not emerge as a predictor. These results of our study are only partially consistent with previous studies. On the one hand, this confirms the notion that the societal cultural context of countries determines the nature of leadership (Konrad, 2000; House et al., 2004). Hanges et al. (2016) state that societal culture can be a powerful factor that shapes who is seen as a leader and which leaders are effective. The majority of leader attributes/behaviors are culturally contingent, and their

desirability is significantly related to culture (Dorfman et al., 2012). On the other hand, it reveals existing inconsistencies in terms of the importance of societal cultural values in international studies such as the OECD PISA, OECD TALIS, or others. A study conducted by Minelgaitė, Nedzinskaitė, and Kristinsson (2018) showed that such societal cultural domains as Power Distance and Individualism as well as the country's well-being (measured by GDP) are predictors, with the moderate effect size, of educational leadership index in the OECD PISA 2015. The results of the mentioned study also revealed that countries with higher GDP score lower in educational leadership (Minelgaitė et al., 2018). Such inconsistencies in the research could be explained by the fact that different well-being measurement indicators were chosen. In the case of our study, not the country's gross domestic product (GDP) per capita, but the COFOG index, which shows Government expenditure on education as a percentage of GDP, was chosen.

In the second stage of the research, 22 European countries were grouped into 4 clusters on the basis of the regions of Europe. The multiple regression analysis with controlled dummy variables for the regions of Europe revealed which societal cultural domains predict the results of school principals' instructional leadership in the OECD TALIS 2018. Significant differences between different regions of Europe emerged. First of all, a significant positive relationship between the Individualism dimension and school principals' instructional leadership was found in all regions of Europe. This is particularly interesting given that, according to Hofstede's 6-D model, Northern Europe (in our case, it includes such countries as Norway, Sweden, the United Kingdom, Denmark, Estonia, Finland, Latvia, and Lithuania), Eastern Europe (in our case, it includes the Slovak Republic, Hungary, the Czech Republic, and Bulgaria), and Western Europe (in our case, it includes Austria, Belgium, France, and the Netherlands) value individualism, meanwhile Southern Europe (in our case, it includes Spain, Portugal, Italy, Malta, Slovenia, and Croatia) attach importance to collectivism. This suggests that in Southern Europe, the well-being of the group or society is more important than personal needs. Organizational goals are more important than personal ones (Mooij, Hofstede, 2011). It is important to note that out of all six societal cultural domains, only Individualism is a significant predictor of school principals' instructional leadership in Southern, Western, and Eastern Europe, and the effect size is strong. Also, in the above-mentioned regions of Europe, the country's well-being is not a predictor.

Secondly, a totally different situation was found in Northern Europe. Together with the Individualism domain (the effect size is moderate), Uncertainty Avoidance domain (the effect size is strong) and COFOG (the effect size is strong) are also significant predictors of school principals' instructional leadership. The research results show that the Uncertainty Avoidance domain in Northern Europe ( $M = 48.00$ ) statistically significantly differs from this domain in other regions of Europe. In other words, Northern Europe has low Uncertainty Avoidance. Therefore, in order to achieve a higher level of school principals' instructional leadership in the Nordic countries, it is important to focus on several key aspects, i.e., low Uncertainty Avoidance indicates that school principals are more flexible, less controlling, more adaptable to innovation, and more willing to take risks, which implies that there is a greater degree of freedom, less control, and fewer formal rules and regulations in schools. The relationship between school principals and teachers is based on trust, not rules. By contrast, in high Uncertainty Avoidance cultures, work environments tend to have clear and formalized rules, experts are seen as authorities, and managers tend to focus more on operational details of activities and planning. A high level of uncertainty avoidance suggests the rule-based management of the school, as well as its desire to control its management by laws and rules in order to avoid misunderstandings and ambiguities (Martinez-Fiestas et al., 2017). As observed by Hofstede (2011), in high uncertainty avoidance organizations, employees feel stressed and need formal as well as informal rules. Compliance with these rules often shifts to punctuality and accuracy. In high uncertainty avoidance cultures, people are expressive, active, emotional, and aggressive. Taking this into account, the organization can use these qualities in its activities. Hofstede (2011) notes that uncertainty avoidance is influenced by the age of the individual – older people tend to have a higher degree of uncertainty avoidance. Meanwhile, no clear relationship between uncertainty avoidance and profession as well as gender was observed (Hofstede, 2011).

Our study once again confirms that there are differences between “cultural clusters” and leadership styles. The results of the GLOBE project show that leadership styles in Eastern Europe differ most from those in Northern Europe (House et al., 2004). Konrad (2000), who conducted a

study on the behavior of middle managers of Western and Eastern Europe, concludes that “the culture affects the kind of leader behaviours that are considered desirable and are accepted” (p. 346). In her study, conducting a secondary data analysis (using the OECD TALIS 2013 data), Liu (2020) revealed that the way leadership is distributed among the school members depends on societal cultural differences. Her research revealed that Anglo countries value individualism, so in these countries, the principal’s leadership is the strongest among all the clusters (the principal, the management team, and teachers) examined. Meanwhile, Germanic and Nordic Europe oppose power distance, and it is assumed that this leads to the fact that leadership is shared (Liu, 2020).

This study uncovered that the country’s well-being, measured by COFOG, is a strong, but negative predictor in Northern Europe. It means that in the countries of Northern Europe with higher COFOG, the principals’ instructional leadership is lower. This is a unique research result because, as mentioned above, the country’s well-being is not a predictor of school principals’ instructional leadership in other regions of Europe. The uniqueness of Northern Europe in this respect can be explained by the fact that in the case of our study, this cluster also includes the Baltic states, which have lower COFOG compared to Norway, Sweden, or Finland (Eurostat, 2019). We assume that school principals have different orientations towards instructional leadership. In other words, in developed countries, such as Norway, Sweden, and Finland, school principals do not think that their role as instructional leaders is important in their work. For example, Lindberg and Vanyushyn’s (2013) study with upper secondary school principals in Sweden showed that even 68 % of the respondents do not think that instructional leadership is important in their work. Even more interesting results are revealed by the research carried out by Salo, Nylund, and Stjernström (2015) with principals from Norway, Sweden, and Finland. The mentioned research shows that in none of these countries do school principals directly apply instructional leadership and they cannot provide any examples (principals’ narratives on instructional leadership lack an explicit vocabulary of didactics, examples of face-to-face guidance of teaching as well as direct professional relationships for strengthening teaching practices) of this practice. The authors reaffirm that in “Nordic educational tradition, where there is a strong tradition of democracy and codetermination within the school community” (p. 503), one should not expect to find a lot of examples in practice of instructional leadership.

It is important to note that this research has several limitations too. First of all, the research is limited to the secondary data analysis of the OECD TALIS 2018. Secondly, the analysis reveals a leader-centric approach as it is based on the answers of school principals. Thirdly, the research covers only the European continent. Despite the previously mentioned limitations, this research contributes to the existing body of knowledge in a variety of ways. The study fills an existing research gap by focusing on the importance of contextual factors in international research. Moreover, it highlights the societal cultural differences between the regions of Europe and their impact on school principals’ leadership. This study also presents interesting directions for future research. The research could be extended across continents and include responses from not only school principals, but also teachers. A longitudinal study could also be carried out, analyzing data from different years, not just the most recent data.

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## **Correlation between Emotional Intelligence and Academic Results Self-Evaluated by Students of Vietnam National University Ho Chi Minh City's Students**

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### **Abstract**

The research was aimed at investigating the relationship between Vietnam National University Ho Chi Minh City students' emotional intelligence and their academic performance throughout self-reported academic results. By understanding the relationship between emotional intelligence and academic results, the research could give suggestions for educators and lecturers to improve students' academic performances and the quality of the teaching-learning process in the higher education context. The sample of this research was 675 students (aged from 18 to 24) out of 73000 students participating in Vietnam National University Ho Chi Minh City. The research was administered within the academic year of 2020–2021 with a google survey form. To achieve the objectives of this study, the scale of Wong and Law Emotional Intelligence Scale (2004) was administered within this research. The scale could be accounted as the point of view from which VNU-HCM students stated their emotional intelligence. The academic results were self-reported by participants. The results indicated that students with high emotional intelligence reported performing better academically. Students attending a training course on emotional intelligence performed better in emotional intelligence. The results imply that the Vietnam National University Ho Chi Minh City board of managers should cascade more training courses on emotional intelligence for students to improve their academic performance.

**Keywords:** emotional intelligence, academic results, VNU-HCM students.

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## **1. Introduction**

Emotional intelligence is increasingly being recognized as a measure of overall performance across various fields. According to Joshi et al. (2012), in research on the influences of emotional intelligence on academic results of 132 undergraduate medical students. Joshi et al. (2012) discovered that high emotional intelligence determines better academic performance. Emotional intelligence was suggested to be increased along with increases in academic results (Skipper et al., 2013). Besides that, Chew et al. (2013) also stated that emotional intelligence correlated with changes in academic results in a studio of 163 (8 years one and 79 years five) medical students. The research of Chew et al. (2013) suggested that emotional intelligence is associated with more prosocial behavior, better academic performance, and improved empathy towards patients among first- and final-year medical students in Malaysia. Similar results could be found in the research of Oyewunmi et al. (2015) in investigating the correlation between emotional intelligence and academic performance of undergraduates from universities in South-West, Nigeria. Oyewunmi et al. (2015) indicated a correlation between emotional intelligence and academic performance; affirming that emotional intelligence predicts academic performance. Moreover, Lucila O. Bance and John Ray B. Acopio (2016) claim that the more the academic achievers become emotional-social intelligent, the higher their tendency to exude academic prowess. With all of the evidence on the influences of emotional intelligence on academic results, research was aimed to investigate the status of Vietnam National University Ho Chi Minh City students' emotional intelligence and its influences on students' academic results. The results would highlight the potential implications of emotional intelligence in educational progress and academic success; hence emotional intelligence-based activities should be integrated into a tougher education curriculum.

## **2. Theory framework**

### **Emotional Intelligence**

Emotional intelligence was first perceived as a branch of the Intelligence quotient (Mayer, Salovey, 1997). According to Mayer and Salovey (1997), the researchers developed emotional intelligence theory based on the intelligence quotation. In Mayer and Salovey's (1997) theory, emotional intelligence could be demonstrated as individual abilities to accurately acknowledge emotions and access and generate emotions to support thinking. Besides that, Mayer and Salovey (1997) also believed that emotional intelligence was individual capacity in understanding emotions and emotional knowledge, and reflexively regulating emotions to promote emotional development and wisdom. However, this approach to emotional intelligence received much criticism from scholars who believe that emotional intelligence was an independent individual capacity in managing emotion and behaviors. According to Baron (1996) the int of violin Vygotsky's social development theory, emotional intelligence was defined as a range of personal emotional, social abilities, and skills that influenced a person's ability to successfully cope with demands and pressures from an external force environment In Baron (1996), He argued that identified five key conceptual components of emotional intelligence were comprised: Intrapersonal interaction; Interactions involved; adaptability; Stress management; General mood. On the other hand, Davies et al. (1998) believed that emotional intelligence should have been perceived as a psychological process rather than a branch of intelligence quotient or social abilities. According to Davies et al. (1998), emotional intelligence was a psychological process in which individuals manage, resolve, and process emotional information. In Davies et al. (1998) theory, emotional intelligence was categorized into four aspects: Individual capacity in self-assessing and expressing one's emotions; Individual capacity in assessing and recognizing the feelings of others; Self-management of individual emotions; Individual capacity in managing emotions to control behavior. In this study, the research was administered the Davies et al. (1998)'s point of view on emotional intelligence.

### **Academic results**

According to Regulations on training at the university level of Vietnam National University, Ho Chi Minh City abided by Decision No. 268/QĐ-ĐHQG on the promulgation of university training regulations on July 14<sup>th</sup>, 2020, the academic records for students in higher education institutes which are members of Vietnam National University Ho Chi Minh City would be as follows.

**Table 1.** Assessment guidelines for higher education educators at Vietnam National University Ho Chi Minh City (abided by Decision No. 268/QĐ-ĐHQG on the promulgation of university training regulations on July 14<sup>th</sup>, 2020)

Ranked	Grades on a scale of 10	Grades in scale 4	Letters
Excellent	From 9.0 to 10	4	A+
Very Good	From 8.5 to 9.0	3.7	A
	From 8.0 to 8.5	3.5	B+
Good	From 7.0 to 8.0	3	B
Average good	From 6.0 to 7.0	2.5	C+
Average	From 5.5 to 6.0	2	C
	From 5.0 to 5.5	1.5	D+
Weak	From 4.0 to below 5.0	1	D
Poor	Below 4.0	0	F

In this research, students were encouraged to self-report their latest academic records in the nearest academic semester at Vietnam National University Ho Chi Minh City, counting back from July 2020. However, in reality, the academic records reported by students varied only from 5.5 to 10 (average to excellent ranks) without any recorded failed cases (weak or poor ranked students). To be more convenient for data analysis, the research would categorize and label ranks and scale in the survey as follows.

**Table 2.** Modified ranks and grades according to assessment guidelines for higher education educators at Vietnam National University Ho Chi Minh City (abided by Decision No. 268/QĐ-ĐHQG on the promulgation of university training regulations on July 14<sup>th</sup>, 2020)

Ranked	Grades on a scale of 10	Grades in scale 4	Letters
Excellent	From 9.0 to 10	4	A+
Very Good	From 8.5 to 9.0	3.7	A
	From 8.0 to 8.5	3.5	B+
Good	From 7.0 to 8.0	3	B
	From 6.0 to 7.0	2.5	C+
Average	From 5.5 to 6.0	2	C
	From 5.0 to 5.5	1.5	D+

### Sample and instrument

#### Sample

In this study, there were 675 students from most of the university members of Vietnam National University Ho Chi Minh City (excluding the Faculty of Medicine and An Giang University). The size of the sample was appropriate since the total population of Vietnam National University Ho Chi Minh City was around 73.000 students. According to Waston (2001), if the total population varies from 50.000 to 100.000 people, the suitable sample size should have ranged from 397 to 398 people. The sample size of this research, as mentioned, was around 675 students.

It would be representative enough for all of the characteristics the research aimed to investigate with Vietnam National University Ho Chi Minh City students in general. There were 213 male students (31.6 %) and 426 female students (68.4 %). Most students came from the second year with 358 second-year students (53 %) followed by 148 freshmen (21.9 %), 108 third-year students (16 %), and 61 senior-year students (9 %). Besides those figures, there were figures on students' history of joining the course on emotional management training before joining this research. According to Table 3, the figures revealed that most of Vietnam National University Ho Chi Minh City stated that they haven't been in a course on training emotional management (48 %). The percentage of students who reported that they self-trained their emotional intelligence was 42.1 %. Only 1.6 % of Vietnam National University Ho Chi Minh City students attended several courses on training in emotional management. However, there were statistically meaningful differences between students having a different history of joining training courses on emotional management on their opinion on their emotional intelligence. More specifically, the students attending several courses on emotional management training had perceived themselves as having better performances on emotional intelligence than others ( $F = 9.250$ ;  $Sig = 0.000 < 0.05$ ).

**Table 3.** Vietnam National University Ho Chi Minh City students' history of joining courses on Emotional Management training

No	History of joining the course on Emotional Management training	Percent (%)	M (StD)	F	Meaningful level
1	Haven't ever been (M1)	48	4.95 (0.85)	9.250	Sig. (ANOVA) = 0.000 < 0.05  M4>M1 (p=0.00) M4>M2 (p=0.02) M4>M3 (p=0.00) M2>M1 (p=0.00)
2	Self-research and training through books, media medium (M2)	42.1	5.24 (0.77)		
3	At least joined a course on training emotional management once (M3)	8.3	5.01 (0.89)		
4	Joined several courses on training emotional management (M4)	1.6	5.83 (0.75)		

#### Instruments

The Wong and Law Emotional Intelligence scale (2004) was administered as the main measurement for assessing Vietnam National University Ho Chi Minh City students' emotional intelligence status and its correlation with academic results. The scale was designed to include 4 factors of emotional intelligence according to Davies et al. (1998), which are: Self Emotion Appraisal; Others' Emotion Appraisal; Regulation of Emotion; Use of emotions. The factors could be interpreted as follows.

- Self-Emotion Appraisal: the ability to assess and understand inner feelings and have the ability to express emotions outwardly naturally.
- Others' Emotion Appraisal: the ability to recognize, understand the emotions of others.
- Regulation of Emotion: the ability to be able to regulate one's emotions, to be able to help oneself overcome psychological stress quickly.
- Use of emotions: the ability to be able to direct emotions in one's activities or increase self-efficacy.

The scale would be at a 7-point Likert scale format in which 1 completely disagrees – 7 completely agrees. The scale was manufactured to calculate the average score, there were no inverse sentences. The high score would indicate that the respondents believe that they have a high ability on this factor. Each level is separated by 0.8 points in the case of 5 – a point Likert scale and 0.86 points in the case of a 7-point Likert scale (the range of levels will be defined as  $(n-1)/n = 0.8$ ) and the significance of the mean values is determined as follows:

- 1,00–1,86: responders completely disagree with statements on their expression about emotional intelligence within recent time;

- 1,86–2,72: responders sometimes disagree with statements on their expression about emotional intelligence within recent time;
- 2,72–3,58: responders disagree with statements on their expression about emotional intelligence within recent time;
- 3,58–4,44: responders partially agree with statements on their expression about emotional intelligence within recent times;
- 4,44–5,30: responders agree with statements on their expression about emotional intelligence within recent time;
- 5,30–6,16: responders sometimes agree with statements on their expression about emotional intelligence within recent time;
- 6,16–7,00: responders completely agree with statements on their expression about emotional intelligence within recent times;

### 3. Results

Reliability and validity of the Emotional Intelligence scale

The Wong and Law Emotional Intelligence Scale (2004) was translated, piloted, and compatible with the context of Vietnamese students. In this study, the process of compatibility and translation was implemented in 4 phases:

- Step 1: Translating from English to Vietnamese and back by different experts;
- Step 2: The translation was evaluated by a 3rd expert;
- Step 3: Interviewing, piloting with 50 students;
- Step 4: Finalizing the official version of the scale in Vietnamese.

The scale of emotional intelligence’s data revealed the Cronbach Alpha index for factors, respectively: 0.797 (Self Emotion Appraisal); 0.791 (Others’ Emotion Appraisal); 0.820 (Use of emotions); 0.864 (Regulation of Emotion). Exploratory Factors Analysis indicated that Initial was 1.104 (> 1), KMO index was 0.875 (> 0.05), (Sig = 0.00 < 0.05), total variance explained of 68.44 > 50 %. Besides that, the Exploratory Factors Analysis showed that there were 4 factors extracted with factor loading that varied from 0.547 to 0.855 (> 0.5).

**Table 4.** The reliability testing and exploratory factor analysis (EFA) of the instruments evaluated by Vietnam National University Ho Chi Minh City’s students

No	Scales	No item	Cronbach’s Alpha		EFA		
			Cronbach’s Alpha	Variable-total correlation	KMO	Eigenvalues and Total Variance extracted	Factor loading
1	<b>Emotional Intelligence Scale (15 items)</b>						
1.1	Self Emotion Appraisal	3	0.797	0.592-0.695	0.875 (Sig. = 0.00)	1.104 (68.44 %)	4 factors, factor loading from 0.547 to 0.855
1.2	Others’ Emotion Appraisal	4	0.791	0.396-0.693			
1.3	Use of emotions	4	0.820	0.558-0.732			
1.4	Regulation of Emotion	4	0.864	0.667-0.781			

The differences between Vietnam National University Ho Chi Minh City’s students ‘Emotional Intelligence with different Academic

The figures from Table 5 also introduce the academic results of students at Vietnam National University Ho Chi Minh City. To be more specific, most of the students reported that they had a good and very good record in their studies (54.8 %, 31.3 %), followed up by several students who ranked average results with 11.9 %. The number of excellent students only accounted for 2.1 % equivalent to 14 students in the total sample. There were no students reported with weak or poor study records within the sample.

**Table 5.** Academic results of VNU-HCM students in the academic year 2019–2020

No	Academic results of VNU-HCM students in the academic year 2019-2020	Number of students	Percent (%)
1	Average	80	11.9
2	Good	370	54.8
3	Very good	211	31.3
4	Excellent	14	2.1

According to Table 6, the data introduce the status of Vietnam National University Ho Chi Minh City's students' emotional intelligence status. The figure revealed that students at Vietnam National University Ho Chi Minh City believed that they performed well in emotional intelligence ( $M = 5.10$ ,  $StD = 0.83$ ) This could be interpreted as VNU HCM students believed that they performed emotion intelligence precisely within survey time. There were statistical differences between different ranked students in self-reporting their emotional intelligence ( $Sig = 0.113 > 0.05$ ). Moreover, the data showed that students with different academic records would have different opinions on their emotional intelligence ( $Sig. (Levene's Test) = 0.113 > 0.05$ ). To be more specific, the data revealed that students with excellent, very good, and good academic results believed that they performed emotional intelligence better than others.

**Table 6.** Differences between Vietnam National University Ho Chi Minh City students' emotional intelligence with different academic results

No	VNU HCM students' Emotional intelligence	VNU HCM students' academic results					F	Meaningful levels
		Excellent (A)	Very good (B)	Good (C)	Average (D)			
1	Self-Emotion Appraisal	5.11 (1.06)	5.15 (1.04)	5.23 (1.00)	6.40 (0.55)	6.849	Sig. (Levene's Test) = 0.113 > 0.05	
2	Others' Emotion Appraisal	4.78 (1.12)	5.14 (0.97)	5.16 (0.99)	6.00 (1.07)	6.798	Sig. (ANOVA) = 0.00 < 0.05 A > D (p=0.00);	
3	Use of emotions	4.84 (1.08)	5.16 (1.10)	5.43 (1.00)	6.32 (0.54)	11.341	A > C (p=0.00); A > B (p=0.00);	
4	Regulation of Emotion	4.65 (1.20)	4.77 (1.16)	4.98 (1.14)	6.32 (0.82)	9.835	B > D (p=0.00); B > C (p=0.03);	
Total		4.85 (0.89)	5.05 (0.81)	5.20 (0.79)	6.25 (0.80)	13.755	C > D (p=0.02)	

#### 4. Discussion

The results of this research were similar to other research on emotional intelligence and academic results of students in higher education institutions. This study also supported the empirical evidence found by Petrides et al. (2006) and Skipper and Brandenburg (2013) that emotional intelligence is related to the academic performance of students. This research also suggested that the development of emotional competencies amongst university students would

result in their better academic performance. The research also proposed that an emotional intelligence program be developed to address the academic achievers' challenges in their academic potential. Besides that, emotional intelligence should have included improving aspects of university students' behavior towards social situations (sociability and personal relations) that are needed to boost their good attitude towards interaction. Besides that, the number of students attending training courses on emotional intelligence at Vietnam National University Ho Chi Minh City was limited (less than 10 %). However, the research also revealed that students who attended a training course on emotional intelligence stated that they practiced emotional intelligence better than before.

### 5. Conclusion

This information implies that the Board of Managers of Vietnam National University Ho Chi Minh City should have had more orders for university members, faculties, and lecturers to develop and encourage university students in a training course on emotional intelligence. Lecturers could also organize class activities and lesson plans to deliver knowledge and promote training emotional intelligence for their students.

### 6. Acknowledgments

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## **Agilecation: Agile Leadership in a Higher Education Institution (HEI) during the Covid-19 Pandemic a Test Case**

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### **Abstract**

The current quantitative research examine how the leadership of a teacher training college in an Israeli Higher Education Institution (HEI) have dealt with the Covid19 crisis in an agile manner. This Perspectives presents a case study of agile leadership during the Covid-19 pandemic from the viewpoint of the college lecturers'. The Covid-19 outbreak was a 'Black swan' events for educational institutions in Israel. Following the unprecedented transition to distance learning. The pandemic forced higher education institutions to adopt agile leadership behaviors. Previous research has given scant attention to the relationship between running an academic institution and application of an agile leadership during a crisis. The Research Goals were:

1. To analyze key processes undertaken by the leadership of the College following the outbreak of the Covid-19 pandemic, to ensure the HEI continued functioning during the crisis.
2. To examine the evaluation (degree of approval) of the lecturers regarding the steps taken by the colleges leadership.

As seen from the findings: The lecturers were persistent in the remote teaching process. Their contact with the students was positive. They perceived the college's leadership as maintaining teaching processes in a highly positive way. They were aware of the ongoing training processes. They felt comfortable contacting those in official roles. The conclusions suggest that ensuring the continued functioning of an organization during a crisis requires agile leadership with skills and competencies multifaceted and direct channels of communication. If we want to sum it up in one word, it can be expressed as Agilecation = agility + education + action in higher education.

**Keywords:** Coronavirus (Covid-19), agile leadership, crisis, teacher training.

### **1. Introduction**

Leaders must be agile decision makers, critical self-reflection, integrate it with action, and

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collaborate with those who are diverse in considerable ways to be successful in a multifaceted global environment. (Taylor, 2017). This was written prior to the Covid-19 outbreak. The pandemic outbreak was a 'Black swan' events for educational institutions worldwide. It forced 1.5 billion pupils, students, and educators around the world to move to ERT (emergency remote teaching) within their homes (Mikuls et al, 2020; Nissim, Simon 2022). This was a change of huge proportions that was thrust upon both students and teachers at great speed, with the aim of maintaining regular ongoing learning and teaching processes (Bao, 2020; Hodges et al., 2020). We call this process Agilecation- agile leadership in education.

In Israel, Since March 2020, the higher education institutions have had to deal with a widespread, ongoing disruption (Cohen, Davidovich, 2020; Nissim, Simon, 2021). For more than a year all the educational activity transitioned from face to face learning on campus to ERT and distance teaching and learning. All activities conducted remotely, in accordance with state guidelines.

Academic activities moved to distance learning for three consecutive semesters. Teacher training programs shift to distance learning closing their campuses gates. The pandemic forced numerous organizations to undergo significant transformations and changes. Reports testified that the educational system was unprepared to deal with rapid changes in teaching methods in Israel and throughout the world. (Alt, 2022). The current study examines the lecturers' evaluations regarding these leadership decisions (described in detailed in the appendix) and the transition to Emergency Remote Teaching (ERT). The study analyses these events and the resultant processes undertaken at the college. The central theory that helps in build the framework for this study is adaptive leadership (Heifetz, Linsky, 2009) and agile approaches based on which we will try to build a unique situational theory that results from this unique situation.

This research deepens our previous research (Nissim, Simon, 2021) It seeks to explore a new angle from a different perspective, evaluating the agile leadership in a teacher training college in Israel from the lecturers' point of view. It is a study of an HEI (Higher Education Institution) addressed the consequences of the Covid-19 pandemic.

This study proceeds as follows, after the introduction, there is a theoretical background section consisted on a literature review on leadership and agility; following is the sample composition and methodology. In addition, the empirical results for this study are subsequently reported. In the end of this paper, we summarized the conclusions and insights.

### **Theoretical Background**

Agility is now a commonly concept due to the pandemic. Leaders had to rethink key elements of their daily work processes and act in an agile manner. The use of technology increased in order to maintain operations while adhering to a changing landscape of new health guidelines and procedural regulations. Agility is especially needed in the constantly changing external environment during the pandemic.

Higher education institutions are routinely operating un a very complex environment that includes human resources lecturers, students, administrative staff, teaching and learning etc. There are frequent changes in academic life, technological, and bureaucratic realms. Even during routine times. There are many changes and stressful process creating pressure experienced in the Academia (Amirault, Visser, 2009). Moreover, HIS, in particular, need sustainable leadership to maintain their goals. (Taşçı, Titrek 2020). Therefore, we believe that leading such an institution requires an agile and supportive leadership strategy. Leading a teacher training college in the covid 19 outburst was like controlling a wild black swan.

The global pandemic of Covid-19 poses multiple complex challenges to institutions of higher education (HEI), which were forced to function under conditions of uncertainty. Alongside the health concerns, it was necessary to ensure the continued proper functioning of institutions.

The Tel Hai College, the campus for teachers training (the former Ohalo College) is a higher education institution located in the northern part of Israel. Teacher training in Israel is an academic process based on theoretical, pedagogic studies and practicum. During their studies, they are developing different teaching skills, Increases the student readiness for the teacher's role (Maskit, Mevarech, 2013; Whitford, Barnett, 2016). Students attain a bachelor's degree and a teacher's certificate within four years (Zuzovsky, Donitsa-Schmidt, 2017). Until the pandemic distance, learning had a minor part in teacher training processes.

In mid-March 2020, the first general closure was imposed in Israel. The colleges' campus leadership decided to continue all activities, while making the necessary adjustments in light of the state of emergency and restrictions. Teaching, learning, and all the practicum activity of the teachers training department moved within 48 hours, from campus learning to Emergency Remote Teaching (ERT). This agile transition affected the college management, 700 courses, 120 lecturers, 40 members of the administrative staff, and 1000 students.

### **Leadership**

Leaders have an essential influence on their employees' perceived career success and their roles are considered most effective in assuring professional success in today's dynamic work environment of the academic world. Success is critical to building qualified employees and attaining organizational success (Al-Ghazali, 2020). Leaders' positive behaviors can establish a work environment that motivates and satisfies employees' (Tak et al., 2019).

A pre-Covid recent study noted that leaders in the HEI should act in an "authentic leadership" Empower their teams and their organization. This could contribute to the sustainable performance of universities (Tak et al., 2019). Furthermore, there should be autonomy in decision-making and a balance between change and stability: the pandemic reflected on agility and adaptive governance." Existing institutional structures and tools can enable adaptively and agility, which can be complimentary, approaches. Agility sometimes conflicts with adaptability, centralized and decentralized decision-making." (Dwivedi et al., 2020). The unpredictability disruption of the Covid-19 outbreak has made it challenging leaders to respond to it.

### **Leadership during a Crisis**

Leadership is of particular importance during crises. In an unpredictable disruption that is an unconventional event that spreads uncertainty and shaken the organization's foundations and ability to act and achieve its goals and objectives. For leadership in a crisis, a system may lose its flexibility, because of failing to deal with a threat or responding ineffectively. The ability to function during the crisis may be diminished (Janis, 1989; Seeger et al., 1998). In a crisis, there is a need for a type of leadership, which enables others to lead. This means, "deepening" the organizational leadership, delegating authority, and overseeing use of human resources. Enabling continuation of the organization's activities, maintaining a positive mood, and offering tools for decision-making. In crises, the leader becomes an active partner with followers. This type of leader that has the power to empower followers, giving them the freedom to act and think and enables them to be managers and "first among equals". Under certain conditions (Abolio, 1999). Similar approaches recommended using the emergency situation to leverage change and create a new reality for the benefit of the organization and the followers ((Harris, 2002; Tzur, 2004).

During an emergency, the leadership must deal with uncertainty in emotions and thoughts, the need for agile responses to the dramatic disruption. They must propose solutions. Leaders should minimize the impact of the crisis, maintain a sense of normalcy, making careful decisions, because their decisions involve risks and have consequences on the personal and, in some cases, the national level (Rosenman et al., 2014).

Leadership skills are critical to the survival of any organization, institution, or nation during an emergency there is a need for effective communication. Leaders should responses in order to improve the organizational outcomes, increase their team's safety and well-being. Effective leadership is associated with effective teamwork and more positive outcomes in emergencies and with improved staff engagement (Manning, 2016; Rosenman et al., 2014).

These processes relate to removing barriers to recognizing and understanding the crisis, knowing the organizational limitations, and assessing its psychological dimensions. Demonstrating leadership performance in times of crisis includes evaluating alternatives, making critical decisions, team building, and execution of decisions (Boin et al., 2005).

Another factor in crisis leadership is related to achievement. Leaders should perform their duties, and be a model of leadership to their followers, so they can become partners in the process (Kadibesegil, 2008). Crises present leadership opportunities, allowing "ordinary" people to move to the forefront, make unexpected contributions, and even develop into leaders. During a crisis, a leader is born as the need arises (Tutar, 2004).

The importance of leadership in times of crises is impressionistic, at best. It is well known that leaders can exacerbate a crisis by ignoring impending threats, making unwise decisions, or

taking careless actions (Boin, Hart, 2010). The leadership abilities are tested in times of crises. They have to demonstrate their confidence in the teamwork in order to get effective results in accordance with the organization vision. This should be the central outline in circumstances of uncertainty (González et al., 2020).

These approaches were mostly theoretical or based on short-term empirical cases such as natural disasters or wars, but not on an epidemic that lasted for such a long time. The pandemic is a “landscape scale” crisis: an unexpected event occurring at enormous and overwhelming speed, resulting in a high degree of uncertainty that gives rise to disorientation, a feeling of loss of control, and strong emotional disturbance (D’Auria, De Smet, 2020).

The pandemic proved that Leadership could be a double-edged sword. It can be valuable, extricating followers from the crisis, or it can be destructive and thoughtless, and even aggravate the crisis.

### **Agile and adaptive Leadership in Times of Crisis**

Agile and Adaptive leaders are aware of leader-follower relationships, and consider factors in the environment within which leaders and followers operate (Glover et al., 2002).

Agile leaders do more than make changes. They recognize potential changes and carefully consider which the best path to positively affect the organization is. Adaptive and agile leadership involves behavioral changes that are appropriate to the changes in the situation (Mahsud et al., 2010). Agile leadership should give a special place to decision-making processes in a crisis; leaders must act quickly but also consider options, consequences and effects of their actions (Netolicky, 2020).

Adaptive leadership involves adaptation to an unusual situation that requires unconventional responses and tools that are not in usual toolbox. Adaptive leadership helps individuals and organizations adjust to and thrive in challenging environments. This approach is based on the research of Heifetz et al. (2009), which shaped the definitions and drew the outline for leadership training and development. In adaptive leadership, actions are based on broad, systemic thinking. Adaptive leadership does not refer to a single, authoritative leader, but rather a system that responds to changes in its environment. This is presented as the preferred path of action, based on systemic understanding, and leading to systemic change (Heifetz et al., 2009). Any person can act to promote systemic change. Anyone can take a position of adaptive leadership. This process involves risk for the person leading the change.

### **Agility**

The leader role is to stage the organization for a learning process that facilitates strategic agility, adaptability, and flexibility (Ferraris et al., 2021). The term “agility”. Is one of the most important factors in the survival and development of organizations in the current dynamic business environment, characterized by change and uncertainty .We see agility as a key concept in the analysis of the various situations that emerged from the Covid-19 pandemic and the leadership’s responses to the crisis. Agility is a relatively new concept, originating in the high-tech industry, and applied in organizational theory and human resource management using a situational approach. The term “Agility” was coined in the field of software engineering, and later expanded into organizational studies (Overby et al., 2006). Agility refers to availability, flexibility, and speed of response. Agility in education refers to an approach that implements change, embraces innovation, and transcends traditional conservative patterns of conduct and thinking (Morien, 2018). Agility is vital for corporate survival in the contemporary dynamic social environment, which is characterized by change, uncertainty, rapid technological development, increased risk, globalization, and the anticipation of privatization. Agility in an organization synchronizes processes, people, and advanced technology. Agility is considered to be a systematic and strategic organizational value among leaders. Agility has been defined as an ability that requires active use (Goodarzi et al., 2018; Morien, 2018).

A recent study notes that technological developments of the 21<sup>st</sup> century have affected institutions of higher education. Therefore, it is important to focus on sustainable leadership in the higher education sector, highlight applied strategies for lifelong learning, sustainability practices, the difficulties faced, and the experiences shared (Taşçı, Titrek, 2020). Agility creates a competitive advantage, enabling success in the organizational environment of the Covid-19 pandemic.

## Agilecation

The Covid 19 pandemic is a call for new definitions on leadership. Ferraris et al. (2021) describes how the CEO, as the corporate leader, is there to set learning processes for strategic agility, adaptability, and flexibility (Ferraris et al., 2021). We define it in one word Agilecation = agile leadership in education.

Agile leadership is a leadership approach that can manage chaotic environments, crises and adapt to developments. It is defined as effective leadership behavior in the face of rapid change, uncertain and challenging situations (Breakspear, 2017). Agile leadership can be explained by the theory of learning agility. It's based on the ability to adapt to new situations using experiential learning (De Meuse, 2019) agile leadership has been addressed independently of learning agility and its positive reflections on the organization have been revealed by various researches (Akkaya, Üstgörül, 2020; Cestou, 2020; Fitaloka et al., 2020; Gren, Lindman, 2020).

Figure 1 describes the development process from the state of shock to the normal routine.



**Fig. 1.** The surprise followed by the agile response. The Agile Leadership Model: from “Shock” to routine

### Research Goals

1. To analyze and evaluate the processes undertaken by the leadership of the College through the degree of satisfaction from the lecturers' point of view.

### 2. Research Questions

1. How the lecturers did perceive the colleges' agile leadership?
2. What are the key insights that can be deduced from this study on agile leadership of an HEI during a crisis?

## 2. Methodology

### Research Methods

This is a quantitative study offers to understanding the key processes undertaken by the college's leadership. Examine the research questions from the lecturers' point of view. We used quantitative measures. Based on an attitude questionnaire constructed especially for the current study. The questionnaire underwent face validation by four experts holding doctorates in education. It was distributed to a convenience sampling via Google Drive to all of the s lecturers (N = 120). The questionnaire asked for the perspectives of the lecturers and their evolution of the actions undertaken by the college's leadership. In order to establish the reliability of the data and the quantitative findings both authors of this article separately performed the measurement of values, using statistical tests (ANOVA, Pearson). Then compared their results, examined the questionnaire responses. \*In variance tests (Anova) we performed a-parameter tests of the Kruskal

Wallis (KW) type on the seven research indicators. Since these indices are not normally distributed (the results are in Table 3).

In order to increase the reliability of the questionnaire, a large number of statements (17) were constructed, as detailed below. In each category we identified the reliability of internal consistency and high correlation was found between the items (Cronbach’s alpha ( $\alpha$ ) = 0.819).

We tested the reliability of the first three indices: maintaining direct contact with the colleges leadership (8 statements); managing the training and practicum processes (4 statements); and persistence in distance teaching and communication with students (2 statements). Cronbach’s alpha ( $\alpha$ ) measures were found to be high, with a high degree of stability and consistency in the statements for each of the indices.

**Research Process**

The data was collected via google drive. The distribution of the questioner was a single-stage procedure among a convenience sample. Responses were anonymous. Statistical analysis was conducted on the findings, as presented in the tables. It examines the degree to which the lecturers were satisfied with the college’s leadership’s performance. The research is supported by a documentary review. The authors of the article were involved in leading the processes described, and therefore their personal and professional experiences are considered.

The theoretical framework of this study is based on previous researches on leadership and adaptive leadership during crises. The literature review together with the quantitative findings collected and the researchers’ experience as leaders of the researched situation and the documentary review provide a triangulation for the validity and reliability of the study.

The main research hypothesis predicts that a positive relationship will be found between the college’s agile leadership and the degree of satisfaction expressed by the lecturers. What will point out the process of Agilication = Agile educational leadership.

**Study Participants**

The study participants included N= 48 subjects. Of these About two thirds (38) were lecturers in the field of education (79.2 %), 5 were lecturers in the school of physical education (10.4 %) and 5 were lecturers in a variety of other disciplines (10.4 %). Ten of the lecturers have seniority of less than 5 years (20.9 %), 19 lecturers have 5-9 years of seniority (39.6 %), and 19 lecturers have seniority of 10 years or more (39.6 %).

**Research Tools**

A questionnaire was specifically constructed to address the research questions and goals. The questionnaire included 17 statements (1-5 Likert scale), in which a high value represented a high degree of agreement or satisfaction with the statement. The statements were associated with seven categories: the direct contact with the leadership. Management of the students training and experience. Persistence in maintaining contact with students during ERT. Degree of personal difficulty lecturers’ desire to be involved in leadership decisions. Perspective regarding the consistency over time of the changes enacted and frequency of use of overall resources. The mean of each participant’s responses to the statements in these seven categories was calculated, and thus the seven indices of the study were verified.

Following the first phase of shock and uncertainty in the first semester (from, March-June 2020), the college had entered a year of “Corona Routine”. At this time, we assessed the performance of the leadership and how the lecturers evaluated the decisions, the leadership made. Key findings are given in the following Tables. Table 1 will demonstrate the general traits of the college's leadership as expressed from the lecturers' perspectives

**Table 1.** General Traits of college's leadership. The Research Indices (N = 48)

Index	Number of Statements	Range	Mean	Standard Deviation	$\alpha$
contact with colleges leadership	8	2.38 - 5.00	4.02	.71	.861
training and experience processes	4	3.50 - 5.00	4.43	.50	.710

distance learning and contact with students	2	2.50 – 5.00	4.61	.53	.648
Degree of personal difficulty	1	1.00 – 5.00	2.35	1.04	--
Lecturers' desire to be involved	1	1.00 – 5.00	3.27	1.36	--
Position regarding the preservation of changes over time	1	1.00 – 5.00	3.26	1.11	--
The use of colleges resources	1	1.00 – 5.00	3.68	.98	--

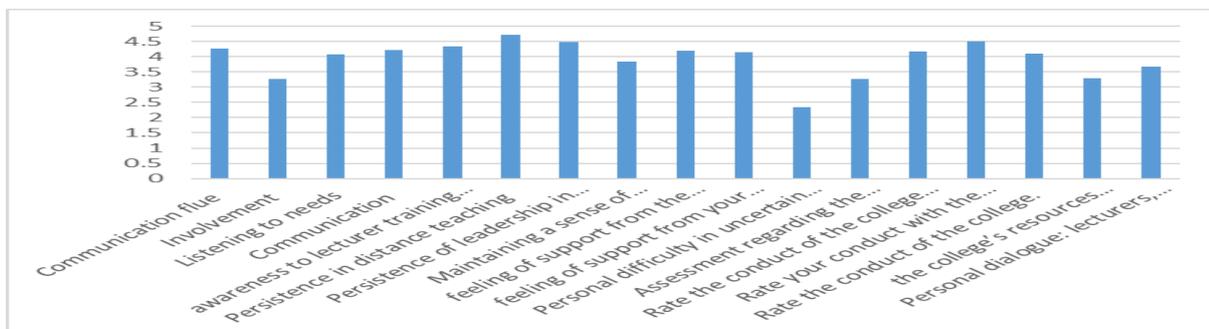
The reliability of the first three indices, as measured by Cronbach's alpha ( $\alpha$ ), was found to be high. This attests to a high degree of stability and consistency in the statements within each of the categories.

Table 2 presents the mean of the respondents' answers to each of the 17 statements.

**Table 2.** Mean and Standard Deviation of the Survey questions and statements (N = 48)

Sub categories	Mean	Standard Deviation
Communication flue	4.27	.74
Involvement	3.27	1.36
Listening to needs	4.09	.95
Communication	4.23	.90
Awareness to lecturer training processes	4.33	.78
Persistence in distance teaching	4.73	.57
Persistence of leadership in conducting studies	4.48	.62
Maintaining a sense of togetherness	3.83	.95
feeling of support from the leadership	4.19	1.00
feeling of support from your colleagues	4.15	1.17
Personal difficulty in uncertain situation?	2.35	1.04
Assessment regarding the preservation of the changes in the future	3.26	1.11
Rate the conduct of the college leadership in directing the various processes during the second semester.	4.17	.75
Rate your conduct with the students.	4.50	.65
Rate the conduct of the college.	4.11	.79
the college's resources availability for lecturers	3.29	1.32
Personal dialogue: lecturers, colleagues, and college officials?	3.68	.98

Figure 2 presents the mean of the respondents' answers to each of the 17 statements.



**Fig. 2.** The Survey questions and statements (N = 48)

In order to examine whether there is a relationship between the lecturer's seniority and their views regarding distance learning, variance tests (Anova) were performed on the seven research indicators. Since these indices are not normally distributed, a-parameter tests of the Kruskal Wallis (K-W) type were performed. Here are the results in [Table 3](#).

**Table 3.** Research indicators according to seniority and various test results (N = 48)

Seniority	up to 5 years (N=10)		5-10 years (N=19)		More than 10 years (N=19)		K-W
	SD.	Mean	SD.	Mean	SD.	Mean	
contact with colleges leadership	6.9	3.55	.63	4.24	.70	4.05	5.59
training and experience processes	0.41	4.18	.48	4.55	.55	4.43	4.41
distance learning and contact with students	0.79	4.30	.26	4.74	.52	4.63	3.04
Degree of personal difficulty	0.92	2.80	1.01	1.84	.96	2.63	7.60*
Lecturers' desire to be involved	1.16	3.30	1.50	3.16	1.38	3.37	0.28
Position regarding the preservation of changes over time	0.16	2.70	1.20	3.61	1.13	3.21	6.49*
The use of colleges resources	1.07	3.40	1.06	3.78	.87	3.74	1.44

As shown in [Table 3](#) it was found that the degree of personal difficulty of lecturers with a seniority of up to 5 years (2.80), as well as of lecturers with a seniority of over 10 years (2.63) is greater than lecturers with a seniority of 5-10 years (1.84) and clearly:  $K-W(2) = 7.60, p < 0.05$ . It was also found that the position regarding maintaining changes over time of lecturers with 5-10 years of experience (3.61) is more positive than that of lecturers with more than 10 years of experience (3.21) and of lecturers with up to 5 years of experience (2.70) and clearly:  $K-W(2) = 6.49, p < 0.05$ .

No significant differences were found in the other indices

All the findings indicate a high level of evaluation in most of the indices examined. The respondents were highly persistent in the distance teaching processes (average 4.73). They rated their communication with the students positively (4.50). In their opinion, the college's leadership preserved the teaching processes in a positive way (4.48). The respondents highly rated their degree of awareness regarding the existence of ongoing training processes (4.33). They felt comfortable contacting those in official roles (4.23). And did not indicate experiencing a high degree of personal difficulty in the time of uncertainty during the Covid-19 crisis (only 2.35).

**Correlations between Research Indices**

Pearson tests were performed to examine the correlations between the research indices, as shown in [Table 4](#).

**Table 1.** Pearson Correlations between Research Indices (N = 48)

Index	1	2	3	4	5	6
1. Maintenance of direct contact with leadership	-					
2. Management of training and experience processes	.747**	-				
3. Persistence in distance learning and contact with students	.035	.293*	-			
4. Degree of personal difficulty	-.244	-.173	-.114	--		

5. Lecturers' desire to be involved	-.230	-.071	.059	.335*	–	
6. Perception of the preservation of changes over time	.443**	.411**	.095	.031	.192	–
7. Frequency of use of overall resources	.469**	.431**	.094	-.118	.073	.296*

\* p < 0.05 \*\* p < 0.01

Summing up the main findings:

There are moderately positive correlations between the maintenance of direct contact with the college's leadership, managing training and experience processes, perception of the preservation of changes over time, and the frequency of use of overall resources.

Positive correlations of medium intensity between the management of the training and experience processes, persistence in distance teaching, contact with students, perception of the preservation of changes over time, and the frequency of use of overall resources. In addition, moderately positive correlations were found between the degree of personal difficulty and the desire of the lecturers for involvement, as well as between the perception of the preservation of changes over time and the frequency of use of overall resources.

Figure 3 describes a model of the ecosystem in which the agile leadership operated during the pandemic as seen from the data above.

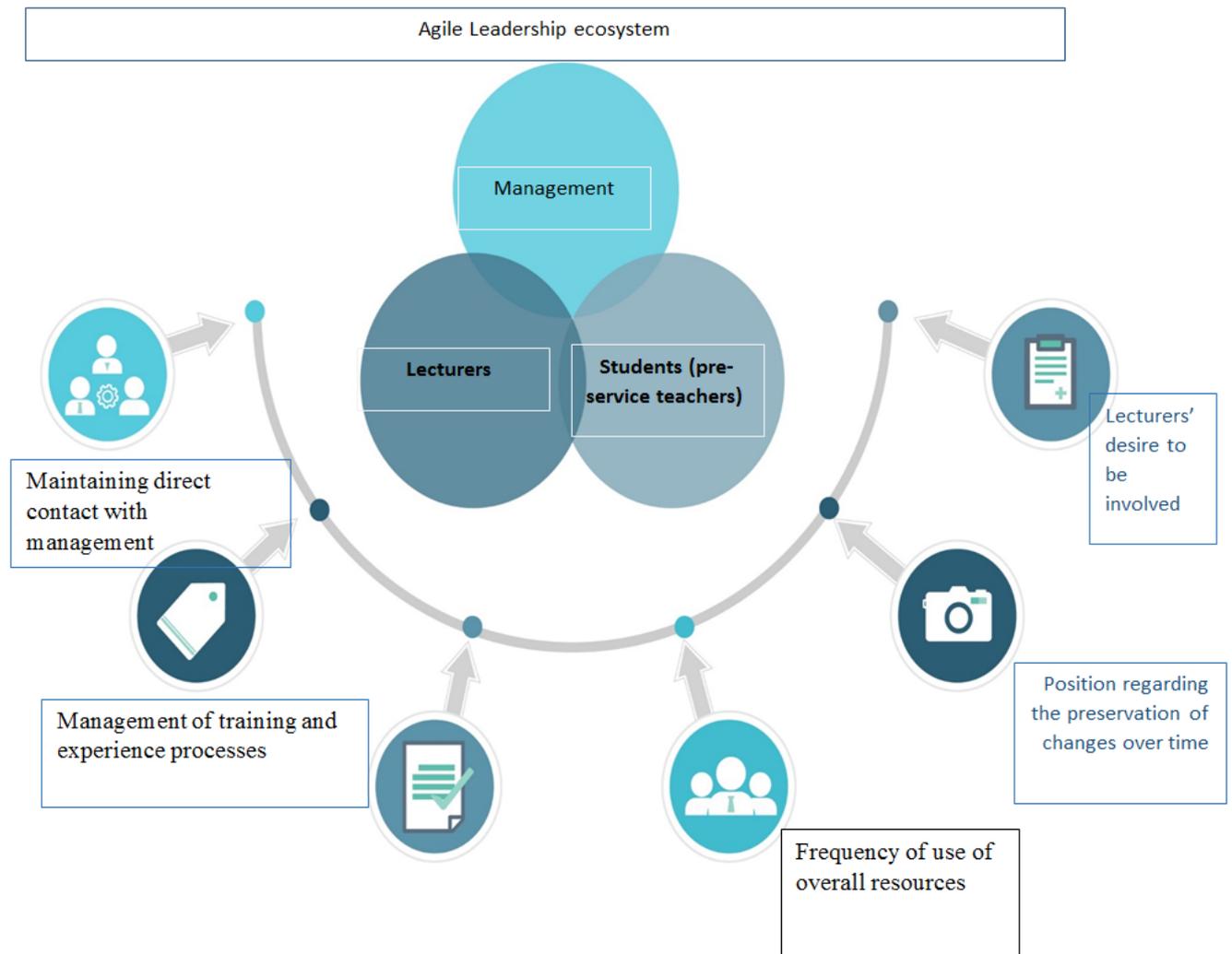


Fig. 3. Agilication ecosystem

### **3. Discussion**

This study focused on the agile leadership of an academic institution for teacher and educator training in northern Israel. The research asked to reveal the perceptions of this special situation as seen from the lecturer's perspective. Since the outburst of the Covid pandemic, from March 2020 and until September 2021, it was essential to continue the organizational activities. Under state regulation for more than 140 days, "Five waves" and three lockdowns all, the college's activity transitioned from face to face learning on campus to ERT and distance teaching and learning from home. All activities conducted remotely, in accordance with state guidelines.

It was necessary to respond in a rapid, agile, and flexible manner. To create solutions and stability under the conditions of uncertainty. Colleges' leaders had to operate in an agile and adaptive manner. We coined it in the innovative term: Agilecation.

The main goal underlying the college's activities was to adopt goals suitable to an "agile" organization in a time of a crisis. The speed with which this transition took place was unprecedented. The practices described above can be linked to the theory of agile and adaptive leadership, as presented by Heifetz et al. (2009). They reflect decisions that move in both directions along the axis between adaptive leadership and organized implementation. During the crisis, issues that were at the core of the organization received the most attention from all stakeholders: leadership, lecturers, and students. Multiple meetings and conversations were held with all stakeholders, in order to give them an opportunity to express their point of view. The role of the leadership was to respond to the newly arisen situation, and to evolve organizationally as the situation developed. This approach is consistent with Akkaya et al. (2022) that describes agile leadership as an important managerial function, responsive and innovative for the development and success of any organization in the uncertain, complex, and ambiguous situations during the COVID-19 pandemic. Furthermore, this kind of agile leadership creates learning situations that can develop internal leadership and makes the leader an active partner with followers, being able to empower followers, give them intellectual and executive independence. It is necessary for leaders to perform their duties, and to model the characteristics of leadership to their followers, so they can become partners in the process (Kadibesegil, 2008).

This is a significant type of leadership in which leaders possess an ability to take quick and correct decisions, cope with stress and psychological pressures while managing crises (Çobanoğlu, Demir, 2022).

### **4. Conclusion**

At the outset of the study, we hypothesized that a positive relationship would be found between the decisions the colleges leadership made and the satisfaction of the lecturers, in terms of whether the training provided and the leadership's conduct were beneficial to the students and faculty. This hypothesis was confirmed by the findings, as presented.

The results show there was a high level of satisfaction on the part of the lecturers regarding the conduct of the college agile leadership during the Covid-19 pandemic. This is despite the fact that the lecturers were facing challenges and unusual changing requirements, which greatly deviated from their normal pre-pandemic routine. They had to teach online using technologies, attend Zoom meetings, and in general adapt to a new disruptive situation that required a significant investment of time and efforts beyond what would have been considered acceptable previously.

As seen from the findings: The lecturers were persistent in the remote teaching process. Their conduct with the students was positive. They perceived the college's leadership as maintaining teaching processes in a highly positive way. They were aware of the ongoing training processes. They felt comfortable contacting those in official roles.

What are the main insights that can be learned from this study? In order to create agile leadership under conditions of a crisis and uncertainty leaders should set goals for the short and long term. This is important in order to act as an "agile" organization in response to the crisis. In the particular case described in this study: to shift all the activities: administrative, teaching, and other educational activities from a frontal format of teaching and learning to an online form, especially using the Zoom platform.

The speed with which this transition took place was unprecedented. For these processes to occur effectively, it was necessary to apply skills and capabilities of agile leadership = Agilecation to

face the crisis. There was a need to adopt channels of direct, selfless communication, to allow other people to take initiative and participate in leadership.

Leadership in an institution of higher education requires special traits. This can be seen as being in alignment with theoretical approaches that include: shaping and imparting a vision, encouraging learning, encouraging collaboration, building meaning, imparting knowledge, providing opportunities for creativity, disseminating viewpoints and values, enabling ongoing dialogue, and maintaining and managing reflective processes in a collaborative and up-to-date climate (Schneider, Monsonego, 2010). We believe that in times of crisis, these traits need to be even more strongly expressed, so that the leader is operating in accordance with the framework and is suited to the situation. Moreover, HEI should activate Agilication.

### 5. Study limitations

The study is based on a small representative sample (48 out of 120) lecturers.

The researchers were involved as the leaders of the processes described. Therefore, the subjectivity of the researchers in light of their professional roles affected the choice the research methodology. The research is based on a limited base of previous research's that deals directly with the situation under investigation, namely leadership of an HEI during the Covid-19 pandemic.

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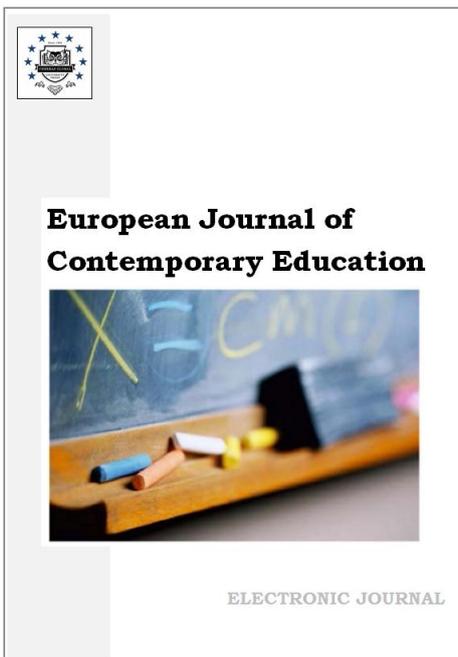
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## **Massive Open Online Courses as an Improvement in Education for Countries in Transition: Case of Bosnia and Herzegovina**

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### **Abstract**

With the rapid progress in technology and the advancement in learning systems, E-learning has become the topic of many studies in the last several decades. The success of a society is based on education; those who have a better educational system prosper and develop faster. The schooling systems of countries that are in transition are facing many problems. Due to the complex governing structure, the reforms of the education system are very slow thus researchers opt for an alternative to traditional education. The goal of this research is to examine what tiger intention to use online-courses and the current barriers that exist. This researcher aims to answer the following questions. "What are the main factors affecting the intention to use online-courses? For this research four variables have been developed (Performance Expectancy, Effort Expectancy, Social Influence, and Motivation) and their influence on students' behavioural intention to use MOOCs was measured. Moreover, in the main model of the study, five variables (Age, Gender, Experience, Language Barriers, and Level of Education) were used as controlling (moderating) variables. The research used a quantitative method where data has been collected using surveys that have been done among high school and university students. Regression analysis was used to test hypotheses and the main findings showed that all four variables have an influence on students and their intention to use MOOCs. The findings of the study show that performance expectancy and device consistency have an influence on MOOC use intentions. Facilitating environments, instructional consistency, and MOOC use purpose all influence MOOC use. MOOC use intention was found to be influenced by social impact and effort expectations and further, this study has confirmed that motivation impacts behavioural intention to use MOOCs. The study finally concluded that the universities must have systems and tools in place to encourage students to use MOOCs. At all stages of education, tech skills instruction should be included in the curriculum. MOOC designers must use the best teaching and learning methods to ensure that

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MOOCs have good instructional content, as well as ensure that the sites and learning materials are in excellent quality.

**Keywords:** massive open online courses, online learning, e-Learning, Bosnia and Herzegovina's education, universities, schools.

### **1. Introduction**

Education is the most important segment in the evolution of the nation, countries with good educational systems are growing faster and it is one of the critical impacts on the growth of the economy (Seltzer, Bently, 1999; Coates, 2013). It gives people proper skill, knowledge, information, and technique to know their rights and obligations toward country, nation, society, family. Unfortunately, a clear disadvantage of proper education is found in developing countries (Barber et al., Rizvi, 2013; Tett, 2018).

To balance these factors various innovations have been launched one of them is e-Learning. E-Learning is defined by the European Commission as the "consumption of the internet to increase the quality of learning by giving access and resources to the larger masses". E-Learning enables distance sharing and distant collaboration (Dominici, Palumbo, 2013), which is a very important fact in reaching masses all over the country.

A segment of e-learning that is growing very fast is MOOCs. It can be defined as distance offered courses that can take a large number of students (Lin et al., 2015). MOOCs had a huge acceptance from the time they were launched. It is considered as one of the curtail change that was needed in education (Weissmann, 2018; Chafkin, 2018).

MOOCs raised the discussion of the potential extension of Higher Education to all, where it would be accessible to any student with an internet connection around the globe (Yuan et al., 2018; Valenza, 2018).

Despite the reality that MOOCs are rapidly increasing mode of education programs with the ability to provide access to world-class teaching and educational opportunities across social and geographical boundaries, retention rates are typically poor. (figures of 10 percent retention are widely cited) (Roca et al., 2006). While research is beginning to look into the reasons for the low retention rates, most studies concentrate on a single MOOC as a case study (Lee et al., 2009; Blin, Munro, 2008) or look at intent to complete rather than actual behavior (Alraimi et al., 2015). However, there are some elements that could be considered barriers in students' learning processes while using E-learning platforms, such as reduced motivation, delayed feedback or support because teachers are not always accessible when students need help while learning, or feelings of alienation due to the lack of presence of classmates (Hughes, 2009; Coman et al., 2020). Because of these difficulties, adapting existing MOOCs is difficult, and users can be hesitant to accept MOOCs. As a result, the effectiveness of a MOOC will be determined by whether or not users are willing to follow it, which is determined by a number of factors such as performance expectancy, commitment expectancy, social influence, and motivation, as well as their impact on students' behavioural intention to use MOOCs (Wang et al., 2009). Consequently, some other determinants such as age, gender, experience, language barriers, and educational attainment are significant for user intention to use MOOC. Very few research has been done to examine the factors, that influencing users' intentions to adopt MOOCs, as well as the impact of disparities in age, gender, experience, language barriers, and level of education on MOOC acceptance. Current studies in this field are narrowly focused on some specific subjects such as satisfaction (Name, et al., 2014), motivation (Hew, Cheung, 2014), or the success rate of students only (Levy, 2007). Therefore this study is to see what inspires tiger's users to take online courses and what obstacles they face. The main objective of the study was to see whether experiential variables affected people's intention to take online courses, in order to aid designers in creating more successful MOOCs.

### **2. Literature review**

UNESCO World Educational in 1998 reported that "New possibilities are emerging which already show a powerful impact on meeting basic learning needs, and it is clear that the educational potential of these new possibilities has barely been tapped". Communication and information technology has shown the potential to transform the role of teachers and education. Developed nations are leading in online learning, intensive competition, globalization, a new form of the classroom, revolution of the information technology, sharing and transferring knowledge is

the difference between old and new economy (Stricker et al., 2011). To understand where was the country in transition stands, we need to understand B&H. War which lasted from 1992 to 1995 devastated the country leaving it with the Dayton agreement where there is Federation of B&H, Republika Srpska, and District Brcko. Complex structure made many issues in education. Curriculums are not harmonized; every party is introducing the changes by themselves, with no joint intention to improve education. The statistic shows that 38 % of the population in B&H has just elementary education, 52.5 % secondary education only 9.5 % has a higher education (Stricker et al., 2011; Bašić, 2018). E-learning in Bosnia and Herzegovina is mainly left to the individuals to make effects, with no help of society, institutions, or government. Being so careless about this big opportunity also created large masses unfamiliar with the system that can improve the quality and lower the spending on traditional education. Agency for the statistic in Bosnia and Herzegovina 2.5 billion per year is spent on education. But the result is more than ineffective (Ibrahimović, 2015). On another side, Bosnia and Herzegovina is a country that has no problem in transferring digital information. According to (Global Digital Report, 2018) 74 % of people in B&H are internet users. In a study done by Chaushi, Chaushi, and Ismaili (Tyler-Smith, 2006) on the western Balkan region, they concluded that the technical aspect of e-learning is implemented as in private as in public universities where 72 % have LMS system where the material for the courses has been uploaded.

E-learning is the process of creating and designing learning environments using information and computer technology and systems (Horton, 2006). E-learning, according to Elmarie Engel Brecht, is a term that uses electronic media such as the internet, CDs, cell phones, and even television which provide distance learning and teaching (Engelbrecht, 2005). In a brief, E-learning is the process of transmitting information and education through the use of different electronic devices (Koochang et al., 2005), and the term is best understood when it is placed within a framework in which technology is used to satisfy people's desire to learn and develop (Cohen, Nycz, 2006). It is often seen as the paradigm of traditional education. Time and place (Croxtton, 2014) is no longer an obstacle for people to gather information and cultivate knowledge (Aparicio et al., 2014). The central point of learning has been changed, from teacher to student, and the possibility that was previously unthinkable such as to use some platforms and to learn new things are today available (Felice, 2009; Yanaze, 2006; Coleman, 2012). D. Zhang et. al. (Zhang, Nunamaker, 2003) confirmed that e-learning students performed better than the group without having any online learning. Various online tools are used in the E-learning phase in higher education. Many terms, such as Computer-mediated learning (Anaraki, 2004), Web-based training, E-learning systems, and Learning Management Systems, have been used to describe online learning over time. Regardless of their names, all of these systems use the Internet and have certain features that enable registration, evaluation of learners' and teachers' activities as well as facilitating lecture delivery and interaction between students, their peers, and teachers (Costa et al., 2012). Forums, which enable asynchronous student-teacher communication and collaboration, web conferences, which allow video, audio, and written communication, and chat, which allows users to send messages and receive responses in real time are among the most critical features of online learning platforms (Cacheiro-Gonzalez et al., 2019). As a result of the incorporation of e learning; education has recently undergone major changes. One of these innovations is the introduction of MOOCs, or massive open online courses. Many organizations such as Coursera, Udacity, and EDX launched MOOCs in 2011, and they embodied significant new advances in education (Alhazzani, 2020). MOOCs are open accessible online courses in which anyone can participate normally for free. Participants are advised to use additional materials such as textbooks in addition to conventional course material such as recorded lectures to help their self-directed studies. Some MOOCs often provide structured and unstructured interactivities, such as video conferencing tools and forums between students, teachers, and experts, as well as immediate feedback during fast quizzes and assignments (de Jong et al., 2020). MOOCs are organized into "modules" or "courses" that are normally spread out over a set period of time and allow students to work through the material at their own pace. (Pilli et al., 2016) Despite the tremendous growth rate of MOOCs and a high rate of enrolments, participation in the MOOCs after enrolment, as well as completion of the courses has been criticized widely (Porter, 2015). A survey of 316 users of three major MOOC platforms based in the United States (Coursera, EdX, and Udacity) was conducted to determine their intention to continue with MOOCs. They discovered that perceived credibility, perceived transparency, perceived utility, perceived pleasure, and user satisfaction all had a major impact on intention.

The emphasis on purpose to use rather than actual completion is a drawback of this review, which had the advantage of looking at experience through various MOOC platforms and courses (Alraimi et al., 2015). Users' intention to use online learning systems in the future is measured by their satisfaction, which is determined by their perception of system quality (Chiu et al., 2005). The decision to continue using online learning systems is positively linked to system quality (Ramayah et al., 2010). Students' behavioral intentions to use online learning course websites are influenced by their perceptions of system quality (Chang, Tung, 2008). According to the literature, the major factors that impact the educational process through e-learning are individual motivation, environmental characteristics, ease of use, system factor, individual factors, usefulness, network externality factor, social factor, student interface, content, learning community, and customization are the main parameter for acceptance of e-learning systems (Vaughan, 2001; Nawal, 2012; David, Bagozzi, Warshaw, 1992; UNESCO, 1998). From the review of the literature, The research model was built using the following variables: performance expectancy, effort expectancy, social influence, facilitating conditions, behavioral intention, and usage behavior. Furthermore, five variables (age, gender, experience, language barriers, and level of education) were used as controlling (moderating) variables in the study's research model.

### 2.1. Development of the Research model

To decide the rate of technology adoption, Alraimi et al. proved that the most frequent factor is performance expectancy. Venkatesh et al. defined performance expectancy as a "degree to which a person believes that using a particular system would enhance his or her job performance". Further Venkatesh et al. defined five constructs: Perceived usefulness (TAM/TAM2, C-TAM-TPB); Extrinsic motivation (MM); Job-fit (MPCU); Relative advantage (IDT); Outcome expectation (SCT); On this grounds the first hypothesis was developed:

H1: Performance expectancy (perceived usefulness) positively influences the usage of MOOCs.

Wu et al. explained that a significantly important segment of technology acceptance is the factor of ease of use. Evaluating MOOCs based on the fact "perceived ease of use" is accessing the system designed to be learner-friendly. Creating a learner-friendly design need to be considered and people with a variety of skills need to be able to operate with the system. The goal should be easy to use and useful for learners. Effort expectancy is defined as the "degree of ease that individuals think they will have when using an information system" (Venkatesh et al., 2003). Three constructs are crucial for the existing model of effort expectancy: Perceived ease of use (TAM/TAM); Complexity (MPCU); Ease of use (IDT). Therefore, the following hypothesis is developed.

H2: Effort expectancy (easy of usage) has a positive influence on the usage of MOOCs.

Khan, Hameed & Khan, discovered that individuals are easily influenced to use new online technology if their peers, colleagues, friends, relatives, and others are using it. Brahmasrene & Lee, (Brahmasrene, Lee, 2012) encourages students to use communication tools as much as it is possible during the courses, the effect increased social participation among students which led to a bigger commitment to continue e-learning. The conclusion was that social ability affects positively student's intention to use e-learning. A student enrolled with friends is more likely to be engaged with course material (Kizilcec, Schneider, 2015), and drop out from MOOCs are less likely (Onah et al., 2014). Social engagement via large online group has a positive effect on a student to finish the course (Kizilcec, Schneider, 2015) and small group engagement face-to-face positively affect MOOCs learning (Li et al., 2001).

Venkatesh et al. referred that social influence can be explained as "the degree to which an individual perceives that important others believe he/she should use the new system". (UTAUT) the unified theory of acceptance explained that social influence is strongly predicting behavioral intention (Venkatesh et al., 2003). Base on the theoretical background the following hypothesis has been established.

H3: Social Influence has a positive effect on the intention to use MOOCs.

The fundamental difference between traditional classroom-based instruction and MOOCs is motivation. Motivation can be described as the reason or a goal a person behaves in a certain manner. It is about what people believe is important (Ames, 1992).

Motivation is a psychological construct that is an important factor in learns' aim to continue using MOOCs and to finish the course (Moore, 2013; Barba et al., 2016). It explains whether a

person has the interest to be engaged in a certain activity. When it comes to learning motivation is conceptualized as enhances, maintains, or mediates cognitive development. It is intentional behavior (Brophy, 2004). Many researchers tried to understand deeper about motivation drives and goals that MOOCs learners have (Moore, 2013; Barba et al., 2016; Glynn, 2011; Zhou, 2016).

The following components influence a person to learn:

- Intrinsic motivation includes emotions that learning is delightful and intriguing (Glynn et al., 2011).
- Extrinsic motivation involves external factors for learning such as reward or punishment (Glynn et al., 2011).
- Personal relevance involves indications of the learner's goals (Duda, Nicholls, 1992).
- Self-efficacy indicates certainty that they can accomplish high results (Bandura, 2006).
- Self-determination indicates learners' beliefs about the control that they have over learning (Black, Deci, 2000).

Motivation plays important role in persistence and learning in any education environment. MOOCs learning are "voluntary learning", so motivation is especially important when it comes to the amount of time individuals spend learning and the effort intensity. Lei (Lei, 2010) studies also revealed that motivation to participate in MOOCs can be internal and external. "Internal can be curiosity and personal interests. External factors are the impact on the development of job competencies and reputation of the universities" (Milligan, Littlejohn, 2017; Wu, Chen, 2017).

H4: Motivation has a positive effect on the intention to use MOOCs.

## 2.2. Moderators

Previous studies indicated that individual expectation defers depending on age (Venkatesh et al., 2003). Age groups among MOOC learners are critical for learner-friendly features so students would not experience technical problems and they would feel that MOOCs are useful for their learning activities and goals (Younet al., 2018). Most of the learners are over 18-year-old students (Yousef et al., 2014), the average age of MOOC participants was 30 and greater (Rodriguez, 2012). The age of the participants was a significant factor for student success in an online program (Diaz, 2000).

H1a: Age moderates the relationship between performance expectancy and behavior intention to use MOOCs.

H2a: Age moderates the relationship between effort expectancy and behavior intention to use MOOCs.

H3a: Age moderates the relationship between social influence and behavior intention to use MOOCs.

H4a: Age moderates the relationship between motivation and behavior intention to use MOOCs.

Christensen and Alcorn (Christensen, Alcorn, 2014) discovered a gap in the gender of online learners only 36.5 % of MOOC participants were female. In a recent study, Halawa et al. (Halawa et al., 2014) confirmed this gender inequality in online learning. Macleod et al. (Macleod et al., 2015) did not agree with previous studies and proposed a theory that gender proposition in MOOCs courses often depends on the subject chosen. The further researcher explained that the Equine Nutrition course at the University of Edinburg had for instance 90 percent female audience while the AI course on MOOCs had only 15 percent, female students.

H1b: Gender moderates the relationship between performance expectancy and behavior intention to use MOOCs.

H2b: Gender moderates the relationship between effort expectancy and behavior intention to use MOOCs.

H3b: Gender moderates the relationship between social influence and behavior intention to use MOOCs.

H4b: Gender moderates the relationship between motivation and behavior intention to use MOOCs.

Diaz (Diaz, 2000) suggested that the profile of an online learner who has more life, work, academic experiences made the student better prepared for independent, self-directed study. Tyler-Smith (Tyler-Smith, 2006) and Diaz (Diaz, 2000) presented that more mature students with more life and work experience are more successful in online learning.

H1c: Experience moderates the relationship between performance expectancy and behavior intention to use MOOCs.

H2c: Experience moderates the relationship between effort expectancy and behavior intention to use MOOCs.

H3c: Experience moderates the relationship between social influence and behavior intention to use MOOCs.

H4c: Experience moderates the relationship between motivation and behavior intention to use MOOCs.

Language has a critical role in communicating and transferring knowledge. As Vygotsky (Vygotsky, 1978) explained that spoken or written language plays the important role in social, cognitive, and motivational factors. Further learners are coming from different cultural and social backgrounds so communication differs and plays important role in learning (Vygotsky, 1978; Lemke, 2001). Language mediates learning and it represents an important factor in transferring ideas, thoughts, and knowledge. Proper communication is crucial in correctly interpreting knowledge by learners (Lemke, 2001). Inappropriate use of language might lead to misunderstanding, miscommunication, and with that lower motivation of students (Vygotsky, 1978) and higher dropout.

In online education, English has become an international medium for communication among learners that do not speak the same native language. Many MOOCs courses are just in English and there are a lot of non-native English speakers that are taking courses in that language (Altbach, 2014).

H1d: Language barrier moderates the relationship between performance expectancy and behavior intention to use MOOCs.

H2d: Language barrier moderates the relationship between effort expectancy and behavior intention to use MOOCs.

H3d: Language barrier moderates the relationship between social influence and behavior intention to use MOOCs.

H4d: Language barrier moderates the relationship between motivation and behavior intention to use MOOCs.

According to the article of Universities UK 2013, there are five groups interested in MOOCs. Vocational learners – professionals that want to maintain their knowledge or learn about new fields and develop their careers through lower cost independent learning models. Educators and researchers – To improve their work with the students or in the field, they are using MOOCs. Higher Education students – This category uses MOOCs as an addition to the courses that they have at the university. Hobby learners – Adults that are eager to learn something new, use the MOOCs system as an easily accessible material at low cost or for free. Prospective students – There is always a group of students that want to learn more. They one to explore a more different topic and work on themselves in different fields.

“Some other characteristics of students are as follows:

- Most of them are over 18-year-old students,
- The length of course schedule changes between 5-12 weeks,
- Educational videos might be on a specific course or a topic,
- The length of videos changes between 5-10 minutes,
- The language of most courses is English,
- Due to a high number of participants and the instructional approach (peer learning),

assessment of participants are made through multiple-choice tests, online assessment tests, and peer assessment.” (Yousef et al., 2014)

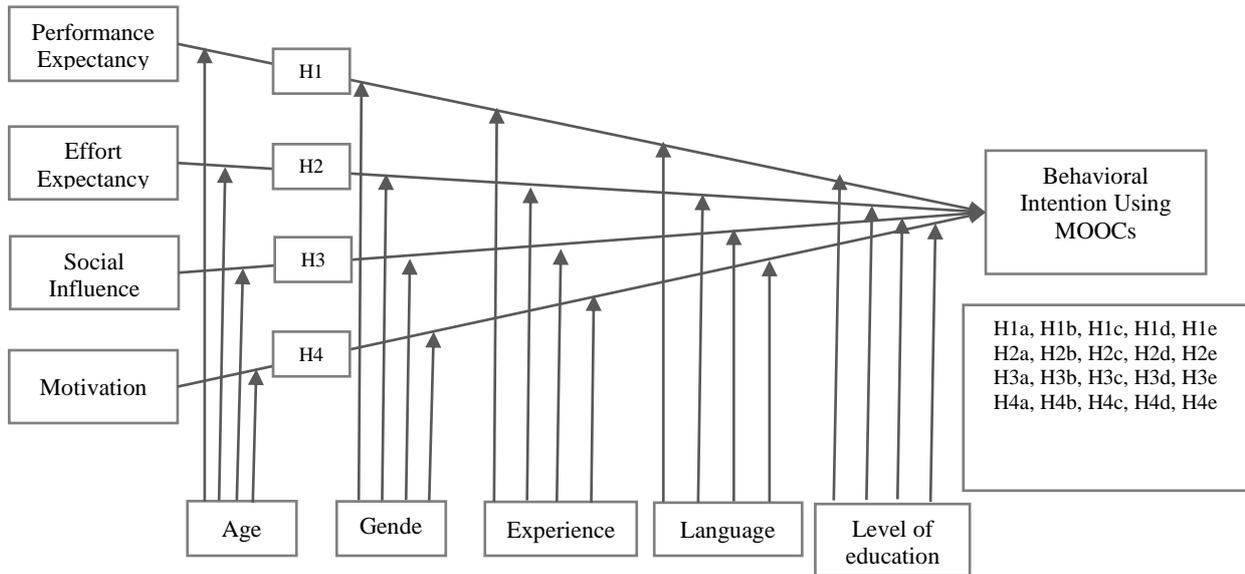
In research done by the Diaz (Diaz, 2000) and K. Tyler-Smith (Tyler-Smith, 2006) reported that despite the high level of education and carrier experience, participants in MOOCs often drop out.

H1e: Level of education moderates the relationship between performance expectancy and behavior intention to use MOOCs.

H2e: Level of education moderates the relationship between effort expectancy and behavior intention to use MOOCs.

H3e: Level of education moderates the relationship between social influence and behavior intention to use MOOCs.

H4e: Level of education moderates the relationship between motivation and behavior intention to use MOOCs.



**Fig. 1.** Proposed Research Model

## 2. Methodology

### Instrument Development

The research model included the above mentioned variables, each of which is measured with multiple items. To develop data validity, the items were adapted from the literature Straub, Boudreau, Gefen, 2004. The items have been revised to represent the MOOC environment and the possible outcome. The questions were reviewed by other researcher to ensure that they were relevant and understandable for respondents. The questions were updated in response to their feedback. The instrument was then validated with a pilot study. The instrument had strong validity, according to the results of an exploratory factor analysis.

**Table 1.** Model fit

	Saturated model	Estimated model
SRMR	0.071	0.072
d_ ULS	2.687	2.705
d_ G	0.737	0.734
Chi-square	2119.381	2100.068
NFI	0.744	0.747

Table 1 shows that that the Saturated model and the Estimated model have similar SRMR values (0.071 and 0.072, respectively), which indicates that there is a small difference between the two models. The goodness-of-fit statistics (d\_ ULS and d\_ G) are similar for both models, with the values being close to the recommended cut-off value of 2. The chi-square value of the estimated model (2100.068) is lower than the saturated model (2119.381), which indicates that the estimated model is a better fit for the data. The NFI (Normed Fit Index) value of the estimated model is higher (0.747) than that of the saturated model (0.744), indicating that the estimated model is a better representation of the data. Overall, the results suggest that the estimated model provides a good fit for the data and can be used to make inferences about the relationships among the variables in the model.

**Table 2.** Construct reliability and validity – Overview

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Behavioral Intention Using MOOCs	0.889	0.891	0.924	0.753
Effort Expectancy	0.816	0.828	0.871	0.577
Motivation	0.89	0.891	0.919	0.694
Language	0.737	0.842	0.739	0.527
Performance Expectancy	0.862	0.863	0.901	0.645
Social Influence	0.758	0.775	0.838	0.514

The first column in Table 2 "Cronbach's alpha" is a commonly used measure of internal consistency. A value of 0.7 or above is considered to be good. In this table, all the values for the five constructs are above 0.7, which indicates a high level of internal consistency.

The second column, "Composite reliability (rho\_a)," measures the reliability of a composite of multiple indicators. A value of 0.7 or above is considered to be good. In this table, all the values for the five constructs are above 0.7, which suggests that the composite indicators are reliable.

The third column, "Composite reliability (rho\_c)," is another measure of composite reliability. Like rho\_a, a value of 0.7 or above is considered good. All the values in this table are above 0.7, which indicates good reliability of the composite indicators.

The fourth column, "Average variance extracted (AVE)," is a measure of how much of the variance in a construct is explained by the indicators. A value of 0.5 or above is considered to be good. In this table, all the values for the five constructs are above 0.5, which indicates that the indicators are effectively capturing the variance in the constructs.

Overall, these results suggest that the five constructs are reliable and that the indicators used to measure them are capturing the variance in each construct effectively.

**Table 3.** Discriminal validity – Fornell – Lacker criterion

	Age	Behavioral Intention Using MOOCs	Effort Expectancy	Experience	Gender	Language	Level of Education	Motivation	Performance Expectancy	Social Influence
Age	1									
Behavioral Intention Using MOOCs	0.081	0.868								

Effort Expectancy	0.016	0.586	0.759							
Experience	-0.165	-0.36	-0.308	1						
Gender	-0.233	-0.07	-0.16	0.216	1					
Language	-0.042	0.273	0.196	-0.03	-0.061	0.654				
Level of Education	0.572	0.116	0.043	0.052	-0.092	0.003	1			
Motivation	-0.02	0.657	0.647	0.296	-0.133	0.357	0.024	0.833		
Performance Expectancy	-0.027	0.647	0.649	0.289	-0.08	0.292	-0.007	0.726	0.803	
Social Influence	-0.04	0.456	0.422	0.169	-0.127	0.402	0.011	0.543	0.459	0.717

This table presents the results of a discriminant validity analysis, which aims to assess whether the measures of different constructs are distinct from each other. The values in the table represent the correlation coefficients between the variables listed in the columns and rows.

According to the Fornell-Lacker criterion, discriminant validity is established if the average variance extracted (AVE) for each construct is greater than the square of the correlation between that construct and any other construct.

#### Measurement Instrument

Variables performance expectancy, effort expectancy, and social influence has been measured base on the UTAUT model developed by Venkatesh, Morris, Davis & Davids (Venkatesh et al., 2003) and the instrument developed by Davis (Davis, 1989). Questions have been adjusted for this study. UTAUT framework was tested on 215 respondents. So, this research should contain a sample of no less than 215.

Motivation would be measured using a specifically designed questionnaire of accessing motivation for online learning. It provides a more focused view on the Online learning enrolment intentions. The questionnaire includes five scales: intrinsic motivation, self-determination, self-efficacy, career motivation, and grade motivation. Self-determination indicates learners' beliefs about the control that they have over learning. The fifth scale was not included it is less relevant in the MOOCs environment of learning. “The reliability of the motivation questionnaire, determined by Cronbach's alpha, was 0.94. For each scale, Cronbach's alpha was: 0.73 for intrinsic motivation, 0.90 for self-determination, 0.90 for self-efficacy, and 0.94 for career motivation (Black, Deci, 2000)”.

Data collection and analysis

For this study quantitatively data has been collected through 487 surveys. The population is people from Bosnia and Herzegovina with the main simple of high school and university students. While measuring variables 5-level scale has been used in such order: Strongly Agree; Agree; Neutral; Disagree; Strongly Disagree. Quantitative data is measured using SPSS software. Data screening and factor analysis was carried out in SPSS. Partial Least Squares (PLS) was used to perform structural model analysis. PLS was chosen because of the exploratory nature of this study.

**3. Results**

The demographics of this study were as follows. Gender, 44,1 % are male while 55.9 % are female. Ages 28.2 % participants are from 14-18 years old, 63.9 % are 19-25, 7.8 % 26 or older. The education level of respondents was 60 % high school. 28.7 bachelor degree and 22 % master degree, 0.8 % have a doctorate. Many MOOCs programs are in English so the participants were asked about the level of their English and 87 % responded that they understand English well to be able to follow an online course.

Hypotheses were tested using regression and analyzed by software SPSS. “Multiple regression is an extension of simple regression or bivariate because it allows two or more independent variables to be examined” (Vaughan, 2001). Through regression, we analyze all the variables together and we take into consideration interactions or overlaps of the independent variables. This method is often considered when it is needed to find out how much variance independent variable can be explained by the independent variables. Also, this is showing which independent variables is the best predictor of outcomes.

In the main model hypothesis H1–H4 were tested whether performance expectancy, effort expectancy, social influence, and motivation are affecting the behavioral intention of the user to use MOOCs. Positive influence represents a strong intention to use MOOCs and negative influence represents that those factors are not directly impacting the intention of users to use MOOCs.

**Table 4.** Regression Analyses – Impact of Independent Variables on Behavioural Intention

Model	R	R Square	Adjusted R Square	Std. An error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.713 <sup>a</sup>	.508	.504	.61714	.508	124.644	4	482	.000	2.066
a. Predictors: (Constant), Performance Expectancy, Social Influence, Effort Expectancy, Motivation										
b. Dependent Variable: Behavioural Intention										

From Table 4, we can see the estimated change in the dependent variable for a unit change of the independent variables,  $R = .713$ . Following is the coefficient of determination  $R^2 = .508$  that represents as the Hear et al. (2013) explained “measure of the proportion of the variance of the dependent variable about it mean that is explained by the independent variables”. The adjusted coefficient of determination (adjusted  $R^2 = .504$ ) will be used in the comparison of the two models proposed. That is telling us that 50.4 % of the variance and the dependent variable are explained by the independent variable. The standard Error of the Estimate is .61714. Durbin-Watson is 2.066 that indicate the level of autocorrelation which is acceptable.

**Table 5.** Analyses of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	189.889	4	47.472	124.644	.000 <sup>b</sup>
	Residual	183.576	482	.381		
	Total	373.465	486			

a. Dependent Variable: Behavioural Intention

b. Predictors: (Constant), Performance Expectancy, Social Influence, Effort Expectancy, Motivation

In Table 5, we can see the standard error of the estimate that represents an estimate of the standard derivation of the actual dependent values around the regression line. Findings of the main model are significant and also F rate is presented which is 124.644.

**Table 6.** Regression Analyses Loadings

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.684	.160		4.269	.000		
	Social Influence	.105	.040	.100	2.639	.009	.704	1.420
	Motivation	.286	.050	.292	5.689	.000	.386	2.588
	Effort Expectancy	.193	.052	.163	3.698	.000	.522	1.914
	Performance Expectancy	.314	.055	.280	5.695	.000	.421	2.373

a. Dependent Variable: Behavioural Intention

The results presented in Table 6 show that hypothesis H1, H2, H3, H4 are supported. Performance expectancy ( $\beta = 0.314$ ), effort expectancy  $\beta = 0.193$ , social influence ( $\beta = 0.105$ ), and motivation ( $\beta = 0.286$ ) influence behavioural intention to use the MOOCs. They are strongly significant with the level 0.01.

In the full model, we have the main hypotheses as well as moderators. As presented in Figure 2 secondary hypotheses represent moderators in this relationship. They are factors that potentially influence the existing relationship. Those factors are age, gender, experience, language, level of education.

In Table 7 we can see that the estimated change in the dependent variable for a unit change of the independent variables,  $R = .741$  is higher than in the main model. We can also see the higher level of coefficient of determination ( $R^2 = .549$ ) in the full model than in the main model and it represents that the dependent variable is better explained by the independent variables in the full model. Adjusted R Square is a just little bit higher than in our main model. If we look at the table and explanations in headings that follow the table, we can see which variables moderate the

mentioned relationship. We can see the standard error of the estimate as well the significance level and F ratio of the full model.

**Table 7.** Regression Analyses – Relation between the dependent variable and independent variable with the moderating effect

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.741 <sup>a</sup>	.549	.525	.60405

a. Predictors: (Constant), Moderator4e, Performance Expectancy, Moderator3d, Moderator3b, Moderator3c, Moderator2a, Moderator3a, Moderator2b, Social Influence, Moderator2c, Moderator1d, Moderator1c, Moderator3e, Moderator1a, Effort Expectancy, Moderator1b, Moderator2e, Moderator2d, Moderator4b, Motivation, Moderator4c, Moderator4d, Moderator1e, Moderator4a

Table 8 shows the standard error of the estimate, significance level as well as F ratio of full model.

**Table 8.** The standard error of the estimate, significance level as well as F ratio of full model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	204.890	24	8.537	23.397	.000 <sup>b</sup>
	Residual	168.575	462	.365		
	Total	373.465	486			

a. Dependent Variable: Behavioral Intention

b. Predictors: (Constant), Moderator4e, Performance Expectancy, Moderator3d, Moderator3b, Moderator3c, Moderator2a, Moderator3a, Moderator2b, Social Influence, Moderator2c, Moderator1d, Moderator1c, Moderator3e, Moderator1a, Effort Expectancy, Moderator1b, Moderator2e, Moderator2d, Moderator4b, Motivation, Moderator4c, Moderator4d, Moderator1e, Moderator4a

**Table 9.** Regression Analyses – Loadings

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.724	.171		4.227	.000
	Performance Expectancy	.283	.056	.252	5.029	.000
	Effort Expectancy	.209	.055	.177	3.821	.000
	Social Influence	.131	.040	.125	3.267	.001
	Motivation	.272	.052	.278	5.253	.000
	Moderator1a	-.031	.054	-.034	-.561	.575
	Moderator1b	-.044	.044	-.049	-.990	.323
	Moderator1c	-.099	.047	-.106	-2.137	.033
	Moderator1d	-.073	.042	-.091	-1.738	.083
	Moderator1e	.031	.057	.035	.554	.580
	Moderator2a	-.103	.049	-.107	-2.108	.036
	Moderator2b	-.048	.041	-.053	-1.180	.239
	Moderator2c	.050	.041	.052	1.208	.228

Moderator2d	.014	.038	.018	.364	.716
Moderator2e	.122	.049	.135	2.508	.012
Moderator3a	-.025	.042	-.028	-.598	.550
Moderator3b	.013	.036	.015	.370	.711
Moderator3c	.004	.037	.004	.101	.920
Moderator3d	.021	.033	.029	.643	.521
Moderator3e	.028	.039	.033	.718	.473
Moderator4a	.136	.061	.145	2.240	.026
Moderator4b	.040	.048	.044	.831	.406
Moderator4c	.042	.048	.046	.882	.378
Moderator4d	-.071	.044	-.090	-1.595	.111
Moderator4e	-.186	.064	-.191	-2.919	.004

a. Dependent Variable: Behavioural Intention

Considering the results presented in Table 9. We can see that this factor moderates the relationship between effort expectancy and behavioural intention to use MOOCs as well as the relationship between motivation and behavioural intention to use MOOCs. It does not infect other relationships. We can conclude that we accept H2a and H4a as a secondary hypothesis another hypothesis (H1a, H3a) is not confirmed.

If we look at the relationship between the independent and dependent variables in Table 9 we will see that gender does not moderate any relationship. Thus, all secondary hypotheses that gender influence the relationship between performance expectancy, effort expectancy, social influence, and motivation on the behavioural intention of users to use MOOCs (H1b, H2b, H3b, H4b) are not confirmed.

When it comes to the factor of how experience influences the relationship between variables as it can be seen from Table 9 we can confirm secondary hypothesis H1c but there is no significant moderating effect of these factors on the relationship between effort expectancy, social influence, and motivation (H2c, H3c, H4c).

Language does not moderate any relationship. All secondary hypotheses (H1d, H2d, H3d, H4d) are not confirmed.

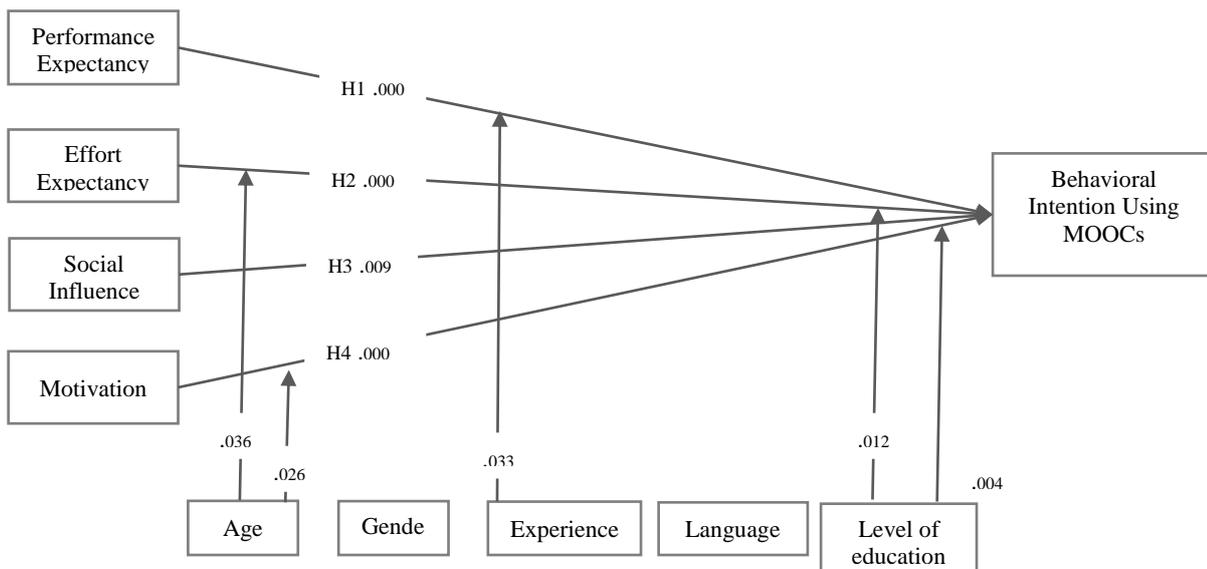


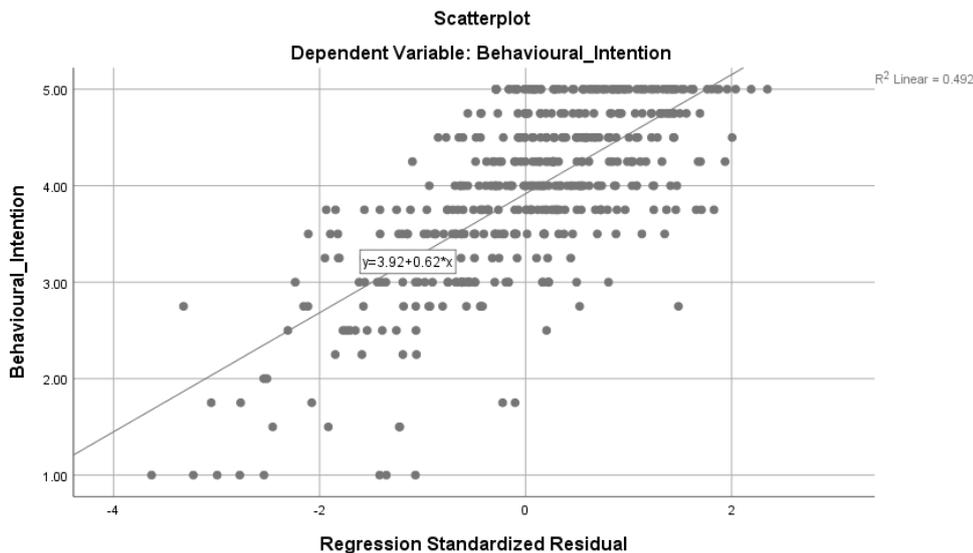
Fig. 2. Loading of the individuals

Considering Table 9 level of education as a secondary hypothesis influences the relationship between effort expectancy and behavioural intention of using MOOCs at 0.05 (H2e), and also a

relationship between motivation and level of education .004 (H4e). Thus, other secondary hypotheses (H1e, H2e, H3e, and H4e) are not confirmed.

Once all results are obtained and diagnostic analyses are performed to ensure that the overall model meets the regression assumptions and that no observations have undue influence on the results. Several assumptions about the relationship between the dependent and independent variables that affect the statistical procedure used for multiple regression are made. Assumptions were examined in four areas:

1. Normality of the error term distribution
2. The linearity of the phenomenon measured
3. Homoscedasticity



**Fig. 3.** Homoscedasticity

On [Figure 3](#) we can see a consistent pattern which means that we have homoscedasticity.

**Table 10.** Multicollinearity

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Performance Expectancy	.421	2.373
	Effort Expectancy	.522	1.914
	Social Influence	.704	1.420
	Motivation	.386	2.588

a. Dependent Variable: Behavioral Intention

We can see from the [Table 10](#) that Variable Inflation Factor are less than 3 and all tolerance values are higher than 0.10 this indicates that there are no multicollinearity issues. O'brien (2007) explained that values which are strong indicators of multicollinearity issues are less than 0.10.

All performed analyses showed that the overall model meets the regression assumptions

#### 4. Discussion

E-Learning is still changing and evolving. It still has not reached its full potential but it is on the right way to bring crucial changes in education and our perception of education. This evolution was led by the institutions such as Cambridge, MIT, Harvard, and soon many other colleges aspired to provide MOOCs as part of their campus offerings. Unlike some popular platforms whose

materials are not always available for reproduction. MOOCs are re-usable material developed by teachers and educators (Yuan, Powell, 2013). One of the main purposes of this research was to get a proper understanding of the MOOC phenomenon and to examine what factors would help Bosnians to learn more online. Data showed that 48.7 % of people had never finished an online course. This study helps us understand the factors which can improve this statistic. MOOC attendance after enrolment, as well as course completion, has been widely criticized (Porter, 2015). Coursera and EdX, two of the most popular MOOC sites, have typical completion rates of less than 13 % of those who registered for the course prior to its launch. The completion rates of some MOOCs are as poor as 4 % or 5 % (Jordan, 2014). The intention of Acceptance of MOOCs is influenced by a number of factors, including performance expectations, effort expectations, social impact, and motivation, which were all studied variables. MOOC use is also affected by the users' age, gender, experience, language barriers, and level of education, according to the report. The first study variable performance expectancy is significant at level 0.01; therefore it is affecting behavioural intention to use the MOOCs. The degree to which a person believes that using the MOOCs would enhance his or her job performance is an important factor in deciding to use MOOCs. The study results authenticate those of (Dečman, 2015; Wang et al., 2009; Pynoo et al., 2011), who found that success expectancy has a major impact on usage intention. This demonstrates that students believe that regular participation in the MOOC will improve their academic performance. The effort expectancy (easy of usage) has a positive influence on the behavioural intention of users to use MOOCs. We accept this hypothesis at the level of 0.01, which is highly significant. This may be because students value the MOOC's utility and learning over the effort required to complete it. Learning is seen as an activity that needs effort, as opposed to conventional technology systems that are mostly built to increase efficiencies and therefore reduce effort. This result is in the line with (Wang et al., 2009) who indicates that effort expectancy had a significant influence on individual intention to use m-learning. This means that the majority of users think m-learning systems should be easy to use. Juinn and Tan (Tan, 2013) also reported that the facilitating conditions have a significant influence on MOOC usage. As a result, these universities must have the required structures and resources to encourage students to use MOOCs. The study investigates the social influence factors on MOOC acceptance and it has been confirmed to have a positive impact on the behavioural intentions of students. It means social interaction accepting the MOOCs is very important. Hypothesis H3 has been confirmed at a significant level of .01. Bosnia is a high context culture so social segments can contribute to better MOOC adoption. Students like to study with their peers and they care what society thing about them. The finding relating to perceived competence is in line with the hypothesis that any student's competence is vital for the development of behavioural intentions. It can be concluded that students are influenced to use new online technology if their peers, colleagues, friends, relatives, and others are using it. Wung et al., reported that Social influence have a major impact on m-learning user intentions. The role of social factors should be recognized by M-learning practitioners and educators. Users can begin to persuade their colleagues and friends to adopt an m-learning system once they have become familiar with it. As a result, m-learning educators will encourage m-learning to potential early adopters, who are more likely than others to have a high degree of personal innovation in IT (Agarwal, 1998). Further, this study has confirmed that motivation impacts behavioural intention to use MOOCs. This hypothesis is accepted at a significant level at 0.01. Motivation to participate in MOOCs learning is crucial from the fact that this type of studying is not obligatory and it depends on any person to commit time and energy to search for the knowledge. Motivation is one of the most important factors that can prevent a student from completing MOOCs (Yuan et al., 2018). We have confirmed all four main hypotheses, besides them, we had secondary hypotheses (Age, Gender, Experience, Language, and Level of education). An assumption has been made that those 5 factors would moderate the relationship with the main model and the main variables. Previous research explained that the intention of students to use MOOCs is influenced by attitude, enjoyment, usefulness, and subjective norm (Nawal, 2012). It has been confirmed that performance expectancy, effort expectancy, social influence, and motivation all those factors are influencing the intention of users to use MOOCs. In secondary hypotheses, age is moderating the relationship between effort expectancy and behavioural intention also between motivation and behavioural intention. Experience in moderating the relationship between performance expectancy and behavioural intention. At last

but not least level of education is moderating relationships between performance expectancy and behavioural intention as well as the relationship between motivation and behavioural intention. Similar findings were reported by (Wang et al., 2009). If the user believes that the system is useful, he or she will be interested in learning using MOOCs. David, Bagozzi, & Warshaw (David et al., 1992) were also using this factor trying to access to whether users might be willing to spend time and effort learning a new interface to be able to perform needed functions. So, if the students see the usefulness of e-learning, the acceptance of using it is increasing. Language does not moderate any relationship. This research has proved that 80% of the respondents do not have a problem with the following courses in the English language. This emphasizes the importance of MOOC designers to ensuring that MOOCs are of high quality. It can do so by ensuring that the site launches quickly, is simple to use, navigate, and visually appealing, and that easy access and interactive technologies are used. These results point to additional variables that could be investigated further through further research with MOOC participants. In addition, more in-depth qualitative research is recommended for identifying emerging problems that impact learner intention to use MOOCs.

### 5. Conclusion

MOOCs provide new opportunities and creativity in education by allowing institutions and scholars to explore new online learning models and emerging approaches in teaching and learning at a national and international level by making learning more open, versatile, affordable, and free or low-cost to learners who are interested in learning. This research provides an understanding of MOOCs in Bosnia and Herzegovina with a view to identify the factors affecting MOOCs users' intention to use MOOCs. The findings show that performance expectations and device efficiency influence MOOC use intention. Facilitating environments, educational consistency, and MOOC user intention all influence MOOC uses. MOOC use intention was found to be significantly influenced by social influence and effort expectations, and this research also indicated that motivation influences behavioural intention to use MOOCs. The study Finally find that the universities should implement programs and resources to enable students to participate in MOOCs at all stages of education. Technical professional development should be included in the curriculum. MOOC designers should use the best teaching techniques, as well as ensuring that the sites and learning materials are of excellent quality, to ensure that MOOCs provide appropriate learning.

This research is bringing the theories about the factors that influence the behavioural intention of using online courses. It also discovered many other topics and problems where the next researchers can focus. It can be a base for many upcoming theories about e-learning in Bosnia and Herzegovina. This research showed a factor that influences students and their intention to use MOOCs but before they can have any intention, they need to be educated that they can update their knowledge using MOOCs. Conducting this study just quantity data have been used for this research, it can be extended by qualitative data. Adding focus groups. The fact that can help to obtain a wide range of options is running focus groups with university staff and students. Another reason is a time limitation, longer research would have a bigger amount of data, and with that more accurate findings.

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## Research of the Possibilities of Interactive Simulators in Intercultural Communication for the Formation of Students' Algorithmic Thinking

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### Abstract

The requirements for the results of mastering the main educational program by students determine that a digital school graduate must have a culture of thinking, the ability to generalize, analyze, perceive information (including in a foreign language), set a goal and choose ways to achieve it. The development of relevant skills is actively taking place in the lessons of computer science, mathematics, physics, chemistry. Intercultural communication in the study of a foreign language and literature provides certain didactic opportunities for the formation of abilities to perform mental operations, choose the best way to achieve a goal, etc. To form the appropriate skills that determine the essence of algorithmic thinking, the authors propose to include the interactive simulators in the foreign language communicative activity of students. The methodology is based on the analysis of the capabilities of interactive simulators for various purposes: in online games (Lingo Play, Kid Mama), in quests (Learnis), in puzzles, crossword puzzles, and quizzes. The eTreniki online constructor is used (Kokla, Krypton, Morfanki, Kartofan services) to create a game simulator in the classroom.

Research results. The students of the experimental group study services for creating interactive simulators and use them in intercultural communication. In conclusion, the possibilities of interactive simulators for the development of algorithmic thinking of schoolchildren in intercultural communication are formulated: activating cognition, determination of the structure of actions to achieve the goal, evaluation and analysis of the result, etc.

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**Keywords:** interactive resource, foreign language activity, training game simulator, network communication, sequence of actions, eTreniki.

### 1. Introduction

The relevance of the study is determined by the following factors:

1. With the support of UNESCO, 2022 has been proclaimed the International Year of Basic Sciences for Sustainable Development. The proposal was supported by the International Union of Theoretical and Applied Physics (IUPAP) and the International Science Council ([IYBSSD2022, 2022](#)). The Russian Academy of Sciences has joined this initiative. As part of the relevant activities, joint events are planned with universities and schools. Their goal is to spread the influence of fundamental knowledge on technology, education and culture.

To meet the high requirements of a changing world, focused on globalization and digitalization, the training of future graduates in modern schools must follow the new standards. In particular, it should include purposeful work on forming the foundations of financial literacy, creative and algorithmic thinking, etc.

2. T.P. Pushkareva, T.A. Stepanova, V.V. Kalitina conclude that when studying the basics of algorithmizing and programming in a modern school, "a very productive age for the formation of algorithmic thinking falls on the 5–6th grades" ([Pushkareva i dr., 2017](#)). In addition, as E.A. Arkhipova notes, modern teenagers get used to gadgets from an early age and easily master new technologies ([Arkhipova, 2019](#)). At the same time, it is the work on the computer, designing and programming "game computer worlds" with the creation of special conditions that can positively affect the development of algorithmic thinking.

3. An important place in the development of intercultural communication skills is given to humanitarian subjects, especially to "Foreign language" ([Belyaev, 2011](#)). The list of significant subject educational results of the disciplines includes such communication skills as: possession of the skills of various types of reading and information processing of the material read; the ability to adequately understand, interpret and comment on texts; the ability to participate in dialogic communication in compliance with the norms of the modern literary language and speech etiquette, etc. ([Veretnova, 2018](#)). In addition, the educational content of foreign languages should be aimed at introducing students not only to a new way of verbal communication, but also to the culture of the people and the national and cultural specifics of behavior in the country of the language being studied.

I.S. Zlobina et al. suggest using interactive simulators and worksheets for the formation of intercultural communicative competence ([Zlobina et al., 2020](#)). The authors point out that the effectiveness of game simulators for educational purposes is determined precisely by the fact that they help to establish direct links between a particular word and its image. In addition, the virtual environment for the interaction of students with the software provides additional conditions for cognitive activity, helps to make the lesson more emotional and entertaining.

At the same time, there are certain methodological difficulties:

- Which interactive simulator to use when teaching a foreign language for the formation of algorithmic thinking and intercultural communication skills;
- How to organize effective educational and cognitive foreign language interaction in an automated environment;
- How to keep and activate the cognitive interest of students using sharing, storage and processing of information.

B.S. Goryachkin and his co-authors note that the danger of the novelty effect and the rapid loss of interest in language training is one of the main didactic problems of the digitalization of education ([Goryachkin i dr., 2021](#)).

The research hypothesis is that the use of computer simulators and interactive electronic manuals in the classroom will provide additional conditions for the development of intercultural communication skills and algorithmic thinking (the ability to operate with images, concepts and categories; willingness to form substantive judgments, inductive and deductive conclusions, etc.).

So, there is an objective requirement for additional study of the development and use of interactive simulators in intercultural communication for the formation of algorithmic thinking.

## **1.2. Goals and objectives of the study**

The purpose of the work is determined from the need to assess the potential of using interactive simulators in intercultural communication to form the foundations of students' algorithmic thinking as an important condition for further self-realization of the individual in the information society.

The objectives of the research are:

- To clarify the essence and potential of game simulators for educational purposes in the context of UNESCO recommendations and the formation of a digital school;
- To consider the concept of "algorithmic thinking", its main components and their significance for human development in terms of intensifying multilingual activities, expanding its creative capabilities;
- To describe the didactic possibilities of a specific gaming service that meets both the needs of the students themselves and the priorities of the digital school.
- To describe the stages of systematic purposeful work on the use of interactive simulators in intercultural communication to form the foundations of the student's algorithmic thinking;
- To experimentally confirm the effectiveness of the proposed training system.

## **2. Relevance**

### **2.1. Literature review**

#### **2.1.1. Review of Russian scientific and pedagogical literature**

According to E.V. Tsareva and R.Z. Bogoudinova, the status of a foreign language in Russian society has changed significantly in recent years (Tsareva, Bogoudinova, 2021). The skills and abilities of intercultural communication are no longer a luxury, but a necessity.

In the context of globalization and internationalization of vocational education, multilingualism is an effective means of intercultural communication in the global space (Kalugina, Tarasevich, 2018). The mutual penetration of different cultures and the need to understand the linguistic characteristics of nations lead to the solution of global problems, where language acts as a tool for deep knowledge of the social and cultural meanings of modern social processes. Multilingual training and communication skills of students have become one of the basic requirements for job seekers from employers. It follows that the training of specialists with knowledge of several foreign languages and capable of intercultural communication is becoming an important task for educational organizations (Zlobina et al., 2020).

Today, a completely new methodology for learning foreign languages is being formed, which purpose is the formation of communicative competence – to teach to communicate, speak, understand and respect another culture. A foreign language, be it English, German or any other, should not be perceived by students as an academic discipline, or a subject, but should take a higher position – as an integral part of modern life, as a means of communication (Belyaev, 2011).

P. S. Sorokin and Y. A. Vyatskaya also note that the development of science and technology is unthinkable without a wide exchange of special information between people speaking different languages (Sorokin, Vyatskaya, 2022). Specialists in a wide variety of industries must constantly monitor everything new that appears abroad and extract information useful for their professional activities. For this, according to S. V. Elovskaya, each educated specialist should have a knowledge of a foreign language (Elovskaya, 2018).

N. Ushakova and ed. come to a reasonable conclusion that the study of foreign languages is an important aspect of the life of a modern person (Ushakova et al., 2022). It contributes not only to acquaintance with the culture and traditions of other countries, but also provides an opportunity for the development of thinking, imagination and memory.

At the same time, as noted by E. V. Soboleva et al., the communication of modern adolescents (representatives of Generation Z) is becoming computerized. The share of virtual (including intercultural) communication among young people dominates over real (Soboleva et al., 2021). This affects people's behavior. Many young people have difficulty communicating in real life. This is especially true for graduates of modern schools, who are so absorbed by the computer and communication in social networks that in ordinary situations they simply get lost.

On the other hand, according to the conclusions of E.V. Arkhipova, a modern student should be able to determine the goal of the upcoming activity, predict the result and adequately evaluate it,

think critically, structure the knowledge gained, be able to move from the particular to the general and vice versa, and etc. (Arkhipova, 2019).

The initiator of the introduction of an algorithmic line in elementary school mathematics was N.Ya. Vilenkin, a famous Soviet mathematician, the author of textbooks on mathematics for school. He argued that in the age of "smart machines" children need to be prepared from elementary school to work with them (Vilenkin, Drobyshev, 1988). This preparation, in his opinion, should consist in the formation of algorithmic thinking.

O. Kalugina, N. Tarasevich note that with the modernization of the education system in the Russian Federation, the use of modern educational technologies in the practical activities of English language teachers aimed at creating a new intellectual product with educational potential has become relevant (Kalugina, Tarasevich, 2018).

L.V. Parunina, A. V. Babikova prove on experimental data that one of the technologies that make it possible to achieve educational results in accordance with the requirements of the Federal State Educational Standards of basic general education is, for example, the technology of developing critical thinking (Parunina, Babikova, 2020). A variant of its implementation is the "Compilation of an algorithm" technique.

Algorithmic thinking is a set of mental actions and techniques aimed at solving problems, as a result of which an algorithm is created, which is a specific product of human activity (Soboleva et al., 2021).

R.M. Gorbatyuk, V.V. Kabak note that the main components of algorithmic thinking are: structural analysis of the problem; the ability to build information models to describe objects and systems, the ability to organize the search for information necessary to solve the task, breaking a large task into small ones, planning possible situations and reactions to them, understanding and using formal ways of writing a solution (drawing up an algorithm) (Gorbatyuk, Kabak, 2019).

In order to indicate the importance of the analyzed problem, one should also highlight the proposal of L.V. Parunina, A.V. Babikova on the possibilities of game forms of learning to involve young people in scientific and innovative activities (Parunina, Babikova, 2020). One of the international educational projects for learning English is LinguaLeo.

I.S. Zlobina et al. notice that it is not always worth following innovations only because of their ability to increase the emotional background, external brightness (Zlobina et al., 2020). It is necessary to strike a balance between the quality of education and the attractiveness of the tools, their own pedagogical skills and the technologies used. Under these conditions, digital services will be indispensable, allowing:

- In an interactive game form to build up intercultural communication skills in accordance with the standards and requirements of society;
- To contribute to the resolution of such personal problems of students as lack of confidence in their abilities, overcoming the language barrier, lack of consciousness among students in teaching types of speech activity.

### **2.1.2. Foreign studies review**

The leaders of UNESCO, in the Science Report (which subtitle is "The race against time for smarter development"), formulated directions for global transformations in the field of science and technology (IYBSSD2022, 2022). These areas are in line with the sustainable development goals defined by the UN. In addition, they set the vector for Russian education and science. According to E. Eriksson et al., it is impossible to ensure advanced development in any of the fields without science (Eriksson et al., 2020).

B. D. Kane, K. C. Keene, S. Reynolds determine that the current problem of modern didactics is the problem of strengthening the communication and activity approach in teaching subjects (Kane et al., 2022). This approach, according to J. Zhang et al. involves the activation of all types of speech activity (reading, writing, listening, speaking) in their unity and relationship when studying any educational discipline (Zhang et al., 2022).

K. Kager et al. indicate that the challenges of globalization and digitalization determine the need for modifications for the system of training future specialists, and reforms should begin with changes in the educational environment of the school (Kager et al., 2022).

J. Martin, T. Nakayama point out that knowledge of the intercultural communication basics is one of the necessary skills for a modern graduate (Martin, Nakayama, 2006). This is dictated by

the processes of globalization in the information world as a whole and changes in the life of society in particular. A competitive specialist understands the realities of another country, its traditions and culture. There is no denying, the authors note, that the study of the culture of a foreign language contributes to the better development of the language itself.

M. Rottenhofer et al. suggest applying computer science tools in language learning (Rottenhofer et al., 2022). According to the authors, the theory and practice of teaching a language using computer technology becomes an organic part of the general methodology for teaching a language. The modern stage of the development of computer linguistics is characterized by the understanding that computerization, without solving all the problems of language learning, can make the process of foreign-language communication much more efficient. To do this, the teacher needs to provide opportunities and restrictions on the use of computers in teaching the language, know the specifics of computer learning tools, navigate the criteria for assessing their quality, and master the methodology for integrating information technologies into the educational process (Tucker, 2022). Rottenhofer, M. et al. explore the possibilities of forming skills such as pattern recognition, decomposition, abstraction, generalization (i. e., components of algorithmic thinking) in the process of learning English and Spanish (Rottenhofer et al., 2022).

The inclusion of computer technology in education from an early age shifts the focus of traditional learning from reading, writing, and arithmetic skills to the development of academic literacy through "execution, use, and thinking" (Eriksson et al., 2020).

N. Nurhayati et al. conclude that due to experiments conducted by psychologists and methodologists, it was noted that each person gets information and manages it differently (Nurhayati et al., 2022). From a practical point of view, different learning styles are reflected in a specific classroom space, when applying different cognitive approaches and models to the study of a certain discipline. These approaches are called learning strategies. The author's methodological version assumes that students focus on the characteristics of a foreign language and seek to absorb them consciously and rationally. This approach requires planning and a clear organization of learning activities based on an analysis of all aspects of the structure of the language being studied. In other words, it requires the development of skills that form the basis of algorithmic thinking.

Educational tasks play an important role in the development of mental activity. They are means of mastering the scientific knowledge system and formation of skills to solve problems of an applied nature. For active mental activity, various tasks are very useful, the process of solving which is characterized by high mental stress, independent search, evidence, and reasoning. Solving problems maximally mobilizes and develops such mental operations as analysis and synthesis, abstraction, comparison, concretization, generalization, and teaches students the optimal use of these operations in their cognitive activity (Silva et al., 2019). The formation of the listed skills, according to B. Steffen, A. Murtovi forms the basis algorithmic thinking of students (Steffen, Murtovi, 2021).

Research of R. Barac et al. allow us to reasonably assert that the use of interactive resources in teaching a language makes it possible to provide additional conditions for the development of a person's creative abilities (Barac et al., 2014). These capabilities (abilities), according to the findings of A. Whitfield, are manifested in thinking, feelings, speech and other activities (speaking, listening, reading, writing) (Whitfield, 2022).

I. Damopolii et al. offer an approach that is important for the ongoing research: to include innovative digital technologies in intercultural communication – comics and augmented reality (Damopolii et al., 2022). The authors substantiate that new game forms of interaction, computer support for foreign language communication are indispensable for mastering the system of mental techniques aimed at solving problems. I. Damopolii et al. noticed that the same students willingly worked with comics, but with a bored look they completed tasks on a series of story images. Comics are such a means of foreign language communication that best meets the needs of a modern student. This refers to the general psychological requirements: the speed of moving attention, grasping the "surface" of the text (Damopolii et al., 2022). As well as the needs of the cognitive plan: cognition through active involvement in the completion of the text, through game forms of working with text, through visual-figurative, and not just logical text-oriented perception. In modern learning conditions, the use of electronic resources with simulators in foreign language classes seems to be both promising and necessary.

At the same time, both Russian and foreign researchers note that the use of interactive simulators and online services as aids in foreign language communication is mostly considered only as elements of gamification. Wherein, their didactic potential is significantly reduced and lost.

The analysis of the scientific works listed above allows us to identify the problem associated with the need for additional study of the use of interactive simulators in intercultural communication to form the foundations of the algorithmic thinking of digital school students.

### **3. Materials and methods**

#### **3.1. Theoretical and empirical methods**

The following methods were used in the work: analysis and generalization of literature when reviewing scientific theories on the development of algorithmic thinking; determining contemporary software tools for the formation of purposefulness, objectivity and accuracy, logical and consistent planning and performing one's actions, the ability to clearly and concisely express one's thoughts when working with educational texts.

The study used interactive simulators for various purposes: for online games (Lingo Play, Kid Mama), for quests (Learnis), for mobile phones (Alice Resort, Kotovasia), Etreniki online constructor (<https://etreniki.ru/>), rebuses, charades, crossword puzzles, metagrams and puzzles with riddles, quizzes.

Criteria for analysis: type of resource (online/offline), free/commercial, functionality, interface and design. Based on the analytical work, a service for creating online constructors (<https://etreniki.ru/>) was chosen.

Its advantages are: an intuitive interface, free domestic software, the ability to create small web applications using a browser (game simulators, the interdisciplinary nature of the tasks being developed, a creative platform for digital school teachers, the ability to edit font size, taking into account age-related perceptions and style schoolchildren's thinking).

To implement a system-activity approach in teaching a foreign language, the "cinquain" technique is used.

To obtain up-to-date information on the effectiveness of the use of interactive game simulators for the development of students' algorithmic thinking in intercultural communication, empirical methods are used: observation of foreign language communication of all participants in the interaction (for example, in word formation); analysis of the speed and quality of "drag and drop" game blocks; discussion of the results of work with simulators (for example, when you need to find the form of a verb in the past tense or designate a morpheme in which a letter is missing).

To assess the input conditions, testing was used, including the following units: "Foreign language" (50 points), "Foreign literature" (50 points), "Basic algorithmic constructions" (50 points). For each correctly completed task in the test, the student receives 1 point. Auxiliary methods for processing information and data were used: tabular design, infographics, presentations and files in the «\*.pdf» format.

So, as a result of the initial diagnosis, each student scored from 0 to 150 points. To determine the level of formation of algorithmic thinking (according to the sum of all 3 units), the levels "low" (from 0 to 69 points (inclusive)), "medium" (from 70 to 133 points (inclusive)), "high" (more than 134 points) were introduced.

Statistical processing of the results was performed using the Pearson's chi-square test –  $\chi^2$ .

#### **3.2. The base of research**

The main purpose of the experiment was to test the effectiveness of the integration of interactive game simulators into intercultural communication for the development of students' algorithmic thinking.

The study was conducted at school No. 10 named after. K. E. Tsiolkovsky of the city of Kirov at the lessons of a foreign language (English) and computer science. 46 schoolchildren of the sixth grade took part in the experiment. The average age of the respondents was 12 years (50 % girls and 50 % boys).

The integration of gaming interactive simulators into intercultural communication was carried out in the same classrooms of the school, using the same equipment and software.

The materials of the test were developed by the authors in accordance with the current standard of basic general education.

### **3.3. Stages of research**

At the preparatory stage of the experiment, the authors analyzed the modern achievements of linguodidactics regarding the potential of digital services, interactive learning tools. It was also revealed that online constructors have didactic potential to support pupils at all stages of their educational, intellectual, research and creative activities.

Various digital services for creating your own game interactive simulators are also analyzed: online constructors (<https://etreniki.ru/>, <https://ruskiyonline.com/>, <http://kid-mama.ru/category/trenazhery/onlajn-trenazhery-po-russkomu-yazyku/>), mobile application Kitty Scramble (<https://cleverappsg.com/game/scramble>).

The following criteria were used for selection: type of resource (online/offline), financial basis (free/commercial), functionality (didactic material, types of tests, options for use at lesson stages, support for individual/frontal/group work at the discretion of the teacher), interface and design.

It was determined that the development of algorithmic thinking involves the formation of skills to accurately follow the rule, a specific sequence of actions. In order to implement the findings in the classroom in a foreign language, it was decided to study in detail the service for creating online constructors (<https://etreniki.ru/>) in the course of school computer science.

Schoolchildren at the stage of initial diagnosis were asked to answer the questions of testing, including the following units "Foreign language" (50 points), "Foreign literature" (50 points), "Basic algorithmic constructions" (50 points). Examples of questions for each unit are presented below (clause 4.3.1).

Thus, it was possible to collect data on 46 students, from which experimental and control groups were formed (23 students each).

The identity of the experimental and control groups is achieved by pairwise alignment of students with significant variables: theoretical knowledge of a foreign language; cognitive activity of students in intercultural communication; the ability to find the sequence of actions necessary to solve the problem; ability to highlight a series of constituent subtasks in a common task; user skills in game services. For each selected test subject, another test subject having the same combination of relevant characteristics is selected in the control group.

The results are presented in [Table 1](#).

The second stage of the experiment was devoted to changing the structure of classes in accordance with the purpose of the study. The teacher at the lessons of computer science studied with schoolchildren a service for creating online constructors (<https://etreniki.ru/>). The capabilities of the simulators "Kokla", "Krypton", "Morfanki", "UFO", "Kartofan" were considered in detail.

The third stage of the study. Then, topics were studied in accordance with the educational and methodological complex at foreign language lessons. When organizing practical work, research and creative activities, students were offered the studied concepts, new spelling rules, and the actions of the characters of literary works to check/design using an online constructor.

## **4. Results**

### **4.1. The essence of the concept of "algorithmic thinking", its main components and their significance for human development in terms of the intensification of multilingual activities**

Algorithmic thinking and a systematic approach are meta-subject skills that are useful to form in pupils as early as possible. At the same time, students do not have to become developers or big-data analysts in the future. The acquired knowledge will help graduates to get the profession demanded by Industry 4.0 in the future and become a highly qualified specialist in the digital society.

Algorithmic thinking is characterized by the following features: the ability to find the sequence of actions necessary to solve the problem; identifying a number of simpler subtasks in the general problem, the solution of which will lead to the solution of the original problem.

Independent (or – at first – with the help of a teacher) compilation of algorithms can not only help pupils learn the order of reasoning or analysis of the grammatical properties of any linguistic phenomenon, but also contribute to the development of analytical skills, the ability to see cause-and-effect relationships and interdependence relationships.

After the review of the literature, it is substantiated that it is the work with educational texts (analysis, critical assessment) that presents a particular difficulty for representatives of

Generation Z (Gerasimova et al., 2021). This is due to the fact that the "clip" of their thinking is primarily aimed at searching for key words, concepts, without relying on formal and semantic features that characterize the text. The actions of the characters in a work of art, the facts of the text are not analyzed, analogies/associations are not taken into account when drawing conclusions.

Certainly, the work on the algorithm in intercultural communication cannot compete with the performance of creative tasks that activate thinking, encourage independent activity, search. However, these two types of activities, complementing each other, can qualitatively improve the work on the formation of language competencies. The advantage of the algorithm is a release of resources and time for solving creative problems. Spontaneous literacy is an automatic, non-conscious, expedient procedure for applying the rules of a foreign language. The step-by-step method of search actions in solving linguistic problems is called an algorithm.

In the current study, the students' work with interactive simulators is considered as an intellectually directed and entertaining-cognitive activity, subordinate to a certain sequence of actions (steps of the algorithm).

#### **4.2. The potential of game simulators for educational purposes in the context of UNESCO recommendations and the development of a digital school**

The operation of interactive simulators implies both foreign language communication and activities with additional educational content. The latter include various digital educational resources – any educational information presented on digital media.

Thus, in a foreign language lesson, with the inclusion of purposeful work with interactive simulators, a system of conditions can be formed. This system is oriented:

- to achieve a specific level of foreign language competence, including the prerequisites for the personal development of students, due to the social and spatial-subject environment;
- to use digital tools, interactive techniques and innovative learning technologies in the educational process;
- to develop skills and abilities for analyzing initial data, establishing relationships between the objects of the problem, constructing a solution scheme, interpreting the solutions obtained for the original problem, compiling tasks according to ready-made models.

An online constructor is a network resource in which an ordinary user without special knowledge can launch an interactive game simulator or create his own. To realize the didactic potential of interactive simulators in terms of the formation of algorithmic thinking and the support of foreign language communication, it was decided to use the eTreniki service to create online constructors (<https://etreniki.ru/>).

Work in the online constructor environment is carried out taking into account the principles of a system-activity approach to learning: when compiling a set of words, there is an understanding of the relationships, principles and algorithms of word formation; attention and memory are activated; imagination develops; skills are formed to quickly navigate in a rapid flow of information (for example, the arrival of game blocks in the Kokla simulator).

The resulting interactive simulators can be used in the classroom, online, and in individual training.

#### **4.3. Stages of systematic purposeful work on the use of interactive simulators in intercultural communication to form the foundations of the pupils' algorithmic thinking**

According to the logic of the research program, in the lessons of computer science schoolchildren studied the possibilities and limitations of the service. eTreniki is an online service that allows to create electronic educational resources for training typical learning skills and foreign language skills. This electronic designer is affordable for any teacher because it does not require any special training, and it will be enough to have basic skills in using a personal computer. As a result, small web applications can be configured for use in the classroom and in the extracurricular activities of students.

Stage I. In computer science classes, students studied the possibilities of creating five types of simulators (Kartofan, Kokla, Krypton, Morfunk and UFO). Let's consider them.

"Kartofan" are simulators in which it is necessary to correlate text fragments with specific points on the map. For example, correctly identify the names of the towers of the Moscow Kremlin. Correct answers will be highlighted in green, incorrect answers in red.

The Kokla type of simulator is used to practice the mental operations of grouping and classifying. It has the ability to set some entities (phenomena, objects, processes, etc.) and a number of categories (groups, types, classes) in accordance with which these entities should be placed. For example, it is required to divide English verbs into two groups (regular and irregular) by tilting a bamboo stick.

"Krypton" allows you to create simulators in which you need to guess words on any topic (for example, the topic is the capitals of the world). In this case, the letters in the words are randomly arranged and you need to drag and drop letters to arrange them in a certain order.

With the help of the Morfanki constructor, you can create simulators for practicing the skills of morphemic parsing of words (highlight the ending, root, prefix, word stem, suffixes). The constructor of this type has a very nice and friendly interface.

The "UFO" constructor can be used to develop simulators of the "third extra" or "fourth extra" type, when in any group of objects, it is necessary to determine one object that differs from all other objects by a certain attribute.

Stage II. In foreign language classes the study of theoretical material took place. For example, forming tag-questions according to the rule. The students analyzed the algorithm (as a sequence of actions), following which a correct question can be asked.

Necessary theory. Tag-questions consist of two parts: the main part – before the comma, and the "tail" – after the comma. Typically problem for students is matching the "tail" to the main part that already exists. Example: "They are at home (main part), \_\_\_\_\_ (tag)?".

A short algorithm (sequence of actions) is as follows:

1. The auxiliary verb is defined and it is used in the in the first place in the tag after the comma. If the main sentence is positive, then the auxiliary verb is negative. If the main sentence is negative, then the auxiliary verb is positive.
2. The subject of the main sentence is defined, if it is not expressed by a pronoun, then the pronoun for the subject is found. The pronoun is put after the auxiliary word.
3. The question mark is put at the end of the tag-question.

Further examples for consolidation are considered.

### **4.3 Experimental evaluation**

#### **4.3.1. The ascertaining stage of the experiment**

To assess the input conditions, specially designed control and measuring materials were used.

The test tasks were formulated according to the following principles:

- Assessment of the quality of theoretical knowledge in a foreign language;
- Assessment of the cognitive activity of students in intercultural communication;
- Assessment of the formation of skills to find the sequence of actions necessary to solve the problem; allocate a series of constituent subtasks in the general task; planning of possible communicative situations and reactions of the performer of them; understanding and use of formal ways of writing a solution (drawing up an algorithm).
- Assessment of user skills in playing services for solving problems of educational, cognitive and communicative activities.

Examples of test jobs.

*The first unit ("Foreign language").*

1. At the end of interrogative sentences, put a question mark, at the end of affirmative sentences – a period ("They want to go to the embankment", "Does she like to skate", "Can we go down to the subway", etc.).

2. Make an algorithm for writing cinquain (example topics: family, sights, travel).

3. Petya compiled a sequence of actions for writing a cinquain. Is this sequence of actions an algorithm? Make the appropriate changes and determine what will happen as a result.

Modifications of this task.

3.1. Compose a short story on the finished cinquain (use of words and phrases that make up the cinquain).

3.2. A cinquain on the topic "Railway" is given. It is necessary to find words and phrases that do not correspond to the theme of the cinquain in the lines.

*The second unit ("Foreign literature").*

1. A fragment of text from a literary work is given (for example, from the fairy tale "Cinderella" by Charles Perrault). Is it possible to swap the first and last paragraphs of this text? Why?

2. To find out who committed the theft, follow the given instructions using operations on text fragments.

A. In the snow, 1 track stretched from the holly at the edge of the clearing to 2. They seemed to go further into the garden, but they broke off there. Copy to appropriate position: 1 – chain; 2 – balcony doors.

B. "Very smart", Inspector 4 said under his breath. He entered the office and 3 on everyone's shoes. "How cleverly the criminal escaped!" grumbled Major Hog. Copy to appropriate position: 3 – carefully looked; 4 – Blair.

C. "My 5!" she exclaimed, "They stole my 5!" "Everyone, stay where you are!" shouted 6, running out through the balcony doors. Copy to appropriate position: 5 – «diamonds»; 6 – «Inspector Blair». D. It was a dark and stormy night. Four people sat and played 7 in 8's room. Copy to appropriate position: 7 – cards; 8 – Major Hog.

E. Suddenly the light went out, and 9 screamed. When the light was turned on again, 10 was lying on the floor and clutching her throat with her hands. Copy to appropriate position: 9 – someone; 10 – Mrs. Pimple.

F. "Not so smart", said 11, looking at the criminal's snow-covered boots. In an instant, he snapped the handcuffs on 12's wrists and fished a sparkling necklace out of his pocket. Copy to appropriate position: 11 – Inspector Blair; 12 – Major Hog

Exercise. Rearrange the fragments in the following order: D E C A B F. Delete all instructions and their numbers in the text.

3. There is a sequence – an order of actions for Sherlock Holmes, who is looking for a clue in the story "The Adventure of the Dancing Men" by Arthur Conan Doyle. Arrange the investigator's actions in such an order that he can find the meanings for each symbol.

*The third unit ("Basic algorithmic constructions").*

1. Listen in English to the song "If there was no winter" from the "Prostokvashino" Soviet cartoon. Make up an algorithm according to the words of the song that describes what fun the guys will be deprived of if there is no snowy and cold winter.

2. There is a sequence – the procedure for launching the Paint program. Arrange the actions in such an order that the user can actually open the graphics editor.

3. Make an algorithm for crossing the road at a traffic light.

Therefore, it was possible to collect data on 46 students, from which experimental and control groups were formed (23 students each).

Each student scored from 0 to 150 points. To determine the level of formation of algorithmic thinking (according to the sum of all 3 units), the levels "low" (from 0 to 69 points (inclusive)), "medium" (from 70 to 133 points (inclusive)), "high" (more than 134 points) were introduced. According to the results of measurements, the quality of students' training was determined in terms of the formation of skills and abilities that form the basis of algorithmic thinking. The experimental group consisted of 50 % girls and 50 % boys.

#### **4.3.2. Forming stage of the experiment**

This stage of the experiment was devoted to planning and organizing purposeful work on the use of interactive simulators in intercultural communication to form the foundations of students' algorithmic thinking.

Also, this stage of the study is the training of schoolchildren (in the experimental group) based on the materials of the "Foreign Language" course, during which they used simulators from the online constructor.

Task examples are given below.

1. Develop an interactive simulator that allows you to determine whether the verb is auxiliary or not.

2. Develop an interactive simulator that allows you to fill in the gaps in the text with separating questions.

3. Develop an interactive simulator that allows you to exclude from the given sentences the one that is not a separating question.

Key task. Compile an instruction (algorithm) in Russian and English for a friend/acquaintance. In the instructions, describe the sequence of actions for registration, the course of work with the online constructor. Be sure to: have the instruction both in Russian and in English.

After the simulators were created, the students exchanged them by link and completed each other's tasks. If the schoolchildren did not manage to answer all the questions correctly the first time, then a special lesson "Correction of mistakes" was provided. As part of this lesson, the students with the teacher again returned to the words and sentences where mistakes were made. The spelling of new words, work with auxiliary verbs, the replacement of pronouns, the meaning of concepts in dictionaries were analyzed in detail.

Schoolchildren of the control and experimental groups were trained on the materials of the work program in English for the 6th grade, developed on the basis of an exemplary program in English and the educational and methodological complex of Yu.E. Vaulina, J. Dooley, O.E. Podolyako, V. Evans for 5–9th grades (Vaulina et al., 2016). A distinctive feature of this program is the regular use of ICT in order to deepen knowledge of regional studies and immerse in the language environment. In addition, the materials contain poems and songs that help emotional, involuntary and simultaneous memorization of not only active vocabulary, but also new grammatical structures.

Examples of exercises for students in the control group.

1. Write a sequence of actions and a list of questions in order to find out which films your classmates prefer. It is obligatory to use at least 5 disjunctive questions in the survey.

2. Little Frankie writes a letter to Santa Claus. It is necessary to read the text of the letter and indicate what little Frankie asks Santa Claus to do/not do. Make up disjunctive questions to the highlighted sentences.

However, students from the control group were not specially involved in the gaming activities for the creation/use of online simulators.

#### 4.3.3. Control stage of the experiment

To test the effectiveness of the proposed system of training in terms of developing the skills that form the basis of algorithmic thinking, another control test of 3 units was carried out. The number of tasks and the principles of their compilation corresponded to those described earlier (clause 4.3.1).

As a result of the diagnostic measure for the course, each student again scored from 0 to 150 points.

The control measurement data before and after the experiment are presented in Table 1.

**Table 1.** The results of measurements on the level of development of algorithmic thinking

Level	Groups			
	Experimental (23 pupils)		Control (23 pupils)	
	Before the experiment	After the experiment	Before the experiment	After the experiment
High	3	11	4	5
Medium	6	9	5	7
Low	14	3	14	11

In this case, the hypotheses are formulated as follows.

Ho: the level of algorithmic thinking in the experimental group is statistically equal to the level of students in the control group; H1: The level in the experimental group is higher than the level of the control group. Further, in the online resource (<https://medstatistic.ru/calculators/calchit.html>), the values of the criterion were calculated before ( $\chi^2$  observable 1) and

after ( $\chi^2$  observable 2) the experiment. For  $\alpha = 0.05$ , according to the distribution tables,  $\chi^2_{crit}$  is 0.234. Thus,  $\chi^2_{obs.1} < \chi^2_{crit}$  ( $0.234 < 5.991$ ), and  $\chi^2_{obs.2} > \chi^2_{crit}$  ( $7.071 > 5.991$ ). Therefore, the shift towards an increase in the level of algorithmic thinking of the students of the experimental group can be considered non-random.

### **5. Limitations**

Possible limitations on the research:

1. The sample of students was not random: the experimental and control groups were formed in such a way that each group was guaranteed to have the same knowledge, skills and abilities that form the basis of algorithmic thinking. In the course of diagnostics, the results of the input control measure were taken into account.

2. The selection of participants for the experiment and the sample size are justified by the specifics of the study, the availability of digital technologies for the inclusion of interactive game simulators in foreign language communication.

4. Throughout the experiment, practical activities on the use of interactive simulators in intercultural communication to form the foundations of the students' algorithmic thinking were carried out by the same teacher, on the same software equipment, in school classrooms.

5. The implementation took into account the main didactic principles underlying learning using ICT tools: adaptability, interactivity and individuality of learning, integrated use of software, expediency, optimal use of information and communication technologies.

### **6. Discussion**

Performing a quantitative analysis of the data obtained, we can conclude that after the completion of the experiment, 48 % of schoolchildren in the experimental group had a "high" level of formation of algorithmic thinking (11 students out of 23) while initially this percentage was 13 % (3 respondents out of 23). The number of pupils with a "low" level has significantly decreased from 61 % to 13 %. For the control group, the following was recorded: the indicator for the "high" level qualitatively changed from 17 % to 12 %, and for the "low" level – from 61 % to 48 %.

When discussing the didactic potential of game services and online constructors, it was found that the described system of actions for the use of interactive game simulators in foreign language lessons has real opportunities for:

- Formation of algorithmic thinking skills;
- Gaining experience in project research and educational and intercultural activities;
- Application of theoretical information from the rules for designing the work of interactive online simulators;
- Modeling of work in demanded professions.

The following questions were highlighted for detailed class discussion both in computer science classes and in English classes:

1. What type of electronic educational resources can be attributed to "eTreniki"?
2. List the types of simulators that can be created using the eTreniki constructors.
3. Give a description of the constructors of each type according to the following plan:
  - a. Didactic functions of the simulator created using this type of constructor;
  - b. The possibility of using the simulator created with the help of this constructor in a situation of foreign language communication (give examples).
4. Create one new simulator for each type of constructors in relation to the learned rule or plot of the work.

In other words, the pedagogical experiment proved that intercultural communication in the digital educational environment contributes to the formation of algorithmic thinking due to interactivity, operational feedback, access to various sources of information, multimedia content, etc.

The obtained conclusions about the didactic potential of new digital technologies in relation to improving the quality of foreign language teaching, the formation of thinking confirm and supplement the results of the work of I. Damopolii et al (Damopolii et al., 2022). Since this team mainly considered the development of critical thinking. A significant result of the study is the description of the basic ideas of the approach, expanding the ideas of I. S. Zlobina et al. about the possibilities of interactive resources for mastering the skills of various types of reading and information processing of the material read; ability to adequately understand, interpret educational texts, etc. (Zlobina et al., 2020).

Further research may be aimed at disseminating the proposed approach to the formation of algorithmic thinking by means of interactive resources when teaching other school subjects.

## 7. Conclusion

The significance of the present study lies in the following:

- The possibility and expediency of forming the foreign language communicative competence and skills of intellectual activity demanded by modern society by means of information technologies in teaching English as a foreign language in basic school is substantiated;
- A system of intercultural educational and cognitive activities has been developed, aimed at forming the foundations of algorithmic thinking among primary school students.

The paper specifies the essence of the concepts of "interactive game simulator", "online constructor", taking into account the specifics of their application in intercultural communication. The authors substantiate the conclusion that interactive game simulators, as new tools for learning and cognition, open up wide opportunities both for changing traditional activities (reading, writing, communication) and for developing higher mental functions and processes (attention, memory, will, thinking) in today's digital environment. The study on experimental data proves that a foreign language is the basis for the development of algorithmic thinking, imagination, intellectual and creative abilities of students.

The potential of interactive gaming simulators is described by the authors using the eTreniki online constructor as an example: Kokla, Krypton, Morfanki, UFO, Kartofan services.

As key features of the use of interactive gaming simulators, expanding the range of educational and cognitive influences, for the formation of algorithmic thinking, enriching the practice of foreign language oral and written speech, the authors highlight the following:

- Intensification of interconnection, data exchange and intercultural cooperation;
- Activation of work with various types of information (text, links, maps, images, tables, etc.);
- Gamification of complex intellectual activity for programming the work of simulators according to the rules of a foreign language or the plot of a literary work;
- A combination of various forms of educational and cognitive activity;
- Taking into account the specifics of thinking and interests of modern teenagers.

The use of ready-made interactive game simulators and the design of their work according to the rules of a foreign language or the plot of a literary work not only corresponds to the priorities in the field of digital technologies, but also makes it possible to convincingly show the didactic potential of game mechanics, in particular, for the formation of algorithmic thinking.

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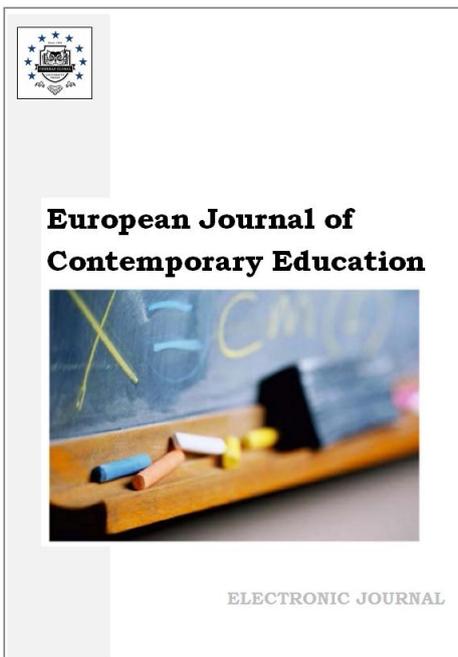
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## Formation of “Teamwork Skills” in Future Teachers when Creating Didactic Games with Traditional and Digital Components

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### Abstract

In accordance with the requirements of the professional standard, the teacher of the digital school must have skills related to information and communication technologies, communicative competence, and teamwork skills. The formation of relevant qualities in the conditions of higher education is complicated by a number of different problems. The purpose of the study is to study the features of the formation of teamwork skills in future teachers when developing didactic games with traditional and digital components.

**Research methodology.** Gamification is used both as a technology for acquiring new knowledge and as a technology for team building. The team activity method is used to design didactic games. The experiment involved 60 undergraduates of the Vyatka State University of the training program "Psychological and Pedagogical Education". To assess team effectiveness Laura Stack's methodology was chosen (five levels of team building).

**Research results.** The students of the experimental group are involved in team work on educational games: they study basic mechanics in didactic games; master interactive services; develop their own project, including both non-computer and digital elements.

In conclusion problematic questions are formulated, the answers to which make it possible to determine the directions of the work of the didactic game design team: discussion of the goal of the game and the game goal, the choice of basic mechanics and formed competences, the rules and resources, etc.

**Keywords:** gamification, educational game, digital services, cross-professional competences, soft skills, co-creation, interaction.

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## **1. Introduction**

Under the influence of digital transformation, the entry of the economy into the fourth industrial revolution, changes are taking place in relation to the requirements to educational institutions at all levels of education. In particular, schools face the need to develop a corporate spirit and self-management skills in teachers. Effectiveness of the didactic process largely becomes dependent on activities of the entire team of like-minded people who are not indifferent to development of the information educational space.

Under these conditions, the employee's quasi-professional experience becomes important for the employer. L.N. Stepanova, E.F. Zeer determine that during interviews not only professional skills are often checked but also additional knowledge and skills that cannot be obtained at university. The scientists use the concept "soft skills" to designate a set of supra-professional skills (Stepanova, Zeer, 2019). I.A. Shcheglova notes that teamwork skills, the skills of joint activities are one of the most high-demand competences in the modern labor market (Shcheglova, 2019).

As a result, the future teacher of the digital school in the context of modern requirements for the quality of higher education, for the level of formation of digital skills for successful professional activity, needs to master ICT competences, understand features of organizing extracurricular (including gaming) activities, be able to create study groups and manage them (Soboleva et al., 2020). Modern school mentors can and/or should combine digital formats and teaching methods with classical forms (lessons, group work, excursions, didactic games, discussions).

At the same time, as G.P. Baibekova points out, innovative solutions in the field of teaching open up new opportunities for targeted, individual development of the required digital competences, supra-professional skills (Baibekova, 2021).

One of the options for integrating digital components into the traditional educational model is gamification of learning and cognition (Soboleva, 2019). G.I. Fazylzianova, V.Yu. Sokolova, V.V. Balalov highlight the need to accurately determine the goals of the game and the process that needs to be gamified as the problem of including this technology in the teamwork (Fazylzianova et al., 2021). For example, if the goal is to motivate a participant in information interaction (directly the student, parents, or the teacher), then achieving this goal implies the need to take into account and mutually influence the following processes: interaction with other participants, performing specific tasks within the framework of ongoing activities, self-development and self-determination. The organizer of the game needs to analyze various ways of gamification and choose the most optimal one to achieve the goal. In particular, ClassCraft, GoogleClass, etc. services can be used to gamify interaction with other participants. For the gamification of solving individual educational and cognitive tasks, LearningApps, Quandary, eTreniki, etc. are effective. When gamifying self-development and self-determination, Minecraft, Codu Game Lab, Uchi.ru, etc. are used.

Ya.N. Poddubnaya, K.S. Kotov, A.A. Slukina note that in the early stages of including game elements in education, teachers supported the idea of developing educational applications and platforms (Poddubnaya et al., 2021). The authors argue that teachers used to believe that computer games stimulate the communicative activity of users, the productivity of teamwork, and group thinking. However, N.E. Veraksa, M.N. Gavrilova, V.L. Sukhikh confirmed that the potential of board and business games, simulation games, and sports quests is singled out separately (Veraksa et al., 2021). It is traditional didactic games that are used to develop emotional intelligence, team building, and group activities.

So, on the one hand, interactive computer applications are effectively used to form teamwork skills in future teachers. At the same time, digital school mentors need the experience of gamification of joint activities even without game-based computer applications.

### **1.2. Purpose and objectives of the study**

The purpose of the work is determined by the need to study the features of formation of teamwork skills in future teachers when developing didactic games with traditional and digital components.

Research objectives:

- To clarify the potential of gamification for formation of a set of supra-professional skills in future teachers of the modern school;
- To describe the principles of implementation of basic mechanics in didactic games with traditional and digital components using specific examples;

- To determine the stages of undergraduates' activities within the framework of the course on developing and applying computer games in education;
- To experimentally confirm the effectiveness of the proposed system of work.

## **2. Relevance**

### **2.1. Literature review**

#### **2.1.1. Analysis of Russian scientific and pedagogical literature**

Regarding to education G. P. Baibekova notes that trans-professional experience should be understood as acquisition by graduates of such knowledge and skills that provide them with awareness of the process of their own education and its real results (Baibekova, 2021).

M.A. Lukashenko determines that the willingness to work in a team, the skill of collaboration, joint creativity to solve a socially significant problem, the application of principles of self-management are among the high requirements that are imposed on modern teachers (Lukashenko, 2021).

The phenomenon of "team" is studied in science from various positions, most often sociological. At the same time, the features of the team are revealed in comparison with a group of people and a collective. In management, more attention is paid to the concept of "working in a team", principles of teamwork and improving the efficiency of actions (Ganseuer et al., 2015). In psychological and pedagogical research, "team learning" is analyzed in relation to obtaining in-demand professional or universal skills.

In a general sense, S.D. Lipatova and E.A. Khokholeva understand the concept "team" as "a group of people who complement and replace each other in the course of achieving the goals" (Lipatova, Khokholeva, 2021).

T.T. Sidelnikova defines teamwork skills and communication skills as competences demanded by the employer. In this regard, she substantiates the need to use various group forms of organization of learning (Sidelnikova, 2018).

G.I. Fazylyanova, V.Yu. Sokolova, V.V. Balalov substantiate that gamification under certain conditions and principles can be an effective technology to increase motivation for joint activities, promote team orientation (Fazylyanova et al., 2021). Their work analyzes the experience of gaming practices in business and politics, education and personnel management. For example, the mechanism of the game "10 Downing Street" is analyzed (the formation of communication skills, foresight thinking); "Pirates of the Caribbean" (development of the speed of thinking, emotional intelligence and the ability to work in conditions of uncertainty). And in each gaming practice special attention is paid to team building and group activities.

S.D. Karakozov, A.Yu. Uvarov, N.I. Ryzhova substantiate the need for a transition from the traditional school to the digital one (Karakozov et al., 2018). Indeed, every year there are more and more educational computer games, digital services for gamification (game platforms, mobile applications, online games, interactive simulators, etc.).

N.I. Isupova, T.N. Suvorova consider the problems of gamification using information technologies (Isupova, Suvorova, 2018). Ya. N. Poddubnaya, K. S. Kotov, A. A. Slukina indicate that interactive computer applications can be effectively used to form general cultural, professional and quasi-professional competences of future teachers (Poddubnaya et al., 2021). At the same time, digital school mentors need gamification experience without digital applications of game learning (Cherniavskikh et al., 2019).

K.A. Ocheretyany, D.A. Kolesnikova note that the game space-time is an interactive dimension (Ocheretyany, Kolesnikova, 2018). The game environment is presented by the authors as a set of solutions, as a universe of foreseeable tasks and goals. The designed gaming solution allows developers and users directly to express the integrity of the experience, individual identity, and the physicality of presence. According to the authors, the game is an affective-interactive model of involvement in activities and communication. As a result of the study the scientists come to the following conclusions: in the modern "digital universe", a gamer is a way to be in the world; a computer game is a source of language that allows developers to create and describe the experience of media reality.

E.V. Soboleva et al. determine that the basics of programming can be effectively learned through interaction with the game world. The authors also consider the possibilities of the environment Minecraft: Education Edition and Scratch. Based on experimental data, the authors show that the interest in programming awakens already at the first lesson (Soboleva et al., 2017).

The materials of the work confirm that such an effect is present even among those students for whom the very word programming was not only incomprehensible, but also hostile (Soboleva, 2019). The examples of didactic games given by the scientists allow us to conclude that specific tasks should not always be set in the game; the goal of the game may be to explore the game world, create the user's own rules of game behavior. Students in the game space get acquainted with the basics of program development, master algorithms, cycles, functions, variables. All of the above creates additional conditions for development of logical and strategic thinking, creative imagination, and emotional intelligence.

E.K. Gerasimova et al. conclude that the use of gaming technologies is, on the one hand, an auxiliary tool for the traditional form of education. On the other hand, it brings both developers and users closer to universal digital literacy (Gerasimova et al., 2021).

But the life in the new digital society sets certain rules of the "game", which create the conditions for a qualitative leap from the "person player" to the "person-doer" (Dieva, 2020). Increasing the intelligence of computer characters allows reaching a new level of aggregation of tasks facing the player. This significantly changes the essence of the gameplay. However, the level of complexity of game decisions is also increasing, which both the developer and users will have to perform on their own.

T.A. Balakireva, M.N. Mogilevich substantiate that problems in the implementation of educational programs may arise due to the integration of advanced technologies and conceptual ideas into traditional learning systems (Balakireva, Mogilevich, 2021).

### **2.1.2. Analysis of foreign studies**

The research conducted by S. Noor et al. in European countries show that 93 % of employers consider "soft skills" to be the same important quality of employees as their professional skills (Noor et al., 2018). The analysis of the questionnaires performed by the authors allows them to conclude that a modern teacher needs to possess the following supra-professional skills: communicative literacy, adaptability, project management, emotional intelligence, etc. A high level of development of these competences will determine the success, professional self-realization.

R.W.M. Mee et al. determine that new technologies as a result of the globalization of society provide unlimited opportunities for exciting discoveries and developments (new forms of energy, medical advances, restoration of ecologically devastated areas, communications, exploration in space and in the depths of the oceans). Therefore, twenty-first century skills must be interdisciplinary and complex, increasingly project-based and research-based, including, and with the support of digital technologies (Mee et al., 2022).

K. Tenório et al. indicate that gaming technologies allow taking into account the peculiarities of perception and information processing of modern students (quick access to information, variability of its use, interactivity, visual presentation of information), their interests (adaptive, individual educational trajectories) (Tenório et al., 2022). Gamification provides effective tools for effectively building communication processes (mechanisms for quick feedback and intragroup communication), increasing the level of motivation of students, etc. However, game technologies have their drawbacks associated with the complexity of application and implementation. The authors come to the conclusion that when developing games for educational purposes, it is necessary to compare the interests and motivation of students with the interests and goals of teachers. This conclusion, according to the scientists, can significantly increase effectiveness of gamification in education.

I.J. Pérez-López, C. Navarro-Mateos, J. Mora-Gonzalez present a gamification project for a healthy lifestyle based on the plot of Star Wars (Pérez-López et al., 2022). The software solution is made in the form of a mobile application. According to students, the work in the interactive digital space using gaming techniques made it possible to visualize the technical reading and fixation of human physical development indices, increase motivation for a healthy lifestyle, intensify the mechanism for obtaining skills in a virtual environment, and activate cognition.

M. Torrado Cespón, J.M. Díaz Lage note that games additionally motivate students by offering them new opportunities for socialization (Torrado Cespón, Díaz Lage, 2022). During games in a new and non-obvious format, interaction with teachers and classmates takes place. The authors highlight the communication "student – teacher" as a guide of the game impact. In their opinion, the success of game learning depends on its nature and intensity. Not only the

methodology is important, but also the fact that the relationship between the student and the mentor in a virtual environment takes place in a special emotional atmosphere.

S. Qiao et al. conduct a multi-stage pedagogical experiment aimed at identifying the current and resulting from the introduction of gamification into the learning environment levels of motivation and subject knowledge in the English language (Qiao et al., 2022). The most effective gamification systems, in their opinion, use additional elements (for example, communication with other "players" - students), which in fact allows to pay attention to interests of all students.

S. Sampedro-Martín, J. Estepa-Giménez in their research show that modern didactic games provide an opportunity to show such qualities as honesty, courage, resourcefulness, wit, ingenuity (Sampedro-Martín, Estepa-Giménez, 2022). The game contributes to the formation of discipline, because every game is played according to certain rules. During the game children learn to reckon with the opinions and interests of others, to restrain their desires. Schoolchildren develop a sense of responsibility; collectivism, discipline, will, character are brought up. Playing the situation several times gives participants the opportunity to change roles, try other behaviors, and reflect on the activity.

C. Lhardy et al. describe the mechanics of the implementation of Unit Kemps – a cognitive, exciting, easy-to-organize game that is used for learning. Supported languages are English, French, and Spanish (Lhardy et al., 2022). The authors present a unique program that can be used in the process of studying physics. Students can find physical formulas, constants and change systems of calculation. Depending on preferences, the user has the opportunity to choose one of various topics.

R.M.C. Rodes, M.I.P. Arreola, A.S. Aranda describe the possibilities of gamification for constructing a thematic investigation in the detective genre (Rodes et al., 2022). The authors found that educational gaming technologies allow students to instill love for discovering the secrets of chemistry, substances, their transformations and various phenomena accompanied by their transformations. At the same time, additional conditions are created for the development of cognitive interest in the wonderful world of chemistry, control of work with chemical reagents when being a team member.

A. Burgess et al. consider the team as a "collective subject of activity", and add that the main characteristic of the team is the "skill to be a single whole" in relation to goal-setting, value orientations and norms of action (Burgess et al., 2019).

E. Jääskä, K. Aaltonen explore the benefits and challenges of using game-based learning methods in higher education in project management (Jääskä, Aaltonen, 2022). The goal of game design is to develop a team project. The scope of the project is limited by the time frame of the training sessions. Because of this, as a rule, a conditional educational project is proposed for implementation, which has no real practical value. The authors also note that educational games allow simulating the socio-psychological aspects of collective interactions. In a role-playing game, it is very difficult to quantify the actions of the participants, therefore, as a rule, qualitative assessments are used.

Thus, the analysis of the above scientific works allows us to substantiate the need for the additional study of the following issues of organization of team activities of future teachers:

- participating in traditional didactic games;
- using interactive services during gamification;
- designing own game scenarios that combine traditional and digital elements.

### **3. Materials and methods**

#### **3.1. Theoretical and empirical methods**

In the study didactic games that combine non-computer and digital components are used to involve all participants in the educational process in various activities (cognitive, research, etc.). At the same time, gamification is simultaneously considered both as a technology for acquiring new knowledge and as a technology for team building.

To divide the study group into teams, the Wheel of Fortune service is used (<https://ru.piliapp.com/random/wheel/>). This is an online tool for random selection of a member. The program, due to the random number generator, allows to gamify the decision-making process. In traditional didactic game mechanics the principles of the game "Lapta", "Snake", "Mafia", "Monopoly", "Rock-Paper-Scissors", "Sorry", "Trivial Pursuit", "Battleship", etc. are studied.

Support tools are StudyStack (<https://www.studystack.com/>), Robotlandia (<https://robotlandia.ru/>), Domino Generator program.

The experimental study was carried out on the basis of the Vyatka State University when studying the course "Development and application of computer games in education." Team work on designing didactic games with traditional and digital components involved 60 first- and second-year students of the training program 44.03.01 Pedagogical education (master's degree level). The average age of the participants was 25 (50 % of women and 50 % of men).

The empirical methods (observation, analysis of the results of team work on a game project) were used to obtain up-to-date information about real qualitative changes in planning skills; degree of trust in each other; managing emotions in case of mistakes; communicative skills, information interaction in a team, interpersonal communication; mutual support; reflection in the team and individually, the use of feedback mechanisms; protection of the results of the game project.

To diagnose the formation of teamwork skills, the Laura Stack method was used, which offers tools for assessing personal and team effectiveness. A distinctive feature of the methodology is that each participant in the survey must conduct an individual assessment of the work of the team (own experience and perception).

The methodology is divided into 4 blocks: "Fair attitude", "Willingness to be responsible for the result", "Systems", "Technologies". For each of them factors for accelerating the teamwork are provided.

Block "Fair Attitude": building relationships, managing conflicts, strengthening integrity.

Block "Readiness to be responsible for the result": trust in colleagues, awareness of responsibility, maximization of efficiency.

Block "Systems": making effective decisions, managing time, increasing efficiency.

Block "Technology": effective communications, effective meetings, compliance with accepted rules.

For each factor 4 limiters are proposed - they are questions. There are 48 limiters in total.

All test questions begin the same way: "To what extent my team members are ...". Response scale: "1 = not at all", "2 = to a minimal extent", "3 = to some extent", "4 = to a large extent", "5 = to a great extent".

Next, a form for summing up is filled up.

In addition, the authors' testing which includes 50 tasks was developed to assess the quality of educational results. The materials are compiled according to the work program, taking into account the theoretical and practical nature of the activity.

Tasks are divided into the following groups: reproductive, constructive, creative (according to the level of complexity); facts, terms, figures, ideas, concepts, causal relationships, patterns, laws (according to the elements of assimilation). This gradation is determined by the university requirements for the course evaluation funds.

Based on the results of testing, the student receives a mark "credit" or "not credit".

Thus, when choosing the experimental and control groups, the authors took into account: the results of the Laura Stack method ([Stack, 2018](#)); the results of the authors' testing which consists of 50 questions, the principles and content of which are disclosed in the research program.

Methodological feature of processing the results:

1. At the stage of statistical processing of the changes that have occurred in the pedagogical system, regarding the formation of teamwork skills in future teachers, the Pearson's chi-square coefficient –  $\chi^2$  was used.

2. To assess the effectiveness of specially organized activities for designing didactic games with traditional and digital components in terms of improving the quality of education, the Fisher criterion was used.

### **3.2. The base of research**

The main purpose of the experiment was to test the potential of designing didactic games by undergraduates using traditional and digital components as part of the course "Development and Application of Computer Games in Education" to develop teamwork skills that are in demand in modern society. 60 students of the training program 44.03.01 Pedagogical education (master's degree level) were involved.

The integration of gaming applications into training was carried out in the same classrooms, using the same equipment and software.

The materials for the test were developed by the authors in accordance with the current standard of higher education in the field of studies.

### **3.3. Stages of research**

At the preparatory stage of the experiment various digital services for gamification of cognition, computer games with educational content were considered: "Heathstone" (mathematics, logical thinking), sports games (<https://igrouka.ru/sportivnye-igry/>), "Battleship" from the resources of Robotland, "Monopoly" (<https://monopoly-one.com/>), "Snake" (<https://multoigri.ru/igri-zmeyka>), "Domino" (<http://domino.ru/domino-na-chetveryx/>), "Mafia" (<https://maffia-online.ru/>), etc.

Classical non-computer games were analyzed, the didactic potential of which is recognized in the scientific and pedagogical community: "Domino", "Monopoly", "Chess", "True/False", quizzes, etc. Further, each group chose those of them which have the resources to form teamwork skills. Whenever possible, the games were divided into two groups "traditional - computer". For example, the games "Mafia", "Chess", "Lapta", "Battleship" can be non-computer and digital. Then, the basic game mechanics, game strategy, components, rules of interaction were determined for each group of games.

To assess the input conditions, it was decided to use the L. Stack method. The main reason is that her questions are formulated precisely in terms of soft skills and correspond to the challenges of Industry 4.0 as much as possible. Other methods and criteria for choosing exactly the specified one are described in paragraph 4.3.1.

To interpret the results, conditional names of the levels of team orientation were introduced: "My team", "We are on the right track", "Our golden mean", "We are all waiting for changes", "You, I, he, she, they...".

In addition, 50 questions for the control work were compiled. Task examples are also presented in paragraph 4.3.1.

The students could get from 0 to 100 points for the control work. According to the results of measurements, the marks were determined as follows: from 0 (inclusive) to 55 points – "credit" and "not credit" in all other cases.

Thus, it was possible to collect data on 60 undergraduates, from which the experimental and control groups were formed. Each of them has 30 people. The sample was not random. The experimental group included 50 % of women and 50 % of men

The second stage of the experiment was devoted to determining the structure of the course in accordance with the purpose of the study.

The third stage of the study is the training of undergraduates based on the materials of the course "Development and application of computer games in education" and the design of didactic games by undergraduate teams.

## **4. Results**

### **4.1. Key concepts of designing didactic games**

In the course of the analysis and generalization of the scientific literature, the authors' positions regarding the key concepts of the study were determined:

- gamification is a technology for involving all participants in the didactic process in educational, cognitive, research activities. At the same time, gamification has the potential both for acquiring new knowledge and for team building;

- teamwork - the skill to accept the unity of values, the consistency of goals and actions, the priority of common goals over personal ones;

- resource management – distribution and rational use of existing human, financial, technological potential;

- competence "teamwork skills" is closely related to the readiness for joint creativity, the ability to interact and resolve conflicts, emotional intelligence, adaptability;

- joint creativity involves a combination of communication skills and creative work in groups;

- the ability to interact – the willingness to work with people and technical systems, the ability to understand and accept the opinion of another in the context of the relationship between

human and artificial intelligence. These skills are manifested through peacemaking and conflict resolution;

- emotional intelligence: empathy, the ability to maintain a positive attitude and high motivation, overcome negative emotions, inspire others;
- adaptability (openness to new things, willingness to learn, unlearn) implies the ability to respond effectively to any changes in the working environment.

In the present study, a team is understood as a group of like-minded people cooperating with each other to achieve the intended common goals. As a result of such interaction, it becomes possible to achieve much better results in a fairly short period of time than working alone. In a close-knit team, all responsibilities are clearly distributed among its members: some generate ideas, others critically evaluate them, and others offer implementation tools (Filatova et al., 2018). Then a general plan and separate tasks for each are developed. Thus, complementing each other, the participants create a single balanced team.

As part of the course, undergraduates in both groups (control and experimental) studied theoretical material: a game, a didactic game, and classifications of games. In addition, the concepts of game mechanics, the goal of the game and the game goal were introduced into consideration.

Game mechanics is an informational/mathematical model that describes the interaction "game – players" and defines the rules, possibilities, limitation. The mechanics involves the characterization of the following relationships: "Player – Moves", "Player – Actions", "Player – Resources", "Player – Players".

#### **4.2. The activities of the undergraduates within the course "Development and application of computer games in education" and designing didactic games by teams**

At the beginning of the course, the teacher and students considered an example of the most famous and simple basic mechanics - the choice mechanics. The choice mechanics were implemented in practice - the study group was divided into teams. In the experimental group at this stage of the work a coin, a cube, etc. were used for that purpose.

A discussion was organized that the game goal and the goal of the game are not always identical concepts. For example, the goal of the game is to go through 10 levels and save the princess, and the game goal is to study folk signs.

The next stage of the activity in the experimental group is modeling of a traditional didactic game ("Battleship", "Monopoly", "Lapta", "Domino", "Mafia").

The teacher initiated an activity to analyze personality traits that are in demand in modern society, which are formed by this or that didactic game. For example, emotional intelligence, critical thinking, creativity, etc. In the experimental group, everyone could give an example of a game action that contributes to developing the discussed qualities.

At the next stage, the theory on computer and online games was studied (history, basic concepts, role and significance in the development of personality). Classifications of computer games were considered (role-playing / non-role-playing, by game genre; by time mode; by the number of players, etc.). The students in the experimental group analyzed the basic game mechanics in computer and online games in detail ("Race", "Queue", "Khorovod", "Voting" and others).

Then, again there was a division into teams. In the experimental group, the Wheel of Fortune service (<https://ru.piliapp.com/random/wheel/>) was used to gamify the decision-making process with a random number generator. For the real participation of students in computer games, the services "Igroteka" (<https://igrouotka.ru/sportivnye-igry/>), "Battleship" from Robotland, "Monopoly" (<https://monopoly-one.com/>), "Snake" (<https://multoigri.ru/igri-zmeyka>), "Domino" (<http://dominoo.ru/domino-na-chetveryx/>), "Mafia" (<https://maffia-online.ru/>) and etc. were used.

Further, the teacher organized the following discussion: the analysis of the personality traits that are in demand in modern society, which are formed by this or that computer game for educational purposes. For example, the speed of thinking, emotional intelligence, communication skills, etc.

The division of students into teams of their own choice at the next stage of the course was the same in both groups.

Then the undergraduate teams in the experimental group designed their own didactic games that combined digital and non-computer components. Teams from the control group could choose

both board and sports games or develop an ecological quest, an online competition for memorizing flashcards, etc.

Here is an example of one of the projects designed as a traditional didactic game supported by digital resources. This is an intellectual game "Information Domino".

The idea and logic.

1. Each team at the beginning of the game receives 50 bonus points and a Starting Task.
2. For the correct solution of the Starting Task the team is awarded 10 points.
3. For the incorrect answer to the Starting Task points are not reduced.
4. The solution of the Starting Task is submitted to the game teacher for verification.
5. Then the selection of a domino bone is organized, on the back of which the following problem is presented.
6. Each team has two attempts to give the correct answer.

Scoring algorithm:

- If the correct answer is given after the first attempt, then the number of points received is equal to the sum of the numbers on each of the sides of the domino bone;
- If the correct answer is formulated after the second attempt, then the number of points obtained is equal to the largest of the numbers on the sides of the domino bone;
- If the answer was incorrect or incomplete after two attempts, then the team loses the number of points equal to the smallest number on the sides of the domino bone. For example, we chose the 6-3 domino. Then for the correct answer after the first attempt, the team receives 9 points, for the answer on the second - 6 points;
- If both answers were incorrect, the team loses three points (-3);
- Refusal of the domino bone is equal to the wrong answer in both attempts.
- The domino bone "o-o" is evaluated separately. The answer to this question can only be formulated once. If the answer is correct, then the team gets 10 points; if not, then nothing is lost;
- The end of the game. This happens if the presenter does not have a single task left that the team has not yet solved; or the total time of the game has expired.

The first limitation on interaction: if there are 5 minutes before the end of the game, new dominoes are not given.

The second limitation on interaction: it is desirable to involve two presenters for the game. One will check the answers and enter the scores in the evaluation table. The second will oversee the implementation of the rules, maintain order in the cards and dominoes.

Examples of tasks on cards:

1. What is this mnemonic rule used to remember: "We Only Advise Well-Brought-Up Individuals"?
2. D'Artagnan, walking around Paris, went to Porthos. Then they went together to Aramis. And already all three of them went to the Bois de Boulogne. Which of the presented pictures shows the route of friends?
3. Write down the first three numbers of the sequence. If the first number is "5", and the rule is "subtract 2 from the previous number and multiply the result by 3".
4. In a fantasy land all computers have the Alpha operating system installed, while none of the mobile phones has the Alpha operating system installed. What conclusion can be drawn from this? Answer options: in fantasy land, all mobile phones are computers; some mobile phones in fantasy land are not computers; in fantasy land, no mobile phone is a computer; some mobile phones in fantasy land are computers.
5. Hare and Wolf came to play in a computer club. There were 8 games on the server (Minecraft, GTA, Sims, Klondike, Spider, Shrek, Cyberpunk, Winx). How much information does the message that Hare will play Sims contain?

After simulating the game in real learning conditions, the undergraduates implemented its digital representation using the Domino Generator program. Domino Generator allows easily and quickly creating print-ready images of domino sets. Any raster images or any text can be used as pictures.

### **4.3. Experimental assessment**

#### **4.3.1. The ascertaining stage of the experiment**

To assess the input conditions, it was necessary to choose a method for diagnosing the formation of teamwork skills. The questionnaires of R. B. Kettel and K. Leonhard, G. Shmishek

were reviewed and analyzed; "Preferred Selection Lattice"; methods of V. Stefanson "Qsorting" and Laura Stack for assessing personal and team effectiveness (Stack, 2018). Taking into account the requirements of employers for future teachers of the digital school, the norms of the current professional standard, the specifics of teamwork in the information educational space, it was decided to use the L. Stack method. Her questions are formulated precisely in terms of soft skills and correspond to the challenges of Industry 4.0 as much as possible.

To interpret the results, the conditional names of the levels of team orientation were introduced.

Level "My team" (from 216 to 240 points). Each member of your group understands perfectly well what a truly mobile and effective team is; how to form and maintain a constructive interaction environment; achieve high quality education. The need for a point adjustment of work in a team arises only from time to time.

Level "We are on the right track" (from 169 to 215 points). In the work of your team, you can improve some areas, but in general, all members of the group are focused on the single result and joint creativity. Try to maintain a positive attitude and high motivation.

Level "Our golden mean" (from 121 to 168 points). Your team is in the process of formation and consolidation. It is necessary to work more actively to improve the efficiency of activities, to master new pedagogical solutions and technologies.

Level "We are all waiting for changes" (from 72 to 120 points). Serious changes in group management are required. It is necessary to reconsider approaches to the organization of joint creativity, the implementation of projects; apply other incentives and motivators for interaction. It is necessary to improve the general professional competence of your team in each of the key areas of activity.

Level "You, I, he, she, they ..." (from 48 to 71 points). Your team needs to start working on improving performance. Now the personal goals of each participant take precedence over the general ones. It is required to develop the skills of joint creativity, group thinking.

In addition, the authors compiled 50 questions for the control work.

An example of a task of the type "Practical/Constructive/Presentation": list and describe the sites used to create interactive applications. Demonstrate the elements of work in one of these services.

An example of a task of the type "Theoretical/Constructive/Representations": mark the correct arrangement of the elements of an electronic educational resource in ascending order of clarity: "diagram – table – text"; "text – table – diagram"; "table – text – diagram"; "text – diagram – table".

An example of a task of the type "Practical/Creative/Patterns": describe the cycles of activity in games and give examples in your future professional activity. Develop a visual diagram to illustrate.

An example of a task of the "Theoretical/Reproductive/Facts" type: choose 3 types of gamification identified by K. Werbach (external, consumer, internal, behavior-changing, and productive).

An example of a task of the type "Practical/Constructive/Cause-and-effect relationships": list the pedagogical goals for using computer games in education.

An example of a task of the type "Theoretical/Creative/Patterns": give examples of digital tools for organizing teamwork in the development of computer games.

For the control work, the student could get from 0 to 100 points. According to the results of measurements, the marks were determined as follows: from 0 (inclusive) to 55 points – "not credit" and "credit" in all other cases.

Thus, taking into account the results of processing materials according to the method of Laura Stack and the data of the authors' testing, it was possible to collect data on 60 undergraduates. Then, the experimental and control groups were formed.

#### **4.3.2. Forming stage of the experiment**

Thus, the teacher of the course "Development and application of computer games in education" organized activities in the experimental group in the following stages:

I stage. The study of theoretical material.

II stage. Dividing the study group into teams, modeling a traditional didactic game.

Implementation feature: in the control group students themselves suggested a method for division: by name, by rows, by sympathy, etc.

III stage. Reflection. New fragment of the theory. Reflection is an essential element of the methodology.

Reflection exercises should help the undergraduates: remember the material covered; combine all the studied blocks into an overall picture of the content of the game; see specific ways to transfer the acquired knowledge into real life. For example, write a "Cinquain".

Line 1 – "Multiplayer computer game"; line 2 – "fascinating, virtual"; line 3 – "it is necessary to plan, interact, negotiate"; line 4 – "from separate parts into a single whole"; line 5 – "Team".

IV stage. The division of the study group into other teams (different in composition from the original ones). Participation in a computer didactic game.

Implementation feature: the students in the control group studied the essence of those indicated in paragraph 4.2., games with the help of network resources, tutorials, additional methodological literature.

V stage. Reflection. Divide the group into teams of the students' own choice.

VI stage. The activities of the undergraduates in designing their own didactic game that combines digital and non-computer components.

Implementation feature: the undergraduates of the control group were not purposefully involved in such activities.

VII stage. Team defending game projects.

An example of a team project in the experimental group is indicated in paragraph 4.2 (the project – intellectual game "Information Domino").

An example of a team project in the control group is the game "At a party".

There are n candies in the box. The two take turns playing. It is allowed to eat one or two candies per turn. Whoever cannot make a move loses.

The participants in the control group designed and developed a program that:

1) displays the rules of the game, while choosing the number of candies in the box randomly in the range from 15 to 25.

2) finds out whether the user will play first or second.

3) plays with the user.

### 4.3. 3. Control stage of the experiment

At the fixing stage of the experiment, the survey was also conducted according to the L. Stack method and the authors' testing based on the course materials. When characterizing the relationships of the features under consideration are used the Pearson's chi-square coefficient –  $\chi^2$ . Information about the levels of formed teamwork skills in future teachers before and after the experiment is presented in Table. 1. (Table 1).

**Table 1.** Assessment of formation of teamwork skills

Level	Group			
	The experimental group (30 undergraduates)		The control group (30 undergraduates)	
	Before the experiment	After the experiment	Before the experiment	After the experiment
"My team"	3 % (1)	33 % (10)	3 % (1)	20 % (6)
"We are on the right track",	7 % (2)	40 % (12)	10 % (3)	20 % (6)
"Our golden mean"	20 % (6)	17 % (5)	17 % (5)	13,5 % (4)
"We are all waiting for changes"	27 % (8)	7 % (1)	30 % (9)	33 % (10)
You, I, he, she, they..."	43 % (13)	3 % (2)	40 % (12)	13,5 % (4)

The following statistical hypotheses were accepted:  $H_0$  – the level of formation of teamwork skills in the experimental group is statistically equal to the level of the control group;  $H_1$  – the level of the experimental group is higher than the level of the control group. In the online resource (<http://medstatistic.ru/calculators/calchit.html>) the values of the criterion were calculated before ( $\chi^2_{obs.1}$ ) and after ( $\chi^2_{obs.2}$ ) the experiment.

For  $\alpha = 0.05$ , according to the distribution tables,  $\chi^2_{crit}$  is equal to 9.488. Thus, we get:  $\chi^2_{obs.1} < \chi^2_{crit}$  ( $0.390 < 9.488$ ), and  $\chi^2_{obs.2} > \chi^2_{crit}$  ( $10.244 > 9.488$ ). Therefore, the shift towards an increase in the level of formation of teamwork skills can be considered non-random.

The verification of the reliability of the results of the control measurement for the quality of education was performed using the Fisher criterion. Testing data before and after the experiment is presented in [Table 2](#).

**Table 2.** The results of the authors' testing based on the course materials

	Before the experiment		After the experiment	
	The control group	The experimental group	The control group	The experimental group
The share of undergraduates who have "not credit"	63,3% (19)	66,7% (20)	56,7% (17)	26,7% (8)
The share of undergraduates who have "credit"	36,7% (11)	33,3% (10)	43,3% (13)	73,3% (22)

Calculations were made using the online calculator (<https://www.psychol-ok.ru/statistics/fisher/>). The critical value of the Fisher criterion for a significance level of 0.05 ( $\varphi_{crit}$ ) is 1.64.

The following hypotheses were accepted:  $H_0$  – the level of educational results in the experimental group is statistically equal to the level of the control group;  $H_1$  – the level of learning outcomes of the undergraduates in the experimental group is higher than the level of the control group. The empirical value of the Fisher criterion before the start of the experiment is 0.279 ( $\varphi_{emp}=0.279 < \varphi_{crit}=1.64$ ). So, before the start of the experiment, the hypothesis  $H_0$  is accepted. The value of the Fisher criterion after the experiment is 2.401 ( $\varphi_{crit}=1.64 < \varphi_{emp}=2.401$ ). Hypothesis  $H_0$  is rejected and  $H_1$  is accepted.

## 5. Limitations

Let's pay attention to the possible limitations for the study:

1. Formation of questions for author's testing in such a way as to ensure that the control and experimental groups have the same knowledge and skills that form the basis of the teacher's professional competences (including the skill of "teamwork", ICT competence).

2. The inclusion of game mechanics in the design of educational projects, the creation of didactic games is included in the training program for a limited number of specialties.

3. An important condition is the fact that throughout the experiment, the gamification of joint activities in the digital environment and without computer applications of a gaming nature was carried out by the same game teacher. The gamification of learning took place in the same classrooms. The software also remained unchanged.

4. When developing and using computer games in education, it is necessary to take into account the didactic principles of game interaction, variability, personal adaptability, expediency.

## 6. Discussion

Performing a quantitative analysis of the data obtained, we can conclude that after completing the course, the level of skill formation in the experimental group of undergraduates in the experimental

group increased from 3 % to 33 %. A significant positive shift has also taken place in terms of the level "We are on the right track": from 7 % to 40 % of the respondents. However, the most qualitative changes were recorded in "You, I, he, she, they ...". Only 2 respondents still have a weak motivation for joint creativity and effective interaction to achieve common goals. At the beginning of the course, the number of such respondents was 13 (43 % of the entire experimental group).

For the control group, there is also a positive trend in all levels. But it is less significant. For example, at the level of "My team", the indicator increased from 3 % to 20 %. "We're on the right track" the value increased from 10 % to 20 %. And for "You, I, he, she, they ..." it is defined as 13,5 % (4 undergraduates in the control group), with the initial value of 40 %. The educational results in the experimental group after studying the course "Development and application of computer games in education" according to the proposed structure for integrating digital elements of gamification into the traditional methodology also increased: the share of undergraduates with the mark "credit" increased by 40%. In the control group, the increase was only 6.6 %.

When discussing the potential of incorporating digital components into core game mechanics, it was found that building teamwork skills occurs because:

- in the process of a computer game, secretive, uncommunicative, shy team members become more free in interaction;

- calculation of points, ratings is simplified and visualized ;

- the process of decision-making and choice is supported;

- the distribution of resources is optimized within the existing limitations;

- there is an acceptance of the need to comply with "virtual" rules, follow the rules and strategies;

- the fear of making a mistake and letting everyone down is minimized;

- a joint effort to defeat the "enemy" from the digital space is transferred to reality.

In general, the pedagogical experiment allows us to conclude that the simulated educational and cognitive activity contributes to the formation of the competence "teamwork skills" as one of the most demanded in modern society. Activities for development of games for educational purposes, integrating non-computer and digital elements, provide additional opportunities for training specialists for joint creativity, the skill to interact and resolve conflicts in a team, the skill to empathize and motivate, and adapt to the challenges of society.

The obtained results support UNESCO initiatives to develop socially significant game forms of joint cognitive creative activity of teachers, children and parents in order to preserve the cultural heritage of Russia. The research materials develop the ideas of M. Torrado Cespón, J.M. Díaz Lage on the didactic possibilities of gamification tools (Torrado Cespón, Díaz Lage, 2022). In addition, the conclusions of G. I. Fazylzianova, V. Yu. Sokolova, V. V. Balalov about the possibilities of using games to increase motivation for joint activities and support team orientation are confirmed (Fazylzianova et al., 2021).

## **7. Conclusion**

Currently, the gamification technology is actively used to improve the performance of employees, to manage innovation, to motivate personal development; to support interaction with customers; in the field of education. The inclusion of gamification elements in the didactic process stimulates development of students' cross-professional competences that are most in demand by the market and therefore attractive to employers.

The competence "teamwork skills" in the concept of "soft skills" is singled out by many researchers as one of the main results of high-quality professional training. Scientific works of a pedagogical, socio-economic nature substantiate the need for additional study of the potential of gamification, feedback mechanisms, the use of digital services for development of skills that determine the formation of a quasi-professional experience of joint activities and collective creativity. New gamification services provide innovative tools to support decision making, choice, centralized control, feedback. At the same time, it has been convincingly proven in world didactics that traditional non-computer games contribute to development of skills to listen to the alternative opinions of other members of the team, accept standards and values of others, and follow rules and regulations.

When developing games for educational purposes, integrating non-computer and digital elements, reference points were formulated – directions for teamwork. These are dichotomous

questions, the answers to which must be discussed before starting the design of a didactic computer game:

1. Consider well-known games for educational purposes (computer-free or in digital form) in order to analyze the rules and capabilities of players, limitations. For example, the following scenario was proposed:

- What is the goal of the game?
- Are the goal of the game and the game goal the same?
- Is this game a team game or an individual game?
- If this is a team game, will there be special roles/functions or not?
- If this game is individual, is it allowed to communicate with all participants?
- If this game is a business one, is there a role component for the participants ("play" other people) or do the participants "play" themselves?
- If the game is a simulation, are all the functions of the participants strictly distributed at the beginning of the game, or do the participants determine their place themselves?
- Do the players take turns or play at the same time?
- Do those players who act faster get an advantage?
- Is there any play money?
- Is it a conflict game or a cooperative one?

2. Consider the impact of the game mechanics chosen for the implementation on the competences in demand (emotional intelligence, flexibility of thinking, decision making, etc.).

An obligatory stage of the described educational and cognitive activity is the analysis of the obtained game result and the game goal, the result of the game and the goal of the game. As a direction for improving the proposed option for organizing activities of undergraduates when designing didactic games with traditional and digital components, it was proposed to introduce a block of game theory with a larger mathematical component. For example, to determine with what probability this or that player will be a representative of the "Mafia".

The results of the study allow us to state the advantages of developing didactic games that integrate non-computer and digital elements to motivate students of pedagogical specialties for group forms of organizing classes, for collective creativity and communication.

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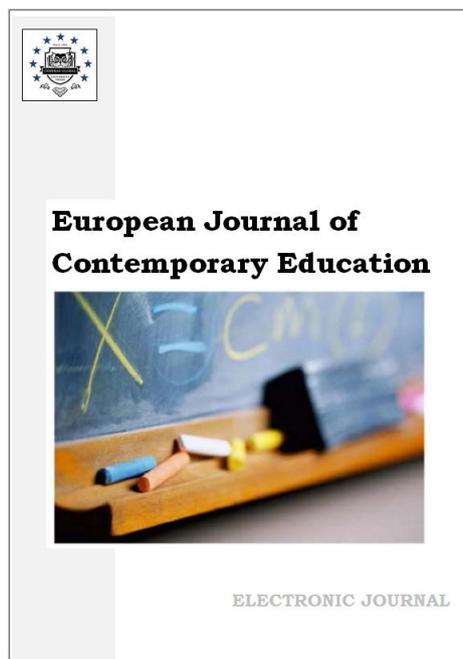
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## Management Information System and Quality Assurance

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### Abstract

Supported by Martin's and Parikh's (2017) systemic view of quality management (as a synonym of quality assurance), this study examined the availability of key data in a management information system (MIS) of a higher education provider and how these data are used for decision-making. This study also examined the use of the results of several quality assurance processes, mainly from surveys by students and employers and faculty. A questionnaire was designed to survey top and middle leaders of Vietnamese universities and faculty and support staff from 13 HEPs on MIS for QA through stratified sampling techniques. It was found that higher education providers (HEPs) collected key data on teaching and learning in their MIS but made limited use of the information generated for decision-making and quality assurance. Similar results were found in how they used data collected from students, employers, and faculty to assure quality. Yet, there are significant differences in collecting three kinds of data in MIS between public and private universities. Private HEPs are better at using the surveyed results by students and employers for discussion by faculty at the departmental level, rewarding faculty and support staff, and continuing or ceasing contracts with visiting faculty; and using surveys by faculty and staff for reviewing academic programs and continuing or ceasing contracts with visiting faculty. Furthermore, the findings indicated that large-size HEPs had more comprehensive MIS, with more data and higher use of these data than small-size HEPs in the Vietnamese context. To promote a culture of evidence whereby decision-making is data-driven, it is necessary to orient internal stakeholders, such as academic and administrative staff, to use the information generated through MIS for

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quality improvement and open up dialogues between top management and these stakeholders for the deployment of the information collected.

**Keywords:** management information system, quality assurance, governance and management, quality improvement.

## **1. Introduction**

Quality assurance (QA) is a mechanism of demonstrating accountability for higher education providers (HEPs) because it is stated by HEPs about what they could do to achieve stakeholders' confidence that they fulfill expectations to threshold minimum requirements (Lemaitre, Karakhanyan, 2017). HEP governance and management can lead to innovation in quality assurance, while quality assurance is the foundation for innovation, a tool to evaluate innovation, creativity, and effectiveness of governance and management. To improve administrative decision processes whereby activities such as decision making, policy analysis, planning, monitoring and management at different levels can be facilitated, it is important to have an effective MIS (Bright, Asare, 2019). The success of a QA system relies on HEP governance and management, which can be facilitated by an effective management information system (MIS); therefore, an MIS should be developed to integrate the QA system with the management process and assessable information about it for quality enhancement (Kahveci et al., 2012). Information on HEP's performance and quality assurance need to be transparent, public, and accountable to meet the needs of stakeholders. Therefore, an information management system (MIS) for decision-making should be fully developed to improve governance and serve as a basis for quality improvement. Only when this is done will it be possible to build the trust of the various stakeholders in the HEP. These are the conditions for HEPs to develop their strategic profile and position against their partners, competitors, sponsors, and students in an increasingly complex and rapidly changing environment. This paper examines how an MIS can support a QA system, which is a mediator for enhancing HEP performance and quality improvement. This study also examines if there is any difference between public and private universities in using MIS for a QA system.

## **2. Results and discussion**

### **Institutional research and management information system**

Institutional research focuses on the analysis of data to produce desired information in a HEP to assist decision-making for management, planning, and institutional policy (Villalobos et al., 2018). Because there have been different issues with data quality and a need for an institutional policy on data quality management, HEPs need high-quality information systems to deal with information requirements (Tahvildarzadeh et al., 2017). In other words, information systems' main task is to generate information for strategic decision-making. Furthermore, it is a mechanism for HEPs to reflect critically on educational processes and quality management to determine areas that need improvement (Raffaghelli et al., 2021). In addition, HEPs' information systems aim to enhance their activities' productivity and management efficiency (Sagitova, 2012). Therefore, HEPs' management information system can be viewed as "an organizational and technical system where information technologies are realized, and hardware and software are used for collection, processing, acquisition, storage, search, and dissemination of information" (Sagitova, 2012: 56). Then, these systems facilitate the sustainment and consolidation of quality management within an internal quality assurance mechanism and system (with QA tools and processes for planning and monitoring, for example) and a QA culture that foster continuous quality enhancement at all level of the HEP (González Bravo et al., 2022).

### **Management information system in quality assurance**

#### **MIS for continuous quality enhancement**

MIS provides information for a corrective action plan and facilitates HEP's continuous improvement. A clear internal quality assurance model framework for institutional effectiveness that integrates quality assurance and performance evaluation processes is viewed as helping the institution achieve its mission and strategic priorities (Reneau, Howse, 2019). The method of assessing the effectiveness of a HEP based on a review of whether operational results align with the vision, mission, and strategic objectives, as well as the operational quality assurance process, requires an information management system. Therefore, HEPs must ensure the collection, analysis, and use of relevant information for effective management of institutional outcomes as

regards study programs and other activities (ENQA, 2015). Thus, information about the achievement of institutional outcomes should be considered for assessment. If a QA system is not augmented with the management system, it is impossible for HEPs to assess whether they achieve the required outcomes for quality enhancement (Kahveci et al., 2012). In other words, to meet information demands for organizational concerns and objectives, HEPs need to develop integrated data-based information systems (Randhahn, 2017). A well-established information system can be a mechanism for formulating and assessing institutional objectives and therefore serves as a mediator for decision-making processes for sustainable strategic planning in higher education (Küpper, Friedl, Hofmann, Hofmann and Pedell 2013, as cited in Randhahn, 2017). For example, to support a HEP's operations and management, Tsolakidis et al. (2015) recommended a multi-layer structure of the Quality Assurance Information System, which typically includes a database system, data mining, and decision support system, executive information system, and KPI monitoring. Among these different layers of controlling information, the executive information system is a Management Information System that informs and supports senior executives in decision making. It helps monitor all the performance indicators against the HEP's strategic goals and assist the administration to improve the quality and set strategic objectives.

Thus, the primary task of quality management is to produce and use the information to assist internal discussion and decision-making for quality improvement (Martin, Parikh, 2017). Information can be collected through inductive methods (e.g., the analyses of organizational documents and data or a survey based on interviews or questionnaires) to identify information supply and subjective information needs, and deductive methods within a systematic way to examine objective information needs (Randhahn, 2017). For example, a study by Martin and Parikh (2017) used a survey to collect information on the availability of key indicators derived from MISs, which investigated "the use of generated information to provide feedback to stakeholders or to inform quality-related processes such as review of study programs and academic staff assessment" (p. 65).

#### **Use of information for decision-making**

Different stakeholders, such as students, graduates, teachers, officers and administrators, and academic audit and QA teams, require different information (Musti, 2020). As users of an information system, students must know about educational processes such as course registration, fee structures, checking their academic progression, and other activities. Graduates as users need something different such as their student transcripts and the ease of the online payment process. Faculty need many data transactions such as verification of courses, details, assessment components, prerequisites, registered students, and marks submission. Another group of special stakeholders includes several layers and numbers of officers and administrators that need to incorporate HEP's information into their decision-making through dashboards and/or data visualization. Furthermore, a group of stakeholders involved in the quality assessment includes internal and external audit and QA teams requiring different data specifications accessible for verifying QA tools and processes. For example, Martin and Parikh (2017) examined the availability and use of information on the following:

Availability and use of information on teaching and learning. QM relies on the availability of data and information derived from an MIS, which commonly has data on students, staff, infrastructure, and financial resources. Then generated information can help formulate key indicators such as student characteristics, progression and graduation rates, and student/teacher ratios at the departmental level. Martin and Parikh (2017) found that key information was relatively available in the participating HEPs, but it was less likely systematically used for QM. For instance:

The institutions were asked whether certain key information generated typically by MIS was available (without being used) or whether it was used (given availability) for QM [quality management] purposes. Around 87 % of the institutions had information on student progression available, but only 40 % of these institutions used this information for QM. This is followed by teacher/student ratio – available in 81 % of institutions, although only 36 % of institutions used it for QM. Information on learning inventory was available in 80 % of the institutions, but only 28 % used it in QM. Information on student characteristics was the least available information; even so, it was available in 70 % of the responding institutions but only 38 % of institutions used it in their QM (Martin, Parikh, 2017: 65-66).

Frequency of use of survey results for feedback. Besides statistical data from MIS, QM usually depends on the results of surveys from stakeholders such as students, staff, graduates, and employers. It was found that although much information was produced, it was often not used to provide feedback to students and faculty. For instance:

... a majority (74 %) of the responding institutions use the results of surveys either often or always in discussion with academic staff at the departmental level. Only half or slightly less of the responding institutions (48 %) often or always informed students who participated in surveys about the results (Martin, Parikh, 2017: 67).

Frequency of the use of survey results to support decision-making. As discussed earlier, QM is used to inform and assist decision-making at various levels of a HEP to close the gap between the production and use of data. The generated information can be used for various actions, such as improving the quality of academic programs in the processes of program development or review and career advancement of faculty through student satisfaction surveys or graduate surveys. For instance:

Interestingly, most responding institutions said that they use results from these surveys either always or often to support decision-making in the design and review of academic programmes (75 %), and in the assessment and promotion of teaching staff (64 %) (Martin, Parikh, 2017: 69).

### Methods and participants

A survey method was used in this study. A questionnaire was designed to survey top and middle leaders of Vietnamese universities and faculty and support staff on MIS for QA. Out of 44 higher education providers (HEPs), 13 ones (accounting for 30 % of total HEPs in a Vietnamese city) were selected to join this study using stratified sampling techniques. They represent both different public and private HEPs in this city. The HEPs were accredited and recognized.

Data was collected through a questionnaire to seek information on the management information system and information use in decision-making (see Appendix A). This included examining a set of information focusing on teaching and learning such as student characteristics (e.g. socioeconomic background, gender, ethnicity; faculty–student ratios at the departmental level; student progression, success and/or graduation rates; and Inventory of learning resources (e.g., labs, computers)). It also included examining the use of generated information from surveys of students, alumni, employers, academic and support staff to provide feedback to stakeholders or to support decision-making as regards QA processes. Specifically, it investigated the extent to which the results of surveys were used: in a discussion by faculty at the departmental level; for students who have responded are informed about the results; in the design of academic programs; in the review of academic programs; in the evaluation of academics' teaching; in the appraisal of academic and support staff; in continuing or ceasing contract with visiting faculty; in upgrading facilities for teaching and research.

### Sample

Table 1 illustrates the number of participants from each group of stakeholders who responded to the questionnaire with a total of 769 responses. As regards the positions of respondents, it is noted that they represented a typical structure of a university. They were grouped into five positions: (1) top leaders of the university, (2) QA staff, (3) leaders of disciplinary departments, (4) faculty, and (5) support staff.

**Table 1.** Participants – Position in a higher education provider (HEP)

Positions	HEP A <sup>1</sup>	HEP B	HEP C	HEP D	HEP E	HEP F	HEP G	HEP H	HEP I	HEP J	HEP K	HEP L	HEP M	Total	Missing
President of HEP Council	2	2												4	
Vice-President of HEP Council					2									2	
Rectors (or equivalent)				1										1	
Vice-Rectors (or equivalent)	1													1	1
QA leader	2		2	7		2			1	1			2	17	8
QA staff	1	1	2	15	3	1		1	4	3	1		1	33	5

<sup>1</sup> HEP A.M are the pseudonyms of higher education providers participating in this study

Positions	HEP A <sup>1</sup>	HEP B	HEP C	HEP D	HEP E	HEP F	HEP G	HEP H	HEP I	HEP J	HEP K	HEP L	HEP M	Total	Missing
Leader of functional units	2		1	11		1					1	1		17	3
Leader of disciplinary depart.	3		7	5	2	6	4		3	4	5	2	3	44	4
Leader of sub-divisions	10		3	14	6	1	2	3	1	7	11	1	2	61	13
Lecturers	52	23	58	22	35	30	45	12	21	34	3	10	8	353	39
Researchers	1	1		1										3	2
Support staff	12	11	30	28	5	9	4	3	2	17		1	6	128	6
Others	6		1				2		3	2				14	
<b>Total</b>	<b>92</b>	<b>38</b>	<b>104</b>	<b>104</b>	<b>53</b>	<b>50</b>	<b>57</b>	<b>19</b>	<b>35</b>	<b>68</b>	<b>21</b>	<b>15</b>	<b>22</b>	<b>678</b>	<b>81</b>
Missing	1														10
Top leaders	3	2		1	2									8	1
QA staff	3	1	4	22	3	3		1	5	4	1		3	50	13
Middle leaders	15		11	30	8	8	6	3	4	11	17	4	5	122	20
Faculty	53	24	58	23	35	30	45	12	21	34	3	10	8	356	41
Support staff	18	11	31	28	5	9	6	3	5	19		1	6	142	6
<b>Total</b>	<b>92</b>	<b>38</b>	<b>104</b>	<b>104</b>	<b>53</b>	<b>50</b>	<b>57</b>	<b>19</b>	<b>35</b>	<b>68</b>	<b>21</b>	<b>15</b>	<b>22</b>	<b>678</b>	<b>81</b>
Missing	1														10

Table 2 displays each HEP’s ownership (public or private), characteristics, and orientation (research or application).

**Table 2.** HEPs: Kinds and autonomy

		HEP A	HEP B	HEP C	HEP D	HEP E	HEP F	HEP G	HEP H	HEP I	HEP J	HEP K	HEP L	HEP M
Ownership	Public	1	1	2		1	1			2	2	2	3	2
	Private				3			3	2					
Characteristics	Public, state funding	1	1	1			1			2	2		3	
	Public, autonomous financing	1				1						2		2
	Private, not for profit				2									
Orientation	Private, for profit				2			3	2					
	Research-oriented	1			2						2	2	3	2
	Teaching-oriented	1	1		2	2	1	3	2					
	Research + teaching			3	1		1		3	2				
	Others					1								

Table 3 displays information on the categories of the participating HEPs.

**Table 3.** Categories of HEPs

Ownership-Finance	HEPs	Size	HEPs
Public-state funding	HEP A	>20,000 students	HEP B
	HEP B		HEP C
	HEP C		HEP D
	HEP F		HEP E
	HEP I		HEP K
	HEP J		HEP M
	HEP L		
Public autonomy in finance	HEP E	<20,000 students	HEP A
	HEP K		HEP F
			HEP G
	HEP M		HEP H

Ownership-Finance	HEPs	Size	HEPs
Private	HEP D		HEP I
	HEP G		HEP J
	HEP M		HEP L

**Data analysis**

Cronbach’s alpha was run to test the reliability of the questionnaire and items modified in the Vietnamese context. The results of Cronbach’s alpha reliability coefficients are as follows:

**Table 4.** Cronbach’s alpha Coefficients

Constructs/Items	Cronbach’s alpha	No. of items
Management information system on teaching and learning	.705	4
Using survey results by students and employers to assure quality	.904	8
Using the survey results by faculty	.929	7

They are all accepted ( $\alpha > 0.7$ ).

To test any differences between public and private universities, independent sample t-tests were run.

As regards the display of nominal information (yes, no, do not know), the results are reported using two principles. Principle 1 means that the data will be reported with the percentage of participants choosing each option offered in the answer. The data were then converted to a scale of 4: if  $>80\%$  chose yes/selecting an option  $\rightarrow 4$ ;  $80\%..>60\% \rightarrow 3$ ;  $60\%..>40\% \rightarrow 2$ ;  $40\%..>20\% \rightarrow 1$ ;  $20\%..0\% \rightarrow 0$ .

**Management information system and use of information in decision-making**

Information on teaching and learning

This section reports on the results of (a) data in the system and (b) the use of the information to assure quality.

Data inventory

The survey asked participants about the availability of four types of data on personal information of individual students, student progression, success and/or graduation rates, inventory of learning resources, and faculty-student ratios. The results are reported in two types. First, Table 5 shows the percentage of participants responding “yes” to the question. Table 6 displays the results on a scale of 4, as explained in the method section.

The results show that the percentage of participants responding yes to these data was not high. Their responses show moderate confirmation of the availability of these types of information. There was also a discrepancy in the information available between these HEPs. HEP I, L, and M have means from 3.0 to 3.3. In contrast, the HEPs with low means (0.5 and 1.0) were HEPs J, E, F, and H.

**Table 5.** Management information system on teaching and learning 1

Data	HEP A	HEP B	HEP C	HEP D	HEP E	HEP F	HEP G	HEP H	HEP I	HEP J	HEP K	HEP L	HEP M	Means
Student characteristics (e.g., socioeconomic background, gender, ethnicity)	44	87	34	70	34	26	59	37	72	21	52	67	68	48
Faculty-student ratios at the departmental level	31	79	42	70	28	32	62	21	61	24	67	80	59	48

Data	HEP A	HEP B	HEP C	HEP D	HEP E	HEP F	HEP G	HEP H	HEP I	HEP J	HEP K	HEP L	HEP M	Means
Student progression, success and/or graduation rates	43	13	47	68	34	28	48	21	78	19	62	67	73	45
Inventory of learning resources (e.g., labs, computers)	34	71	45	52	25	26	51	21	61	18	76	87	95	45
N	93	38	104	104	53	53	61	19	36	68	21	15	22	687

**Table 6.** Management information system on teaching and learning 2

	HEP A	HEP B	HEP C	HEP D	HEP E	HEP F	HEP G	HEP H	HEP I	HEP J	HEP K	HEP L	HEP M	Means
Student characteristics (e.g., socioeconomic background, gender, ethnicity)	2	4	1	3	1	1	2	1	3	1	2	3	3	2.1
Faculty-student ratios at the departmental level	1	3	2	3	1	1	3	1	3	1	3	3	2	2.1
Student progression, success and/or graduation rates	2	0	2	3	1	1	2	1	3	0	3	3	3	1.8
Inventory of learning resources (e.g., labs, computers)	1	3	2	2	1	1	2	1	3	0	3	4	4	2.1
<b>Total</b>	1.5	2.5	1.8	2.8	1.0	1.0	2.3	1.0	3.0	0.5	2.8	3.3	3.0	2.0

Tables 7 and 8 illustrate the results of the independent t-test for public and private universities.

**Table 7.** Descriptive statistics of data in MIS between public and private universities

	Types of university	N	Mean	Std. Deviation	Std. Error
Student characteristics (e.g., socioeconomic background, gender, ethnicity)	Public	529	1.50	.500	.022
	Private	195	1.36	.481	.034
Faculty-student ratios at the departmental level	Public	529	1.51	.500	.022
	Private	195	1.37	.484	.035
Student progression, success and/or graduation rates	Public	528	1.51	.500	.022
	Private	195	1.41	.493	.035
Inventory of learning resources (e.g., labs, computers)	Public	529	1.49	.512	.022
	Private	195	1.49	.501	.036

The result shows that there are significant differences in collecting three kinds of data (student characteristics, faculty/student ratio, and student success) in MIS between public and private universities ( $p < 0.005$ ). Yet, surprisingly, public and private universities are similar in the inventory of learning resources.

**Table 8.** The differences between public and private universities of data in MIS

		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2- tailed)	Mean Differ- ence	Std. Error Differ- ence	Lower	Upper	%
Student characteristics (e.g., socioeconomic background, gender, ethnicity)	Equal variances assumed	45.342	.000	3.513	722	.000	.146	.041	.064	.227	
	Equal variances not assumed			3.578	358.774	.000	.146	.041	.066	.226	
Faculty-student ratios at the departmental level	Equal variances assumed	37.100	.000	3.443	722	.001	.143	.042	.061	.225	
	Equal variances not assumed			3.497	356.714	.001	.143	.041	.063	.224	
Student progression, success and/or graduation rates	Equal variances assumed	16.242	.000	2.421	721	.016	.101	.042	.019	.183	
	Equal variances not assumed			2.437	350.880	.015	.101	.041	.020	.183	
Inventory of learning resources (e.g., labs, computers)	Equal variances assumed	.306	.581	-.108	722	.914	-.005	.043	-.088	.079	
	Equal variances not assumed			-.109	352.485	.913	-.005	.042	-.088	.078	

**Use of information to assure quality**

The survey further asked participants whether these data were used for quality assurance with three options (Yes, No, Do not know). The results are presented in Table 9. It was found that:

- The percentage of participants who ticked “yes” was extreme between these HEPs (26 %..95 %).
- The HEPs were diverse in confirming the use of information for quality assurance purposes.

It is noticeable that HEPs M, B, and L demonstrated more use of the information for QA, contrary to the limited use of these data by HEPs F and H.

**Table 9.** Use of the information in teaching and learning

		HEP A	HEP B	HEP C	HEP D	HEP E	HEP F	HEP G	HEP H	HEP I	HEP J	HEP K	HEP L	HEP M	Means
<b>Use of information</b>	Yes	51	87	66	85	49	38	46	26	69	56	81	87	95	63
	No	2		5		2	6	3		3	6	5			3
	Don't know	47	13	29	15	49	57	51	74	28	38	14	13	5	35
<b>N</b>		93	38	104	104	53	53	61	19	36	68	21	15	22	687
<b>Total</b>		2	4	3	4	2	1	2	1	3	2	4	4	4	2.8

Tables 10 and 11 show the results of the independent t-test for how public and private universities used data in MIS for teaching and learning.

**Table 10.** Descriptive statistics of using data in MIS in teaching and learning between public and private universities

Types of university	N	Mean	Std. Deviation	Std. Error
Public	571	1.67	.927	.039
Private	195	1.63	.923	.066

**Table 11.** The differences between public and private universities in using data in MIS

		Levene's Test for Equality of Variances		t-test for Equality of Means		Sig. (2-tailed)		Mean Difference	Std. Error Difference	95 % Confidence Interval of the Difference	
		F	Sig.	t	df					Lower	Upper
Use of information teaching and learning	Equal variances assumed	.318	.573	.520	764	.603	.040	.077	.077	-.111	.191
	and Equal variances not assumed			.521	337.023	.602	.040	.077	.077	-.111	.191

It was found that public and private universities are not different in using these data in teaching and learning.

Use of survey results by students and employers to assure quality

Eight questions were surveyed related to the frequency of using the results collected from students and employers for eight activities (curriculum design and review, informing students, faculty evaluation and rewards, faculty termination/teaching invitation, and facility improvement) with six options: never, not frequent, sometimes, regular, always, and do not know. The percentage of participants responding “do not know” was low (~8 %..13%). The result of EFA shows that all eight items converged to one factor ( $\alpha = .909$ ).

As can be seen in [Table 12](#):

- The difference between the frequency of using the survey results was not too significant, most often for the review of academic programs and evaluation of faculty (3.4) and least frequent use for faculty and staff reward (2.5) and in reporting the results to students (2.7).

- Similarly, the difference among the HEPs was not too significant: the highest means for HEP H (3.6), HEPs K and D (3.5), HEPs C and L (3.4), and the lowest means for HEP E (2.4) and HEP A (2.7).

**Table 12.** The frequency of using survey results by students and employers to assure quality

Using survey results by students and employers for	HEP A	HEP B	HEP C	HEP D	HEP E	HEP F	HEP G	HEP H	HEP I	HEP J	HEP K	HEP L	HEP M	Menas
discussion by faculty at the departmental level	2.7	3.5	3.3	3.7	3.5	2.3	3.0	2.9	3.6	3.1	3.1	3.6	3.5	3.2
informing students who have responded to the surveys	2.5	3.0	2.8	2.6	3.2	2.2	2.1	2.2	3.6	2.7	2.5	3.2	2.9	2.7
the design of academic programs	2.8	3.8	3.5	3.7	3.6	3.0	3.0	2.8	3.8	3.3	3.2	3.6	3.5	3.3
the review of academic programs	3.2	3.7	3.4	3.7	3.9	3.0	3.2	3.1	3.8	3.3	3.2	3.6	3.6	3.4
evaluation of faculty	3.3	3.7	3.3	3.6	3.7	2.8	3.2	3.1	4.0	3.3	3.3	3.5	3.6	3.4
rewarding faculty and	2.2	2.4	2.3	3.0	3.3	1.8	2.2	2.7	2.9	2.0	3.2	3.3	2.8	2.5

	HEP A	HEP B	HEP C	HEP D	HEP E	HEP F	HEP G	HEP H	HEP I	HEP J	HEP K	HEP L	HEP M	Menas
Using survey results by students and employers for support staff														
continuing or ceasing contract with visiting faculty	2.6	3.6	2.7	3.2	3.5	2.1	2.8	2.6	3.5	2.8	3.5	3.5	3.8	2.9
upgrading facilities for teaching and research	2.5	3.3	0	3.5	3.5	2.1	2.5	2.9	3.8	2.6	3.3	3.4	3.5	3.0
<b>Total</b>	<b>2.7</b>	<b>3.0</b>	<b>3.4</b>	<b>3.5</b>	<b>2.4</b>	<b>2.8</b>	<b>2.8</b>	<b>3.6</b>	<b>2.9</b>	<b>3.2</b>	<b>3.5</b>	<b>3.4</b>	<b>3.0</b>	<b>3.0</b>
<b>N</b>	<b>85</b>	<b>26</b>	<b>94</b>	<b>95</b>	<b>43</b>	<b>50</b>	<b>61</b>	<b>17</b>	<b>34</b>	<b>58</b>	<b>19</b>	<b>14</b>	<b>17</b>	<b>612</b>

Tables 13 and 14 show the results of the independent t-test for how public and private universities used survey results by students and employers to assure quality.

**Table 13.** Descriptive statistics of using survey results by students and employers to assure quality between public and private universities

Using survey results by students and employers for	Types of universities	N	Mean	Std. Deviation	Std. Error
discussion by faculty at the departmental level	Public	571	3.77	1.624	.068
	Private	195	4.06	1.406	.101
informing students who have responded to the surveys	Public	571	3.39	1.721	.072
	Private	195	3.25	1.487	.106
the design of academic programs	Public	571	3.83	1.718	.072
	Private	195	3.92	1.523	.109
the review of academic programs	Public	571	3.77	1.809	.076
	Private	195	3.94	1.596	.114
evaluation of faculty	Public	571	3.56	1.951	.082
	Private	195	3.64	1.777	.127
rewarding faculty and support staff	Public	571	3.14	1.714	.072
	Private	195	3.57	1.304	.093
continuing or ceasing contract with visiting faculty	Public	571	3.43	1.821	.076
	Private	195	3.73	1.465	.105
upgrading facilities for teaching and research	Public	571	3.43	1.771	.074
	Private	195	3.64	1.642	.118

**Table 14.** The differences between public and private universities in using survey results by students and employers

Using survey results by students and employers for	Levene's Test for Equality of Variances		t-test for Equality of Means							
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95 % Confidence Interval of the Difference		
								Lower	Upper	
discussion by faculty at the departmental level	Equal variances assumed	9.537	.002	-2.246	764	.025	-.293	.130	-.549	-.037
	Equal variances not assumed			-2.410	384.070	.016	-.293	.121	-.532	-.054
informing students who have responded to the surveys	Equal variances assumed	14.326	.000	1.021	764	.307	.141	.138	-.130	.412
	Equal variances not assumed			1.097	384.797	.273	.141	.129	-.112	.394
the design of academic programs	Equal variances assumed	12.062	.001	-.645	764	.519	-.089	.139	-.362	.183



Using survey results by faculty for	HEP A	HEP B	HEP C	HEP D	HEP E	HEP F	HEP G	HEP H	HEP I	HEP J	HEP K	HEP L	HEP M	Means
support staff														
continuing or ceasing contract with visiting faculty	2.7	3.5	3.0	3.1	3.4	2.4	3.0	2.7	3.4	2.5	3.3	3.4	3.9	<b>3.0</b>
upgrading facilities for teaching and research	2.9	3.5	3.1	3.5	3.5	2.4	3.0	2.8	3.6	2.6	3.3	3.4	3.8	3.1
Revising strategies/plans	3.0	3.8	3.3	3.5	3.6	2.3	3.0	2.7	3.5	2.7	3.3	3.4	3.8	3.2
<b>Total</b>	2.9	<b>3.5</b>	3.2	3.4	<b>3.5</b>	<b>2.5</b>	3.0	<b>2.8</b>	3.5	<b>2.8</b>	3.3	<b>3.5</b>	<b>3.7</b>	3.1
N	85	27	95	95	43	51	61	17	34	60	20	14	18	619

Tables 16 and 17 show the results of the independent t-test for how public and private universities used survey results by students and employers to assure quality.

**Table 16.** Descriptive statistics of using survey results by faculty and staff to assure quality between public and private universities

Using survey results by faculty for	Types of university	N	Mean	Std. Deviation	Std. Error Mean
the design of academic programs	Public	571	3.83	1.669	.070
	Private	195	3.92	1.616	.116
the review of academic programs	Public	571	3.71	1.792	.075
	Private	195	3.96	1.526	.109
evaluation of faculty and staff	Public	571	3.68	1.789	.075
	Private	195	4.09	1.440	.103
rewarding faculty and support staff	Public	571	3.48	1.600	.067
	Private	195	3.66	1.327	.095
continuing or ceasing contract with visiting faculty	Public	571	3.53	1.737	.073
	Private	195	3.77	1.397	.100
upgrading facilities for teaching and research	Public	571	3.59	1.711	.072
	Private	195	3.91	1.417	.101
Revising strategies/plans	Public	571	3.70	1.706	.071
	Private	195	3.95	1.439	.103

**Table 17.** The differences between public and private universities in using survey results by faculty and staff

		Levene's Test for Equality of Variances									
		t-test for Equality of Means									
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
								Lower		Upper	
the design of academic programs	Equal variances assumed	18.766	.000	-1.754	764	.080	-.251	.143	-0.533 .030		
	Equal variances not assumed			-1.897	390.301	.059	-.251	.133	-0.512 .009		
the review of academic programs	Equal variances assumed	26.415	.000	-2.927	764	.004	-.415	.142	-0.693 -.137		



facilities for teaching and research, and continuing or ceasing contracts with visiting faculty. However, there was a more significant difference in using the results of faculty surveys among the HEPs. It was found that there are significant differences in collecting three kinds of data (student characteristics, faculty/student ratio, and student success) in MIS between public and private universities. Private HEPs are better at using the surveyed results by students and employers for discussion by faculty at the departmental level, rewarding faculty and support staff, and continuing or ceasing contracts with visiting faculty; and using surveys by faculty and staff for reviewing academic programs and continuing or ceasing contracts with visiting faculty. The synthesis of the quantitative analysis on MIS shows that large-size HEPs had good information management systems, with more data and use of these data than small-size HEPs.

The findings concur with earlier research on using information generated from quality assurance for decision-making in that some key information is available but not necessarily used for decision-making (Martin, Parikh, 2017). In their selective review of the utilization of decision-making support systems for making decisions in HEPs, Mora et al. (2017) found that these systems have been present. Still, their utilization for quality improvement is insufficient and partially deployed. This suggests that there exists a relevant knowledge gap in the generation and utilization of information for quality management and decision-making, and there are open opportunities to implement an effective MIS and further research on MIS for quality enhancement. In other words, HEPs leaders may need to engage stakeholders, mainly faculty and other staff, in extracting actionable information for the data in their MIS so that they gain insights into the relationships between the inputs and outputs of educational activities across their institution, which help to inform their decision making for improved outcomes they collectively target and to achieve their mission successfully (Soares et al., 2016). Although there are no difference in using surveyed results between public and private universities for almost all QA activities, private HEPs are better at using the surveyed results from stakeholders such as students, faculty, and staff for rewarding faculty and support staff, continuing or ceasing contracts with faculty, and reviewing academic programs, as Nguyen (2012) found in her study through case analysis of private universities. Collecting feedback from stakeholders may be part of private HEPs' scheme to stay competitive with public ones. The information collected may be used to improve educational quality in order to keep present students satisfied and attract prospective learners. Meanwhile, it is difficult to cease contracts with faculty in public HEPs, for example, because they are considered as public servants. The findings that large HEPs tend to have more sophisticated MIS and utilize generated information for decision-making suggest that HEPs are on their way to data-driven management. It is a must for HEPs to implement critical reflection on information generated from the use of data through administrative activities, quality assessment, and teaching because "the lack of adequate shared reflection (also and above all at the institutional level) on technology and its purpose creates a situation of fragmentation in data practices" (Raffaghelli et al., 2021). Thus, opening up to the data and engaging frontline academic and support professionals in conversation on MIS can encourage the development of a culture of evidence (Soares et al., 2016). To do this, the management of HEPs needs to provide adequate support so that information is generated by MIS and utilized to achieve targeted outcomes in quality management. Further research may examine moderating factors that affect the decision-makers' intention to use the information generated by HEPs' MIS.

The study has a few limitations. It used convenience sampling method, so the findings are true for this particular group of participating HEPs but cannot be generalised for the larger populations. Another limitation is that the data collected based on the participants' perception (opinions) or self-report, rather than objective data. For example, stakeholders at the same university may have different ideas about their MIS because their perception depends on their role, ability to access and use data, and their awareness of the use of MIS, for example. The study is limited in that students' voice was not included. The final limitation is that it lacks interviews with stakeholders.

#### **4. Conclusion**

The findings of this study can be useful for assisting HEP decision-makers in improving their MIS as regards the generation and utilization of information to improve their quality management and educational quality. The results concur with previous studies in that HEPs may have established their key information but partially utilized it for decision-making. This study figured out such issues in using MIS for quality management that would shed light on HEP top

management's framing of relevant strategies for implementing and managing MIS in their institutions. To promote a culture of evidence whereby decision-making is data-driven, it is necessary to orient internal stakeholders, such as academic and administrative staff, to use the information generated through MIS for quality improvement and open up dialogues between top management and these stakeholders for the deployment of the information collected. Thus, sufficient support and guidance should be systematically provided so that these stakeholders can use the information for quality enhancement. Further studies may examine contextual factors influencing decision-makers use of information for quality management in HEPs. Then, a mixed method may need to be used, inclusive of student participants.

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## Appendix A

### Questionnaires on management information system and information use in decision-making

1. What information on teaching/learning is available from your management information system?
  - a. Student characteristics (e.g. socioeconomic background, gender, ethnicity)
  - b. Teacher–student ratios at the departmental level
  - c. Student progression, success and/or graduation rates
  - d. Inventory of learning resources (e.g., labs, computers)
  - e. Other (please specify)
2. Is this information used for QM purposes in your HEP?
  - a. Yes
  - b. No
  - c. I do not know.
3. How often are the results of surveys (including student satisfaction surveys, graduate surveys, and employer surveys) used for these activities?

No	The results of surveys were used	I do not know	Never	Not often	Sometimes	Often	Always
1	In discussion by faculty at the departmental level	<input type="checkbox"/>	①	②	③	④	⑤
2	Students who have responded are informed about the results	<input type="checkbox"/>	①	②	③	④	⑤
3	In the design of academic programs	<input type="checkbox"/>	①	②	③	④	⑤
4	In the review of academic programs	<input type="checkbox"/>	①	②	③	④	⑤
5	In the evaluation of faculty's teaching	<input type="checkbox"/>	①	②	③	④	⑤
6	In the pay rise/or awarding of teaching staff and support staff	<input type="checkbox"/>	①	②	③	④	⑤
7	In continuing or ceasing teaching contracts with visiting faculty	<input type="checkbox"/>	①	②	③	④	⑤
8	In upgrading facilities for teaching and research	<input type="checkbox"/>	①	②	③	④	⑤
9	Other (please specify)						

4. How often are the results of academic and support staff surveys used for these activities?

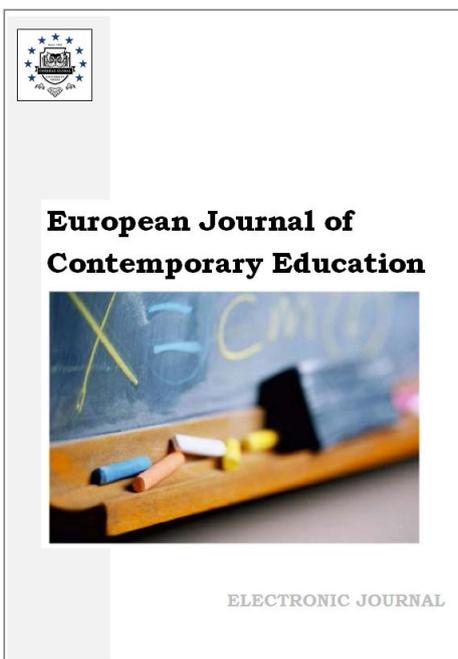
No.	The results of surveys were used	I do not know	Never	Not often	Sometimes	Often	Always
1	In the design of academic programs	<input type="checkbox"/>	①	②	③	④	⑤
2	In the review of academic programs	<input type="checkbox"/>	①	②	③	④	⑤
3	In the evaluation of faculty teaching	<input type="checkbox"/>	①	②	③	④	⑤
4	In the pay rise and/or awarding of teaching staff and support staff	<input type="checkbox"/>	①	②	③	④	⑤
5	In continuing or ceasing teaching contracts with visiting faculty	<input type="checkbox"/>	①	②	③	④	⑤
6	In upgrading facilities for teaching and research	<input type="checkbox"/>	①	②	③	④	⑤
7	In the adjustment of institutional quality objectives or institutional development plan	<input type="checkbox"/>	①	②	③	④	⑤
8	Other (please specify)						



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## Financial Literacy on College Students in the Context of Tuxtepec, Oax

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### Abstract

The objective of this study is to determine the variables that explain the knowledge of financial literacy among college students in Tuxtepec, Oaxaca, and to identify whether the level of financial literacy that prevails in these students differs by gender, age and school grade. To do so, the study is based on a theoretical reference recently exposed by Goyal and Kumar (2021), who analyzed 502 articles between the years 2000 to 2019, in their findings they found that the gender gap and financial education, impacts on financial behavior. The participants of the study were 600 college students of a public sector Institution. The statistical procedure for data analysis was: first, the instrument was validated with Cronbach's alpha and normality through the values of skewness and kurtosis, then the correlation matrix, Brattle's test of Sphericity with Kaiser and the sample adequacy measure were calculated, and the extraction of components under the criterion of eigenvalues > to 1 and total variance. Finally, to verify if there is a difference in relation to the variables of financial education, gender, age and employment status, an ANOVA analysis is performed. Finally, the findings show that there is a difference between the variables: Gender and financial literacy (Saving and Investment); Age (Spending and Credit); Employment Status (Income, Money Management, Spending and Credit, Saving and Investment). This leads us to think that the higher level student presents a low level of financial knowledge, which could affect their personal growth, and that the gap of gender, age and employment status makes a difference in relation to the variables studied.

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**Keywords:** financial literacy, savings and investment, financial literacy, financial knowledge.

### **1. Introduction**

Currently, the issue of financial literacy is becoming more important on a daily basis due to the international requirements issued by some organizations such as the G-20, which recognizes that financial inclusion is a key factor in the fight against poverty, which is why policies must be designed to help improve this aspect in all countries around the world. In this regard, the recent work of Dinc, Cetin, Bulut and Jahangir (2021), who conducted a study in the Islamic region, based on the steps recommended by DeVellis (2003), focused on the development of a scale of financial inclusion, which in addition to covering all segments of the Islamic financial sector, was also applicable to any country, even those who are not familiar with the financial practice.

Other findings were reported in the study conducted by Lusardi, Hasler and Yakoboski (2020) in the United States, in which they show that financial fragility is strongly linked to financial literacy and many Americans are ill-equipped to deal with the financial decisions necessary to weather a financial crisis such as that of Covid-19, being strongly associated with specific demographic groups, such as African Americans and those with low incomes.

In the same idea Swiecka, Yesildag, Özen and Grima (2020) conducted a study in Poland with the participation of high school students with an age range of 5 to 16 years, whose objective was to determine the level of financial literacy of students, as well as to verify whether the level of financial literacy is different gender and the effect of gender on financial literacy at an early age. Their study showed that there is a good level of financial literacy among high school students in Poland, although gender makes a difference in financial behavior and in the use of financial instruments, it does not influence the level of financial literacy of students.

Morgan and Long (2020) examine the effects of financial education on financial inclusion and savings behavior in Laos, the most sparsely populated country in Southeast Asia. In their reported results, they note that financial education has statistically positive effects on both financial inclusion and savings, and people with higher levels of financial education are more likely to have savings in both formal and informal forms than those with lower levels of financial education, even when controlling for income and education.

Niu, Zhou and Gan (2020) conducted a study in China on the level of financial education and its impact on retirement readiness, showing that even though China is the second largest economy in the world, a large proportion of Chinese lack financial education, even basic financial knowledge. In addition, they report findings that women, the elderly and the poorly educated lack financial literacy; those with advanced financial literacy tend to prepare for retirement by purchasing long-term financial plans and increase the likelihood of purchasing private pension insurance.

On the issue of socio-demographic profile, Sahul and Jia (2020), conducted a study in Malaysia where they show that socioeconomic factors related to education, income, ethnicity, marital status and the number of credit cards that people have, influence the decisions of payment of credit cards. Other works that have been identified in the existing literature on financial education, is a systematic and bibliometric study conducted by Goyal and Kumar (2021), in their work they perform an analysis of 502 articles published in journals between the years 2000 to 2019, with the aim of adopting a meticulous approach aimed at presenting quantitative and qualitative knowledge on the topic financial education, from three perspective: 1) levels of financial education among different cohorts, 2) the influence that financial education experts on financial planning and behavior, 3) the impact of financial education. In their findings they found that the gender gap, tax and insurance literacy and digital financial literacy impact financial planning and behavior.

Based on the arguments previously exposed about Financial Education, we can see that it is evidently a phenomenon that is in the academic, scientific and political discourse. Therefore, the following questions arise:

#### **Question Research**

What are the variables that explain the knowledge of financial education among college students in Tuxtepec, Oaxaca? In addition, it is pertinent to ask: Does the level of financial education that college students have differs by gender, age and school grade? Therefore, the following objectives are set: To determine which variables explain the financial literacy

knowledge of college students in Tuxtepec, Oaxaca. In addition, to identify whether the level of financial literacy among college students differs by gender, age and grade level.

### **Hyphotesis**

H1. Financial literacy in college students is explained by at least one factor.

H2. Prevalent financial literacy among college school students differs by gender, age, and grade level.

### **2. Literature review**

Currently, the topic of financial education is gaining strength in the international context, due to the interest of countries in increasing the level of bankarization of their population. Despite the efforts made by academics, international organizations and even local governments to improve financial education, the expected results have not been achieved. In this regard, they recently carry out a study Lusardi et al. (2020) where they showed that from 2017 to 2020, there was only a 3 % increase of people who correctly answered questions about financial education, they also report that, in the case of gender, this phenomenon is observed more in women, low-income people, unemployed or disabled, young people and those with less education, same results that are consistent with the study of Wagner (2019).

In the same idea, Sembiring and Leon (2021) contribute to the literature on this construct, as they analyze the relationships between demographic factors with pension planning and financial literacy in Indonesian population. In that study, they find that age, education level, marital status and income have a significant relationship with financial literacy and pension planning; and gender factor has no relationship with financial literacy. However, in the study of Kawamura, Mori, Motonishi and Ogawa (2021), they point out that people with higher financial literacy tend to be more daring and reckless with some financial aspects, unlike people who have lower financial literacy, they may be better at retirement planning.

But what happens with people who are illiterate, in this regard Xue, Gepp, O'Neill, Stern and Vanstone (2020) conducted a study called: Financial literacy and financial strategies: The mediating role of financial concerns, in their findings identify that people with financial illiteracy are more likely to have financial concerns, also reduce their expenses, increase their debts and in some cases may even sell their homes. Klapper and Lusardi (2019) conducted a study in which they found that not only in developing countries there are gaps in financial literacy, but also in countries with well-developed financial markets, and that, worldwide, only one in three adults has financial literacy; women, poor and less educated adults are the most lacking in financial literacy.

Other works have explored these behaviors in single people, hence the work of De Beckker, De Witte and Van Campenhout (2019), in their study made up of 12 countries ( Belgium, Canada, Croatia, Estonia, Hong Kong, Jordan, Latvia, Malaysia, Netherlands, New Zealand, Thailand and the United Kingdom), show that single people, with less education and unemployed with low income, are those who lack financial illiteracy, and on the contrary people with a high level of education who live with a partner, have a high percentage of financial literacy, financial behavior and financial attitudes, the countries that belong to this group are Belgium, Canada, Hong Kong and New Zealand.

Similar results were reported by Stolper and Walter (2017) who showed that financial literacy turns out to be considerably lower in transition economies and lower income economies compared to industrial economies; the elderly, the young, as well as less educated and lower income people, have particularly low literacy levels, making financial mistakes more frequently. On the other hand, Cucinelli, Trivellato, Zenga (2019) conduct a study in fourteen Italian regions in which they show that not only the socio-demographic and socio-economic conditions of individuals, but also certain characteristics of the regional context where they live have an impact on their financial literacy.

The study conducted by Karakurum, Kokkizil and Uysal (2018), find that women, young people and people who cannot read or write in the official language of their country of residence have less financial literacy, hence financial literacy increases with quality education. Another study by Ćumurović and Hyll (2018) reveals that there is a positive relationship between financial literacy and self-employment, as people with less financial literacy are more likely to work as wage earners than take steps towards self-employment.

Garg and Singh (2018) show that in most parts of the world the level of financial literacy among youth is low, moreover socio-economic and demographic factors such as age, gender, income, marital status and educational level influence the financial literacy of youth and there is an interrelationship between financial knowledge, financial attitude and financial behavior. Swiecka et al. (2020) show that young people aged 15-16 years have a very good level of financial literacy as in a survey conducted 45.3 % scored medium level and 43.8 % scored high level in financial literacy.

Eniola and Entebang (2017) conduct a study on the level of financial literacy of SME owners and managers in Nigeria, their finding confirms that financial literacy of SME owner-managers is not related to how well they perform their activities within SMEs, however, for financial decision making it does affect knowledge on financial literacy.

In the student population have been explored relatively frequently in the topics on financial literacy, on this we cite the work of Aydin and Akben (2019), who analyzed financial behavior in university students from 14 campuses in the region of Turkey. The findings they reported show that students with higher parental income have more financial literacy and with it more favorable financial attitudes; those who receive financial education and learn about finances through their parents have less concern for repayment of their student loans, similar results those reported by Fan and Chatterjee (2018).

In this idea, Zhu (2018), finds that family financial socialization is another important factor in financial attitudes, while direct financial teaching by parents has a positive impact on adolescents' financial behavior.

To this research can be added the studies conducted by Al-Bahrani, Buser and Patel (2020), whose analyze a sample of 529 college students at three institutions in the southeastern United States, in their findings they report that financial literacy is acquired through education and the culture that exists in the country of residence, not through acquired experience, as there is a gender gap that develops at an early age, i.e. before people have had the opportunity to develop financial skills through experience or specialization in domestic roles.

On the contrary, Douissa (2020), analyzes students from the University of Sharjah in the United Arab Emirates, in her results she shows that the factors used in the literature such as: gender, educational level, business studies, financial inclusion, family income, do not explain financial behavior or the dimensions of financial attitude, they only capture the knowledge dimension of financial literacy.

Ramos, García-Santillán and Molchanova (2020), measured the financial competence of 224 university students in Mexico and Colombia, finding that university students in Colombia have a higher level of financial education than Mexican students, in the topics of retirement planning, inflation, credit (use of credit cards), savings and investment, and risk diversification. García (2020) also analyzes high school students, and in his findings he reports that, according to the variables of savings and investment, students have a favorable attitude towards their personal finances and there is a significant relationship between financial knowledge and the application of financial products. This behavior is associated with the context in which the students have developed, i.e., from home they have fostered the customs of their parents towards the administration of family finances.

### **Design and method**

The study is a non-experimental quantitative, descriptive, exploratory and correlational cross-sectional study. The participants were 600 college students enrolled in two institutions of the Tecnológico Nacional de México, campus Tuxtepec and the campus of the Papaloapan basin, both belonging to the state of Oaxaca. The type of sampling is non-probabilistic by self-determination since it was considered to apply the sample for convenience to the groups, which were previously agreed with the campus authorities and the research group and also, with the support of some professors. The instrument is the Likert scale used in García-Santillán, Contreras-Rodríguez and Moreno-García (2017) which integrates topics associated with income, money management, savings and investment, as well as spending and credit, all in relation to knowledge, use and application.

The procedure for measuring the data matrix is as follows: first, the instrument is validated through Cronbach's alpha internal consistency index and the normality of the data through the values of skewness and kurtosis, to subsequently calculate the correlation matrix and the values of

Bartlett's test of Sphericity with Kaiser and the measure of sampling adequacy (MSA) and the extraction of components under the criterion of eigenvalues > 1 and the total variance. Finally, to verify if there is a difference between college students at the higher level in Tuxtepec, Oaxaca in relation to the variables of financial education, gender, age and employment status, an ANOVA analysis is carried out.

**3. Data analysis**

The validity of the test yielded a Cronbach's alpha value of .745 in the 42 items, so the internal consistency is acceptable. In relation to the conformation of the database, of the 600 college students whose participated (Table 1), 322 were male (51.8 %) and 289 were female (48.2 %), the age ranged from 17 to 29 years old and a significant percentage were working students (71.7 %).

**Table 1.** Descriptive variables profile

Gender	%	Age	%	Labor status	%
Male	51.8	17 to 20	60.00	Study	71.7
Female	48.2	21 to 24	39.00	Study and work	28.3
		25 to 29	1.00		

Source: Own.

**Normality test of the data**

In this section, the value of skewness and kurtosis for samples larger than 300 is presented, according to this information, the values of the study sample (600 college students), the value of skewness should be less than 2 and kurtosis should be less than 7. The values of skewness and kurtosis of the study variables are shown in Table 2, all of them show values less than 2 and 7 respectively.

**Table 2.** Theoretical values skewness and kurtosis, and values of the sample

Simple size	Z value	skewness	kurtosis	p value	Null hypothesis	Distribution
small n < 50	> 1.96	Ignore	Ignore	0.05	Reject	Non normally
medium 50 < n < 300	> 3.29	Ignore	Ignore	0.05	Reject	Non normally
large > 300	Ignore	> 2	> 7	0.05	Reject	Non normally
Skewness and kurtosis of the study sample						
		Income	Money management	Saving and investing	Spending and credit	Distribution
skewness		0.174	0.073	0.249	0.395	Normal
Standard error of skewness		0.100	0.100	0.100	0.100	Normal
kurtosis		-0.658	-0.603	-0.322	0.733	Normal
Standard error of kurtosis		0.199	0.199	0.199	0.199	Normal

Source: Hae-Young Kim (2013)

Subsequently, we report the tests that allow us to verify the adequate structure of the data to determine the set of variables that explain the knowledge of financial education of college students in Tuxtepec, Oaxaca. Table 3 shows the correlation between the variables, all are positive, tend to one and none is zero or one, so it does not constitute an identity matrix, so it is feasible to continue with the factor analysis. In addition, the chi-square test is significant and the KMO value is greater than 0.712. Also the values of the Sample Suitability Measure (MSA) are all greater than 0.500.

**Table 3.** Correlation matrix, KMO and MSA

Variable	Income	Money management	Saving and investment	Spending and credit	MSA
Income	1.000	.528	.458	.338	.692
Money management		1.000	.355	.344	.713
Saving and investment			1.000	.478	.714
Spending and credit				1.000	.735
Determinant = .408					
Measure Kaiser-Meyer-Olkin.712					
Chi-square (6 df)534.421					
p value.000					

Source: Own.

The principal components method was applied for the extraction of components and the eigenvalue criterion  $> 1$ . The results are shown in [Table 4](#). As can be seen, the analysis detects a factor that explains 56.32 % of the total variance and the contribution of each variable to the model.

**Table 4.** Component matrix, eigenvalue and variance

Variables	Component 1	Communalities
Income	.784	.614
Saving and investment	.767	.588
Money management	.742	.550
Spending and credit	.707	.501
eigenvalue	2.253	
% total variance	56.324	

Source: Own.

The results of the ANOVA analysis are shown below, which allowed verifying if there is a difference between the college students of Tuxtepec, Oaxaca in relation to the variables of financial education, gender, age and employment status. It should be noted that the values  $p$  values associated with each factor in relation to gender, as well as the values of the variables income, money management, spending and credit are less than 0.05, only the saving investment variable is greater than 0.05. This indicates that there is no difference in relation to gender with respect to the first three variables, however, in terms of savings and investment, there is a difference between men and women.

**Table 5.** ANOVA-financial knowledge and gender

Variables	F	$p$
Income	6.024	.014
Money management	12.656	.000
Spending and credit	13.780	.000
Saving and investment	3.495	.062

Source: Own.

To verify the difference between the college students in relation to the variables of financial knowledge and age. The results are shown in [Table 6](#), in which it is observed that the first three variables are significant and only the spending and credit variable is greater than 0.05, which denotes that there is no difference in relation to the college students' financial knowledge (income, financial management, savings and investment), in terms of age. However, financial knowledge does differ in terms of spending and credit.

**Table 6.** ANOVA-financial knowledge and age

Variables	F	Sig
Income	3.526	.000
Money management	2.566	.007
Saving and investment	3.664	.000
Spending and credit	1.246	.264

Source: Own.

Finally, to verify if there is a difference between the college student in relation to the variables of financial education and their employment status, the results are shown in [Table 7](#). As we can see, each variable that make up the financial education construct, all *p* values are greater than 0.05, which reveals that there is a difference between the financial knowledge of college students who work and those who do not.

**Table 7.** ANOVA-financial knowledge and labor status

Variables	F	<i>p</i>
Income	1.693	.194
Money management	.338	.561
Saving and investment	.832	.362
Spending and credit	.052	.820

Source: Own.

#### 4. Conclusion

In this work an ANOVA analysis was carried out to verify if there is a difference between college students in Tuxtepec, Oaxaca in relation to the variables of financial education, gender, age and employment status. The results show that there is a difference between the variables: Gender and financial knowledge (Saving and Investment); Age (Spending and Credit); Work Status (Income, Money Management, Spending and Credit, Saving and Investment).

Therefore, it is concluded that college students in Tuxtepec, Oaxaca have low level of financial literacy which may affect their economic growth as they lack the ability to take financial risks and even make decisions regarding the acquisition of wealth. As pointed out by Xue, Gepp, O'Neill, Stern and Vanstone (2020), in their findings they identify that people with financial illiteracy are more likely to have financial worries, reduce their expenses, increase their debts and in some cases may even sell their homes.

The results of this study are in agreement with the findings reported by Garg and Singh (2018), whose found that the level of financial literacy among youth college is low, moreover, socio-economic and demographic factors such as age, gender, income, marital status and educational level influence the financial literacy of youth and there is an interrelationship between financial literacy.

These results are consistent with the study by Ramos, García-Santillán and Molchanova (2020), whose reported that college students in Colombia have a higher level of financial education than Mexican students in the areas of retirement planning, inflation, credit (use of credit cards), savings and investment, and risk diversification. However, in relation to gender, in this study there was no evidence of any difference between the variables: income, money management, spending and credit, but not in the variable savings and investment. This is evidence that there is no difference in relation to gender with respect to the first three variables, however, in what refers to saving and investment there is a difference between men and women. Regarding this result, it is concordant with that reported by Lusardi et al (2020), Jamie (2019), Klapper and Lusardi (2019), who showed that the lack of financial knowledge occurs more in women.

In relation to the variables on financial knowledge and age, the results show that the first three variables are significant (income, money management, savings and investment) that is, there is no difference between them, only the variable expending and credit is different in terms of age. And in relation to employment status in all the variables analyzed there is a difference between those who work and those who do not work. Relevant to this result is the study carried out by

Semiring and Leon (2021), who showed that age, level of education, marital status and income have a significant relationship with financial education and pension planning.

The results of this research are not in line with those reported by Douissa (2020), as it shows that the factors used in the literature such as: gender, educational level, business studies, financial inclusion, family income, do not explain financial behavior or the dimensions of financial attitude, they only capture the knowledge dimension of financial literacy. Similarly, these results do not coincide with what García (2020) reported, since in his study of high school students he finds that, according to the savings and investment variables, students have a favorable attitude towards their personal finances and there is a relationship difference between financial knowledge and application. of financial products. They also differ from the results found by Swiecka et al. (2020) who show that young students between 15 and 16 years of age have a very good level of financial education since in a survey conducted 45.3 % obtained a medium level score and 43.8 % achieved a high level score in financial literacy.

### 5. Future research

Based on the results presented, which were compared with the studies that were the basis for this work, the following is now presented: It is necessary to continue fighting for higher education institutions to include subjects related to the topic of Financial Inclusion in their curricula. In this variable, financial education is already immersed in the different topics associated with financial products and services offered in local financial systems and throughout the world. Financial knowledge could help to increase the use of and access to these services and thus increase Financial Inclusion.

It is important that Financial Institutions and Educational Institutions explore options to establish collaboration agreements and jointly design new strategies for the contents of educational programs, based on the offer of financial services and products, all this, in order to improve financial knowledge among the student population.

It would be interesting to continue evaluating the perception of elementary and high school students in the different municipalities of the state of Oaxaca, in order to know the gaps that exist in relation to financial issues and in turn propose adjustments to the school curriculum from this level, so that when they reach higher education they have solid knowledge on financial issues.

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## Academic Motivation of First-Year Pedagogical Students in Vietnam: Case Study

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### Abstract

This research was conducted to examine the academic motivation of 892 first-year pedagogical students at Hanoi National University of Education in Vietnam. This research mainly follows the approach of self-determination theory. The research instrument is the Academic Motivation Scale including 27 items: 12 items reflecting intrinsic academic motivation (IAM), 11 items reflecting extrinsic academic motivation (EAM) and 4 items reflecting amotivation. The results show that first-year students have a higher EAM than IAM. Among the total sample group, about 4.7 % of students are amotivated. Three aspects of IAM, including IAM-to know, IAM-toward accomplishment and IAM-to experience are positively correlated with each other; and three regulations of EAM such as identified regulation, introjected regulation, and external regulation are also positively correlated with each other. Female students have higher EAM than male students, particularly in EAM-introjected regulation and EAM-external regulation. IAM-toward accomplishment is many students' weakest motivation for different socio-demographic characteristics (female, academic majors, academic levels, family economic situations, authoritative parenting style, authoritarian parenting style, uninvolved parenting style). These findings offer several new hypotheses and research questions concerning the academic motivation continuum of the first-year pedagogical students, related variables to their academic motivation continuum, and measures to develop, maintain and enhance the academic motivation for pedagogical students. Limitations of this study and possible future research directions on pedagogical students' academic motivation are also mentioned in the discussion and conclusion.

**Keywords:** pedagogical students, academic motivation, freshman, intrinsic academic motivation, extrinsic academic motivation, amotivation.

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### 1. Introduction

Motivation is a hypothetical construct used to describe the internal and/or extrinsic forces that induce the initiation, direction, intensity, and persistence of a behavior (Vallerand et al., 1993). Academic motivation is the driving force that promotes, directs, empowers, and maintains learning activities for the purpose of meeting the needs and stimulating the learning interests of learners. (Deci, Ryan, 2002; Phan, 2005; Duong, 2013; Nguyen, 2015a; Bui, 2017; Pham, 2018). EAM is the performance of a learning action in order to achieve a result that is associated with the learning action itself, or to avoid something (Deci, Ryan, 2000b). IAM is the contentment and satisfaction that comes from within when participating in learning activities with a high degree of autonomy, in order to promote and develop the process of learning to understand, learning toward accomplishment and learning to experience stimulation (Deci, 1975; Bates, 1979; Gottfried, 1983; Deci et al., 1991; Vallerand et al., 1992; Cordor, 1999; Deci, Ryan, 2000b; Woolfolk, 2008). Amotivation is a consequence of depreciating and undervaluing the relevance of the learning task (Ryan, 1995), underrating one's ability to carry out and perform the work (Bandura, 1986) or disbelieving one's expectation that the effort would result in the desired outcome (Seligman, 1975).

At present, academic motivation is generally considered on a broad continuum (Deci, Ryan, 2000b). According to the theoretical model of self-determination, the individual's motivations are sorted according to the degree of autonomy in behavior, and extrinsic motivation is not opposed to intrinsic motivation (Deci, Ryan, 1985; Deci, Ryan, 1991; Vallerand et al., 1992). An individual's motivation is classified into three groups: amotivation, extrinsic motivation (with four types of regulations: external regulation, introjected regulation, identified regulation, integrated regulation), and intrinsic motivation. Six types of motivation are distributed over a continuum and are ordered by the increasing degree of autonomy as follows: amotivation, extrinsic motivation-external regulation, extrinsic motivation-introjected regulation, extrinsic motivation-identified regulation, extrinsic motivation-integrated regulation, and intrinsic motivation (Deci, Ryan, 1985; Deci, Ryan, 1991).

On the spectrum of academic motivation (Figure 1), EAM-external regulation is understood as a motivation of external pressure, which is regulated by compliance and conformity and the individual learns to receive positive reinforcement and avoid punishment and threats. EAM-introjected regulation is an extrinsic motivation driven by self-control, ego-involvement, and responding to internal pressure. EAM-identified regulation is a somewhat intrinsic and usefulness-driven motivation; which means that students realize the importance of learning for themselves, and are aware of the value of activities. EAM-integrated regulation is an intrinsic motivation, in which, students participate in learning activities because it corresponds to their own deeply held values.

Motivation	Amotivation	Extrinsic Motivation				Intrinsic Motivation
Regulatory styles	Non-regulation	External regulation	Introjected regulation	Identified regulation	Integrated regulation	Intrinsic regulation
Source of the motivation	Impersonal	External	Somewhat external	Somewhat internal	Internal	Internal
Regulatory processes	Non-intentional, nonvaluing, incompetence, lack of control	Compliance, external rewards and punishments	Self-control, ego-involvement, internal rewards and punishments	Personal importance, conscious valuing	Congruence, awareness, synthesis with self	Interest, enjoyment, isatisfaction

Nonself-determined Self-determined

Fig. 1. A Self-Determination Theory Framework-adapted (Ryan, Deci, 2000)

Intrinsic motivation implies that the student is self-motivated and self-determined, and that the individual is driven by interest, delight, and satisfaction inherent in the involved behavior or

activity. It is categorized as three types: intrinsic motivation-to know, intrinsic motivation-toward accomplishment and intrinsic motivation-to experience stimulation. Students' intrinsic motivation-to know expresses itself in the way that they are joyful and fulfilled when they learn new and favorite topics; they are excited to discover new things and to understand knowledge from beloved subjects. Students' IAM-toward accomplishment manifests as a desire to outperform themselves in order to conquer topics, achieve learning goals, or do something, and for gratification when in the process of tackling tough tasks. IAM-to experience stimulation in students implies learning for sensory pleasure, excitement, or delight. In other words, individuals study because they love exchanging ideas/perspectives with others, reading about a preferred topic, reading a good paper or book, and being immersed in new knowledge.

The study of students' academic motivation has drawn a lot of interest. The research is varied, using a variety of approaches and methodologies. (Deci et al., 1981; Wigfield, 1994; Murphy, Alexander, 2000; Nguyen, 2015a; Vietnam Psycho-Pedagogical Association, 2015; Chia et al., 2016; Liu et al., 2016; Chemsu et al., 2020). There are studies that focus on understanding specific approaches in the research of university students (Wigfield, 1994; Deci, Ryan, 2000b; Murphy, Alexander, 2000; Niemiec, Ryan, 2009; Wigfield, Cambria, 2010; Duong, 2013; Ngo, Le, 2015; Nguyen, 2015; Liu et al., 2016; Pham, 2018). There are studies that have been conducted to determine the overall state of students' academic motivation, with a focus on identifying the manifestations of various academic motivation types, classifying academic motivations, and identifying the distinctive traits of each academic motivation type (Le, 2009; Truong et al., 2012; Olagbami, 2013; Nguyen, Du, 2014; Duong, 2015; Dang, 2015; Tran, 2015; Huynh, Nguyen, 2015; Bui, 2015). Research on academic motivation during the online learning process is included in studies on the state of students' academic motivation (Chemsu et al., 2020).

There are studies that look deeply into the factors related to and affecting academic motivation in general as well as each students' particular type of motivation (Tariq, 2011; Hazrati-Viari et al., 2012; Cigan, 2014; Massari, 2014; Luu, 2015; Ferguson, 2017; Litalien et al., 2017; Raza, Shah, 2017; Wang et al., 2017). There are studies on trials and recommendations for development strategies to promote students' academic motivation (Elliott et al., 2005; Amoura et al., 2015; Tran, 2015; Nguyen, 2015b; Dang, 2015; Nguyen, 2017; Fatima et al., 2018; Stolk et al., 2018).

Several studies have been conducted on students' academic motivation in various majors; these studies explore the current situation, take into account and examine the variables that have an influence on students' academic motivation in the unique training setting of each major (computer science, communication science, police training, teacher training, political training, tourism training, military training, law enforcement training (Herman, 2012; Nguyen, 2015b; Nguyen, 2015c; Luu, 2015; Manh, 2015; Nguyen et al., 2015; Tran, 2015a; Huynh, Nguyen, 2015; Ferguson, 2017; Zhang et al., 2017). In addition, there are a number of studies on the influence of students' academic motivation and learning attitudes on their own learning results (Elliott et al., 2005; Taylor et al., 2014; Luu, 2015; Nguyen et al., 2015; Bui, 2017; Zhang et al., 2017).

A few in-depth researches on the status of learning motivation in pedagogical students, the elements that shape and develop it, and the significance of learning motivation for pedagogical students of various majors have been conducted both internationally and in Vietnam (Massari, 2014; Rafailă, 2014; Bezverkhnya, Mayevsky, 2015; Nguyen, Pham, 2015; Ivanova et al., 2017; Yarmakeev et al., 2021; Yatsenko et al., 2021). Furthermore, studies on the learning motivation of graduate/level master's pedagogical students are also available (Massari, 2014).

The quality of general education depends on many different objective and subjective factors, in which the pedagogical capacity of teachers in education and teaching for students is a fundamental factor; teachers' pedagogical capacity is formed and developed mainly at the stage when they are trained in a pedagogical environment. However, in reality today, there are also many pedagogical students who, while enrolled in school, do not have specific learning objectives and are not particularly interested in pedagogy. In addition, there are many students who do love pedagogy, take initiative, put forth effort to study independently, are interested in learning, and develop themselves to become future teachers. Because of objective requirements, some students actively study, but in reality, they are still passive, lack self-control, aren't particularly creative or enthusiastic, and lack self-discipline in learning, and self-training activities (Massari, 2014; Rafailă, 2014; Bezverkhnya, Mayevsky, 2015; Nguyen, Pham, 2015; Ivanova et al., 2017; Yarmakeev et al., 2021; Yatsenko et al., 2021). Specifically, 67.8 % of first-year pedagogical students at Hue

University of Education are not interested in studying in class, skip lessons, and skip classes (Phi, 2012). First-year students at Can Tho University have lower self-study ability than university requirements, especially when it comes to the actual academic credit policy of the university (Truong et al., 2012). In addition, a study on students at 08 universities in Hanoi showed that 16.39 % of students procrastinate studying "regularly" and 11.82 % of students in that study "always" procrastinate.

Vietnam is promoting a reform of general education (K–12), giving high priority to a number of objectives, including the promotion of vocational education for high school students (K–12), a field that has not seen significant development or efficient instruction in a long time (Ministry of Education and Training, 2018a). Vietnam's educational innovation now depends directly on the quality of teacher training in pedagogical schools; because they are the future teachers who are responsible for educating students in general and orienting their careers for students in particular (Vietnam Psycho-Pedagogical Association, 2015; Ministry of Education and Training, 2018). Therefore, there is a need for understanding the reality of the diverse learning motivational spectrum of pedagogical students who are future teachers to have evidence of strengths and weaknesses, along with the specific socio-demographic characteristics of students. Pedagogical students, on that basis, need to develop training and intervention plans and programs to improve self-learning motivation (intrinsic motivation, learning interest), and to form active learning habits, which is a really urgent study. This research will contribute to promoting the quality of pedagogical teacher training and the quality of general education in Vietnam in general.

The study aims to determine how pedagogical freshmen show academic motivation based on the academic motivation continuum, and which type of academic motivation is most clearly and strongly articulated. Simultaneously, it intends to investigate the link between academic motivations on the academic motivation continuum, as well as the differences in the expression of academic motivation based on various demographic characteristics. On the analysis and discussion of the actual findings, further research directions and a number of ways to generate autonomous and intrinsic academic motivation for pedagogical freshmen shall be proposed.

In this study, we hypothesize that: (1) the majority of pedagogical freshmen have lower IAM than EAM; (2) different aspects of IAM are associated with each other, as are aspects of EAM; (3) there are differences in the aspects of IAM as well as EAM by gender, academic major, academic level, family economic status, and parental style; and (4) there is a certain percentage of academically amotivated students who require timely attention, intervention/support.

## **2. Materials and methods**

### **Research Design**

The study is a cross-sectional research design where an online questionnaire was used with particular attention towards examining the first-year students' academic motivation. The University gave the approval for collecting data and conducting the study. All the subjects took part in this quantitative study voluntarily. Due to COVID-19 and social distancing, students answered the questionnaire via Google form in the order of demographics (age, gender, major, class, phone number, high school academic ranking, family economic status, parenting styles), and academic motivation scale.

### **Research sample**

The study was conducted on a total of 892 pedagogical freshmen. The students are from a public National University of Education located in Hanoi, which is the largest teacher training university in Vietnam. All participants are recruited through a convenient sampling method.

There were no exclusions for any reason. In accordance with the APA's ethical guidelines, all respondents were voluntary and informed consent was obtained.

The specific characteristic of the pedagogical students is that the number of females is greater than males, and pedagogical students are recruited from all over the country. In the sample, the number of students in the natural science major is fairly large, with 533 freshmen (415 females, 116 males, and 02 others). This major usually has a larger proportion of men compared to social science. Social science has 359 first-year students (340 females, 19 males). In this convenient sample group, Students majoring in social science study the following branches: educational psychology, special education, early childhood, history, literature, Vietnamese studies, French pedagogy, music, primary school, and civic education, while students majoring in natural science

study chemistry, physics, math, information technology, and biology. For comparative statistical analysis, the group of parenting styles below 35 samples shall be excluded.

**Table 1.** The research samples (n = 892)

Characteristics		N	%
Gender	Male	135	15.1
	Female	755	84.6
	Other	02	0.2
Age	1995 (27 years old)	02	0.2
	1998 (24 years old)	02	0.2
	1999 (23 years old)	02	0.2
	2000 (22 years old)	05	0.6
	2001 (21 years old)	14	1.6
	2002 (20 years old)	46	5.2
	2003 (19 years old)	821	92
Academic level	High distinction	563	63.1
	Distinction, Credit & Pass	329	36.9
Academic major	Natural science	533	59.8
	Social science	359	40.2
Family economic status	High and upper middle income	279	31.3
	Middle income	551	61.8
	Lower middle and low income	62	7.0
Parenting style	Authoritative	770	86.3
	Authoritarian	60	6.7
	Permissive	35	3.9
	Uninvolved	27	3.0

### Research tools

The questionnaire was inherited from research on the Vietnamese version of the Academic Motivation Scale (Nguyen, Nguyen, 2019). They developed the scale based on the Academic Motivation Scale by Vallerand et al (1992) following self-determination theory (Vallerand et al., 1992). There are a total of 28 items, of which 12 items are under IAM, 12 items are under EAM, and 4 items are under academic amotivation. The researchers tested 341 university students and showed highly reliable subscales, with Cronbach's alpha ranging from 0.80 to 0.87 (Nguyen, Nguyen, 2019).

The questionnaire we used was tested to determine the comprehension of the items by a group of 45 university students. We reconciled the problematic items according to a large number of students. Regarding reliability, the first item "Because with only a high-school degree I would not find a high-paying job later on" was removed due to the low level of item-total correlation ( $\alpha = 0.291 < 0.3$ ). We deliberately decided to do so because removing this item improves the scale's internal consistency. It was explained that this item was built in the negative orientation while the remainder of the subscale had a positive structure (Nguyen, Nguyen, 2019). Furthermore, Nguyen & Nguyen suggested that students could evaluate this item based on Vietnamese social conception with the overemphasis on having a good job with a university degree rather than on their personal status. As a result, 27 items were accepted for the official survey. The questionnaire employed a 7-point Likert scale (from point 1 = does not correspond at all to point 7 = corresponds at all).

The data from our official survey demonstrated that an item was removed because it did not meet the criteria of reliability (Item-total correlation of  $< 0.3$ ); the remaining items on academic motivation are shown in Table 2. The guaranteed reliability of the Academic Motivation Scale was indicated. The remaining 12 items reflect IAM. Eleven items reflect EAM and 4 items reflect amotivation.

**Table 2.** Reliability of the scales (n = 892)

Academic Motivation scales	Items	Cronbach's alpha
Intrinsic Academic motivation	12	0.921
IAM-to know	04	0.814
IAM-toward accomplishment	04	0.812
IAM-to experience stimulation	04	0.806
Extrinsic Academic motivation	11	0.869
EAM-identified regulation	04	0.772
EAM-introjected regulation	04	0.798
EAM-external regulation	03	0.749
Amotivation	04	0.836

In addition to the official questionnaire on academic motivation, there are 07 other items asking about: gender, high school performance, academic major, age, parenting styles, family economic status and phone number. Overall, this is an anonymous questionnaire; therefore, students are not affected by the requirement to disclose their identities.

#### Statistical Analysis

The research data was compiled by utilizing the Statistical Package for Social Sciences. In this study, Cronbach's Alpha was employed to examine the validity (convergence and discrimination) and reliability of the scales. Statistical parameters such as mean and standard deviation were calculated to describe the current status of students' different academic motivations. The Pearson correlation was calculated to analyze the relationship between different aspects of intrinsic motivation and the correlation among extrinsic motivation's various regulations. T-test and One-way ANOVA were also applied to compare the intrinsic and extrinsic academic motivation as well as amotivation regarding demographic characteristics.

### 3. Results

#### Intrinsic academic motivation of pedagogical freshmen

The intrinsic academic motivation of the first-year pedagogical students is presented in [Table 3](#).

**Table 3.** General descriptive analysis of intrinsic academic motivation

	M	SD
Intrinsic academic motivation	5.37	1
IAM-to know	5.75	1.01
IAM-toward accomplishment	5.15	1.19
IAM-to experience stimulation	5.20	1.09

Note: N = 892, Min = 1 (does not correspond at all), Max = 7 (corresponds at all)

The IAM and three IAM aspects have average scores ranging from 5.15 to 5.75, all of which are in the range of corresponding a lot to the reasons why students go to college and further. The self-reported IAM of the pedagogical freshmen is average in general and in each specific aspect. Considering the three aspects of intrinsic motivation, first-year students mostly tend to learn to know (M = 5.75), followed by learning to experience stimulation, and learning toward accomplishment is the lowest motivation. This proves that freshmen mainly participate in learning activities with a mindset of exploring new things. In other words, they enjoy discovering their favorite topics and expanding their knowledge of interesting things. They also study because they have positive feelings about learning, find the materials and lesson content attractive, have positive emotions when sharing ideas with teachers, friends, and everyone else, and have fun when participating in academic projects. Lastly, the motivation of trying to excel and achieve a new standard, especially learning to achieve high goals and surpass themselves in class, is not as strong

as students' motivation to learn new things. They do not really learn to get results, achieve their goals, or see changes in their own learning progress.

IAM is analyzed according to 3 aspects: learning to know, learning toward accomplishment, and learning to experience stimulation. Each specific expression of university students is also evaluated and presented in [Table 4](#).

In the aspect of IAM-to know, the average score of each item is from 5.64 to 5.86, all of which are in the range of corresponding a lot or higher; in which students show the highest expression is going to university because of joy and satisfaction when learning new things (M = 5.86), followed by going to school because of excitement when discovering new things and learning the things they are passionate about.

In terms of IAM-toward accomplishment, the average score of each item is from 4.79 to 5.49, ranging from corresponding moderately to corresponding a lot; in which the item with the highest expression is going to school because freshmen feel happy when they surpass themselves to achieve their learning goals (M = 5.49), followed by going to school because of pleasure when they excel to conquer subjects. The lowest expression is schooling due to satisfaction when achieving difficult goals in learning (M = 4.79).

The average score for each item in the category of IAM-to experience stimulation ranges from 4.93 to 5.54, with a range of corresponding moderately to corresponding a lot ([Figure 1](#)). The lowest expression is attending school because they enjoy the sensation of being drawn to knowledge (M = 4.93), and the highest expression is because they are excited to learn their favorite subjects and read about their best-loved topics (M = 5.54) as well as to share and discuss their fresh insights and viewpoints with others (M = 5.25).

Thus, the overall findings indicate that students who are intrinsically motivated to learn, go to school primarily because they enjoy learning new things, are thrilled to discover new things, are learning about topics they are interested in, and because they are happy when they surpass their own expectations to complete their studies and master all subjects. Few students attend school for the satisfaction of achieving challenging academic goals, for the love of learning, for the contentment of achieving challenging academic goals, or for the pleasure of excelling in their academic subjects.

**Table 4.** Expression of pedagogical freshmen's intrinsic academic motivation

Intrinsic academic motivation	M	SD
Intrinsic academic motivation-to know	5.75	1.01
2. Because I experience pleasure and satisfaction while learning new things.	5.86	1.19
9. For the pleasure I experience when I discover new things never seen before.	5.73	1.22
16. For the pleasure that I experience in broadening my knowledge about subjects which appeal to me.	5.64	1.31
23. Because my studies allow me to continue to learn about many things that interest me.	5.75	1.31
Intrinsic academic motivation-toward accomplishment	5.15	1.19
6. For the pleasure I experience while surpassing myself in my studies.	5.26	1.42
13. For the pleasure that I experience while I am surpassing myself in one of my personal accomplishments.	5.49	1.38
20. For the satisfaction I feel when I am in the process of accomplishing difficult academic activities.	4.79	1.53
27. Because college allows me to experience a personal satisfaction in my quest for excellence in my studies.	5.05	1.59
Intrinsic academic motivation-to experience stimulation	5.2	1.09
4. For the intense feelings I experience when I am communicating my own ideas to others.	5.25	1.36
11. For the pleasure that I experience when I read interesting authors.	5.09	1.4
18. For the pleasure that I experience when I feel completely absorbed by what certain authors have written.	4.93	1.42

25. For the "high" feeling that I experience while reading about various interesting subjects. 5.54 1.3

N = 892, Min = 1 (does not correspond at all), Max = 7 (corresponds at all)

The Pearson correlation coefficient analysis demonstrates positive relationships among three aspects of IAM.

**Table 5.** Correlation between aspects of intrinsic academic motivation

	(1)	(2)	(3)
(1) Intrinsic academic motivation-to know	-		
(2) Intrinsic academic motivation-toward accomplishment	0,73**	-	
(3) Intrinsic academic motivation-to experience stimulation	0,8**	0,76**	-

Note: \*\*:  $p < 0,001$

Specifically, learning to know and learning to experience stimulation are most positively correlated ( $r = 0.8$ ;  $p < 0.001$ ). Learning toward accomplishment and learning to experience stimulation also had a significant linear relationship. The two components of studying to know new topics and learning to experience stimulation are also positively correlated. Therefore, the more a freshman learns to understand more new things, the more she/he wants to find joy and positive emotions while participating in interesting learning projects, and the more she/he wants to learn to surpass himself and achieve in her/his studies.

Extrinsic academic motivation of pedagogical freshmen

Table 4 presents the extrinsic academic motivation and three types of regulations on the first-year pedagogical students.

**Table 6.** General descriptive analysis of extrinsic academic motivation

	M	SD
Extrinsic academic motivation	5.76	0.88
Extrinsic academic motivation-identified regulation	6.0	0.9
Extrinsic academic motivation-introjected regulation	5.31	1.24
Extrinsic academic motivation-external regulation	5.98	1.03

Note: N = 892, Min = 1 (does not correspond at all), Max = 7 (corresponds at all)

The average score of freshmen's EAM is from 5.31 to 6.0, all of which are in the range of corresponding a lot and above. The identified regulation is currently their strongest motivation ( $M = 6.0$ ;  $SD = 0.9$ ). It indicates that first year students have certain learning orientations and understand that studying will improve their ability and give them the opportunity to find favorite jobs and enter their appropriate career paths. This is also an advantage that makes it easier and more convenient for students to transform their extrinsic motivation into intrinsic motivation. Although there is a need for further education to develop this type of motivation, if too much emphasis is placed on this regulation, students will probably experience high self-pressure. Students' external regulation is also quite a strong motivation for pedagogical freshmen. In other words, many freshmen learn because they absolutely want to have well-thought-of jobs with excellent salaries and generally good lives. Among three types of regulations, extrinsic motivation (introjected regulation) is the weakest motivation. That means there are a number of freshmen who are not just wanting to assert their own learning ability, academic success, or intelligence, or to be important people to themselves.

Specific manifestations of 3 aspects of external learning motivation are summarized in Table 7.

In the identified regulation, the average score ranges from 5.76 to 6.19, equating to corresponding a lot and more. The majority of students who have this type of motivation go to

school because they feel it will help them prepare for their chosen career (M = 6.19), followed by their belief that it will improve their working competence (M = 5.98).

In the introjected regulation, the average score is from 4.84 to 5.54, ranging from corresponding moderately to corresponding a lot. Most freshmen attend school to demonstrate their ability to succeed in their studies (M = 5.54) and to feel valued when they study well (M = 5.47). Their weakest expression of attending the university is to prove that they can complete their college degree (M = 4.84)

In the external regulation, the average score is between 5.76 and 6.29, within the range of corresponding a lot and above. The majority of students go to school because they want to have a secure existence in the future (M = 6.29), solid pay at a later date (M = 5.89) and to have a prestigious job (M = 5.76).

Overall, students with EAM attend college primarily to ensure a stable future life, be well equipped for their chosen job, earn a decent wage, and improve their working productivity and have a valued job. Not many students go to college because doing well in studies makes them feel worthwhile or proves their ability to do so.

**Table 7.** Expression of pedagogical freshmen’s extrinsic academic motivation

Extrinsic academic motivation	M	SD
Extrinsic academic motivation-identified regulation		
3. Because I think that a college education will help me better prepare for the career I have chosen.	6.19	1.02
10. Because eventually it will enable me to enter the job market in a field that I like.	5.76	1.36
17. Because this will help me make a better choice regarding my career orientation.	5.98	1.17
24. Because I believe that a few additional years of education will improve my competence as a worker.	6.08	1.09
Extrinsic academic motivation-introjected regulation		
7. To prove to myself that I am capable of completing my college degree.	4.84	1.87
14. Because of the fact that when I succeed in college I feel important.	5.47	1.44
21. To show myself that I am an intelligent person.	5.39	1.45
28. Because I want to show myself that I can succeed in my studies.	5.54	1.48
Extrinsic academic motivation-external regulation		
8. In order to obtain a more prestigious job later on	5.76	1.44
15. Because I want to have "the good life" later on	6.29	1.06
22. In order to have a better salary later on.	5.89	1.26

Note: N = 892, Min = 1 (does not correspond at all), Max = 7 (corresponds at all)

The Pearson correlation coefficient was computed to assess the linear relationships between students’ identified regulation and introjected regulation, between identified regulation and external regulation as well as between introjected regulation and external regulation.

**Table 8.** Correlation between aspects of extrinsic academic motivation

	(1)	(2)	(3)
(1) Extrinsic academic motivation-identified regulation	-		
(2) Extrinsic academic motivation-introjected regulation	0,56**	-	
(3) Extrinsic academic motivation-external regulation	0,54**	0,55**	-

Note: \*\*: p<0,001

There were three positive correlations between each pair of variables. They showed statistically significant but moderately weak correlations. Freshmen’s higher motivation of preparing better for their chosen career, improving their ability as a working adult, and making

better career-related decisions does not strongly guarantee the higher motivation of having a higher salary, a good life, and being respected. Also, the stronger identified regulation and external regulation does not guarantee the stronger motivation of proving oneself as a successful and intelligent, highly capable person.

#### Academic amotivation of pedagogical freshmen

The first-year students' academic amotivation is low ( $M = 2.16$ ,  $SD = 1.29$ ). There are five students with the highest scores, accounting for only 0.56 % of the total research sample. It shows that the number of students without academic motivation is extremely small. There are also 42 freshmen who showed their high level of amotivation with scores ranging from 5 to 6.75. This group of participants accounts for 4.28 % of the total subjects.

Although it is a small number, some students lose the meaning of going to university which they used to have. There are also students who do not have a reason and purpose for going to college and they ignore it. These are the students that need to be focused and strengthened so that they can see the meaning of learning and gradually form IAM.

The results of the amotivation of the sample group are summarized in [Table 9](#). The average score is from 1.9 to 2.7, which is in the range of corresponding a little. The most obvious manifestation of students' lack of academic motivation is whether they should continue studying at university even though there was a reason to study. Some students are not motivated to study because they don't understand why they go to college, don't care and feel like they're wasting their time in college.

**Table 9.** Expression of pedagogical freshmen's academic amotivation

Academic amotivation	M	SD
5. Honestly, I don't know; I really feel that I am wasting my time in school.	1.93	1.37
12. I once had good reasons for going to college; however, now I wonder whether I should continue	2.74	1.85
19. I can't see why I go to college and frankly, I couldn't care less.	1.99	1.56
26. I don't know; I can't understand what I am doing in school.	1.97	1.51

Note:  $N = 892$ ,  $Min = 1$  (does not correspond at all),  $Max = 7$  (corresponds at all)

#### General review of freshmen's motivation

[Table 10](#) shows that the majority of first-year pedagogical students have an IAM (accounting for 67.7 %) and an EAM (accounting for 54.4 %) at an average level. The percentage of freshmen with low intrinsic and extrinsic academic motivation is very small, accounting for only 1.8 % and 0.8%, respectively. These numbers show that students in the survey group always have at least some motivation for participating in learning activities.

This study's overall findings are similar to those for 349 pedagogical students from Hung Vuong University, Phu Tho ([Bui, 2015](#)), as well as research findings on students from many other universities, including Ho Chi Minh City University of Technology, Saigon University, Dong Thap University, University of Engineering and Logistics-People's Public Security, and Hong Duc University ([Duong, 2015](#); [Dang, 2015](#); [Nguyen et al., 2015](#); [Huynh, Nguyen, 2015](#)).

**Table 10.** Distribution of academic motivation by score range

Score Range	IAM (%)	EAM (%)	Amotivation (%)
Low ( $\leq 3$ )	1.8	0.8	82.2
Average (3.01-5.99)	67.7	54.4	15.7
High (6-7)	30.5	44.8	2.1

In [Table 11](#), 45.9 % of the students have the same average level of intrinsic and extrinsic academic motivation. Nearly a quarter of the students simultaneously have high intrinsic and extrinsic academic motivation. The percentage of students with almost no motivation is at a very low level of 0.6 %. There are 67 students whose intrinsic motivation is superior to their extrinsic

motivation (accounting for 7.5 %) and 205 students whose EAM is superior to their IAM (accounting for 22.9 %).

**Table 11.** Cross-compare intrinsic academic motivation with extrinsic academic motivation

		Intrinsic academic motivation				Total
			Low	Average	High	
Extrinsic academic motivation	Low	N	5	1	1	7
		%	0.6 %	0.1 %	0.1 %	0.8 %
	Average	N	11	409	65	485
		%	1.2 %	45.9 %	7.3 %	54.4 %
	High	N	0	194	206	400
		%	0.0 %	21.7 %	23.1 %	44.8 %
Total	N	16	604	272	892	
	%	1.8 %	67.7 %	30.5 %	100.0 %	

Academic motivation by demographic characteristics

Frequency analysis of demographic characteristics showed a big difference in the two genders, two academic majors, two academic levels, and four parenting styles. Therefore, we only studied the academic motivation of male and female students separately; students majoring in natural sciences and students majoring in social sciences separately; students with high and students with distinction, credit and pass separately; students from high and upper middle income families, students from middle income families, as well as students from lower middle and low income families separately; students having authoritative parents, students having authoritarian parents, students having permissive parents, and students having uninvolved parents separately.

Gender

The results of the students' expression of their intrinsic motivation, extrinsic motivation, and amotivation by gender are summarized in [Table 12](#).

**Table 12.** Freshmen's academic motivation by gender

	Gender	M	SD	T	p
Intrinsic academic motivation	Male	5.34	1.12	-0.28	0.78
	Female	5.37	0.98		
IAM-to know	Male	5.75	1.08	0.22	0.98
	Female	5.75	1.00		
IAM-toward accomplishment	Male	5.04	1.40	0.01	0.25
	Female	5.17	1.14		
IAM-to experience stimulation	Male	5.24	1.13	0.57	0.65
	Female	5.19	1.08		
Extrinsic academic motivation	Male	5.53	0.98	-3.41	0.001
	Female	5.81	0.86		
EAM-Identified regulation	Male	5.87	0.94	-1.85	0.06
	Female	6.02	0.89		
EAM-Introjected regulation	Male	4.96	1.45	-3.65	0.000
	Female	5.38	1.19		
EAM-External regulation	Male	5.76	1.12	-2.76	0.006
	Female	6.02	1.01		
Academic amotivation	Male	2.37	1.45	2.1	0.04
	Female	2.12	1.26		

Both males and females have higher EAM than IAM. Among three aspects of IAM, male and female freshmen have the highest IAM-to know ( $M = 5.75$ ). On the motivation continuum, male students have the highest EAM-identified regulation and female students have the highest EAM-identified regulation and external regulation. Male students have the lowest EAM-introjected regulation ( $M = 4.96$ ). Female students have the lowest IAM-toward accomplishment ( $M = 5.17$ ). There is only a difference between female and males' motivation. Female students have higher EAM than male students. Particularly, female students have stronger introjected regulation and external regulation than the males. There is no difference between the genders regarding other types of motivation.

Academic major

Table 13 presents the findings of the analysis of freshmen's academic motivation by academic major in the social sciences and natural sciences.

**Table 13.** Freshmen's academic motivation by major

	Majors	M	SD	T	p
Intrinsic academic motivation	Natural Science	5.34	1.00	-0.79	0.43
	Social Science	5.40	1.01		
IAM-to know	Natural Science	5.71	1.00	-1.44	0.15
	Social Science	5.81	1.03		
IAM-toward accomplishment	Natural Science	5.13	1.20	-0.49	0.62
	Social Science	5.17	1.16		
IAM-to experience stimulation	Natural Science	5.19	1.07	-0.31	0.76
	Social Science	5.22	1.12		
Extrinsic academic motivation	Natural Science	5.74	.85	-1.11	0.27
	Social Science	5.80	.93		
EAM-Identified regulation	Natural Science	5.99	.86	-0.4	0.69
	Social Science	6.01	.95		
EAM-Introjected regulation	Natural Science	5.22	1.25	-2.64	0.008
	Social Science	5.44	1.22		
EAM-External regulation	Natural Science	6.00	.98	0.66	0.51
	Social Science	5.95	1.10		
Academic amotivation	Natural Science	2.13	1.29	-0.82	0.41
	Social Science	2.2	1.3		

Freshmen in natural science and social science both have stronger EAM than IAM. Among three aspects of IAM, motivation to know is the most powerful motive of students in both majors. In the continuum of motivation, students of natural science learn mainly due to EAM-external regulation ( $M = 6$ ;  $SD = 0.98$ ) and students of social science learn mostly due to EAM-identified regulation ( $M = 6.01$ ;  $SD = 0.95$ ). Students in the two majors possess the weakest IAM-toward accomplishment. There is no difference between students' different types of motivation in both majors ( $p > 0.05$ ) except EAM-Introjected regulation. Students in social science have stronger introjected regulation than those in natural science.

Academic level

Table 14 summarizes the analysis results of the expression of academic motivation by student's educational level.

**Table 14.** Freshmen's academic motivation by academic level

	Academic level	M	SD	T	p
Intrinsic academic motivation	High distinction	5.41	1.00	1.75	0.08
	Distinction, Credit & Pass	5.29	1.01		

IAM-to know	High distinction	5.77	1.00	0.83	0.41
	Distinction, Credit & Pass	5.71	1.03		
IAM-toward accomplishment	High distinction	5.20	1.18	1.6	0.11
	Distinction, Credit & Pass	5.07	1.19		
IAM-to experience stimulation	High distinction	5.27	1.08	2.32	0.02
	Distinction, Credit & Pass	5.09	1.10		
Extrinsic academic motivation	High distinction	5.80	.84	1.64	0.1
	Distinction, Credit & Pass	5.70	.95		
EAM-Identified regulation	High distinction	6.04	.85	1.84	0.07
	Distinction, Credit & Pass	5.93	.97		
EAM-Introjected regulation	High distinction	5.30	1.24	-0.33	0.74
	Distinction, Credit & Pass	5.33	1.24		
EAM-External regulation	High distinction	6.06	.98	3.04	0.002
	Distinction, Credit & Pass	5.84	1.10		
Academic amotivation	High distinction	2.10	1.24	-1.72	0.09
	Distinction, Credit & Pass	2.26	1.37		

Freshmen at different academic levels all have greater EAM than IAM. Among three aspects of IAM, motivation to know is the most powerful motive of students at different academic levels. On the motivation continuum, freshmen with high distinction study mainly due to EAM-external regulation ( $M = 6.06$ ;  $SD = 0.98$ ) and students with distinction, credit and pass learn mostly due to EAM-identified regulation ( $M = 5.93$ ;  $SD = 0.97$ ). Students at all academic levels possess the weakest IAM-toward accomplishment. There is a statistical difference of students' motivation having dissimilar academic levels regarding IAM-to experience stimulation and EAM-external regulation. In other words, high distinction freshmen have higher IAM-to experience stimulation and EAM-external regulation than students at other academic levels.

#### Family economic status

The analysis of freshmen's academic motivation from families with various economic circumstances is summarized in [Table 15](#).

**Table 15.** Freshmen's academic motivation by family economic status

	Family economic status	M	SD	F	p	Comparison
Intrinsic academic motivation	M1	5.52	0.96	6.6	0.001	M1 > M2; M2 = M3; M1 > M3
	M2	5.32	1.00			
	M3	5.06	1.13			
IAM-to know	M1	5.90	0.95	6.57	0.001	M1 > M2; M2 = M3; M1 > M3
	M2	5.70	1.02			
	M3	5.46	1.07			
IAM-toward accomplishment	M1	5.31	1.15	5.47	0.004	M1 > M2; M2 = M3; M1 > M3
	M2	5.10	1.17			
	M3	4.82	1.37			
IAM-to experience stimulation	M1	5.33	1.04	4.8	0.008	M1 = M2 = M3
	M2	5.17	1.08			
	M3	4.89	1.27			
Extrinsic academic motivation	M1	5.90	0.80	6.09	0.002	M1 > M2; M2 = M3; M1 > M3
	M2	5.72	0.90			
	M3	5.53	1.01			
EAM-identified	M1	6.11	0.79	4.53	0.11	M1 = M2 = M3

regulation	M2	5.97	0.91	3.88	0.21	M1 = M2 = M3
	M3	5.77	1.18			
	M1	5.47	1.21			
EAM-introjected regulation	M2	5.25	1.24	4.64	0.01	M1 = M2; M2 = M3; M1 > M3
	M3	5.10	1.29			
	M1	6.11	0.94			
EAM-external regulation	M2	5.94	1.05	2.74	0.07	M1 = M2 = M3
	M3	5.73	1.14			
	M1	2.07	1.33			
Academic amotivation	M2	2.17	1.26			
	M3	2.49	1.36			
	M1					

Note: M1 = High and upper middle income; M2 = Middle income; M3 = Lower middle and low income

Freshmen from different family economic situations all have better EAM than IAM. Among three aspects of IAM, motivation to know is the most powerful motive of students coming from different families. In the continuum of motivation, EAM-external regulation (M = 6.11; SD = 0.94) and EAM-identified regulation (M = 6.11; SD = 0.94) are the strongest motivation of students from the high and upper middle income families. EAM-identified regulation is the greatest motivation of students from middle income families (M = 5.97; SD = 0.91). EAM-identified regulation is also the greatest motivation of students from lower middle- and low-income families (M = 5.77; SD = 1.18). Regardless of family economic circumstances, freshmen have the lowest level of IAM-toward accomplishment.

#### Parenting styles

Table 16 presents the findings from examining how students from various parental style groups expressed their academic motivation.

**Table 16.** Freshmen’s academic motivation by parenting styles

	Parenting styles	N	M	SD	F	P	Comparison
Intrinsic academic motivation	M1	770	5.39	0.99	0.73	0.48	M1 = M2 = M3
	M2	60	5.24	1.01			
	M3	35	5.30	1.07			
IAM-to know	M1	770	5.77	0.99	1.07	0.34	M1 = M2 = M3
	M2	60	5.58	1.08			
	M3	35	5.82	0.98			
IAM-toward accomplishment	M1	770	5.18	1.17	0.97	0.38	M1 = M2 = M3
	M2	60	4.96	1.23			
	M3	35	5.14	1.27			
IAM-to experience stimulation	M1	770	5.23	1.07	1.12	0.33	M1 = M2 = M3
	M2	60	5.18	1.05			
	M3	35	4.95	1.32			
Extrinsic academic motivation	M1	770	5.78	0.86	0.64	0.53	M1 = M2 = M3
	M2	60	5.66	0.99			
	M3	35	5.83	0.87			
EAM-identified regulation	M1	770	6.03	0.87	1.93	0.15	M1 = M2 = M3
	M2	60	5.84	1.05			
	M3	35	5.84	1.04			
EAM-introjected	M1	770	5.32	1.24	0.56	0.57	M1 = M2 = M3
	M2	60	5.23	1.28			

regulation	M3	35	5.51	1.05			
EAM-external regulation	M1	770	6.00	1.01	0.59	0.55	M1 = M2 = M3
	M2	60	5.90	1.05			
	M3	35	6.13	1.01			
Academic amotivation	M1	770	2.11	1.29	4.32	0.01	M1 > M2;
	M2	60	2.6	1.36			M2 = M3;
	M3	35	2.03	0.82			M1 = M3

Note: M1 = Authoritative, M2 = Authoritarian, M3 = Permissive, M4 = Uninvolved

Students being raised in families with different parenting styles all have stronger EAM than IAM. Among three aspects of IAM, they all have the highest IAM-to know. In the continuum of motivation, EAM-identified regulation is the greatest motivation of students having authoritative parents (M = 6.03; SD = 0.87) and students having uninvolved parents (M = 5.71; SD = 1.19). EAM-external regulation is the highest motivation of students having authoritarian parents (M = 5.9; SD = 1.05) and of students having permissive parents (M = 6.13; SD = 1.01). IAM-toward accomplishment is the weakest motivation of students having authoritative parents (M = 5.18; SD = 1.17), authoritarian parents (M = 4.96; SD = 1.23) and uninvolved parents (M = 4.67; SD = 1.34). IAM-to experience stimulation is the lowest motivation of students having permissive parents (M = 4.95; SD = 1.32).

In short, pedagogical students have the greater EAM than IAM and IAM-to know is the strongest aspect among three aspects of motivation regardless of sociodemographic characteristics. IAM-toward accomplishment is many students' weakest motivation of different socio-demographic characteristics (female, majors, academic levels, authoritative parenting style, authoritarian parenting style, uninvolved parenting style).

#### 4. Discussion

This study was carried out on a sample of 892 first-year pedagogical students with the aim of deeply understanding the current status of the student's academic motivation continuum, including EAM, IAM and amotivation, by analyzing the correlation between expression aspects of each type of first-year students' academic motivation and investigating academic motivation according to social-demographic aspects such as age, gender, academic levels, socioeconomic status, and parenting style. The research findings shall serve as the basis/evidence for strategies for enhancing academic motivation of the first-year pedagogical students, while also assisting in the development of further research with the capacity of proposing educational, intervention and improvement measures for pedagogical students' academic motivation.

Overall, freshmen's EAM is higher than IAM, in which there are a large number of students having an average to high score of EAM. This is similar to the previous research results in a few universities in Vietnam (Nguyen, Doan, 2013; Duong, 2015; Dang, 2015; Nguyen et al., 2015; Huynh, Nguyen, 2015; Bui, 2015). This finding also raises the concern that Hanoi National University of Education should consider and have supportive strategies for those with a high score of EAM, especially those with a high score of EAM-introjected regulation and identified regulation, so that they may possess a higher opportunity to gradually transform their motivation to IAM (Le, 2009; Nguyen, Doan, 2013; Bui, 2014; Tran, 2015; Nguyen, 2015b; Hoang, 2015; Dang, 2015; Huynh, Nguyen, 2015).

With the group of students having IAM, they demonstrated that going to school was primarily due to the joy and satisfaction from learning new things, excitement when discovering new things, when learning topics and things they love and for joy when exceeding themselves to achieve learning goals as well as conquering subjects. As numerous studies have shown, it is a positive signal and it is vital to sustain and grow the IAM in these freshmen while also organizing training so that it may develop and spread to other students while participating in learning and working together in groups and in class (Truong et al., 2012; Kertechian, 2018). Moreover, not many students attend school because they are satisfied when achieving difficult goals in learning, because they like to be caught up in knowledge, because they are satisfied when they gradually achieve difficult goals in learning or when they obtain excellent results in all subjects. This outcome

is also consistent with previous research (Luu, 2015; Hoang, 2015). This is the basic limitation to students' IAM in the sample group; these aspects should be evaluated for improvement, with a particular emphasis on pushing students to succeed in each topic, exceeding themselves to accomplish their own full potential (Pham, 2011; Tran, 2015; Nguyen, 2015b; Hoang, 2015; Huynh, Nguyen, 2015).

The results on EMA are comparable to many published studies in that, the majority of students go to school because they want to have a stable future life, to prepare well for their chosen career, and to have a decent wage, improve working skills and have a respected job (Nguyen et al., 2015; Huynh, Nguyen, 2015; Bui, 2015). Few students attend university because achieving well in school makes them feel worthwhile or to demonstrate their ability to attend university (Tuyen, Trang, 2015).

Three aspects of IAM including IA-to know, IAM-toward accomplishment and IAM-to experience stimulation have a positive relationship with each other; and three regulations of EAM such as identified regulation, introjected regulation, and external regulation are also positively correlated with each other (Pham, 2011; Massari, 2014; Tran, 2015; Nguyen, 2015b; Hoang, 2015; Huynh, Nguyen, 2015). Therefore, it is necessary to focus on enhancing weak aspects of academic motivation, meanwhile promoting the strong components of academic motivation.

The study also discovered 42/892 (4.7 %) amotivated students and 05 individuals out of 42 having severe academic motivation problems. These are the students who must be supported, understood, and accompanied in order to determine the causes and intervene in time (such as consultation and/or in-depth counseling) to assist them in developing an appropriate academic motivation or to take up another career option. It is a fact that there are Vietnamese and international studies indicating that amotivated students enrolled in a university due to their family's wishes or pressure. Other explanations in these studies include that freshmen did not pass their preferred school or major or after they entered school, they found that they were no longer interested in the chosen profession, ... hence, they got bored with studying and learned to pass the time (Phi, 2012; Nguyen, Du, 2014; Bui, 2014; Massari, 2014; Nguyen, 2017; Kertechian, 2018).

The most common reason for amotivated students is that they wonder if they should continue to study at university even though they used to have a reason to study. A small number of amotivated students do not understand why they are going to university, do not care or believe they are wasting their time studying at university. In order to intervene directly (with consulting and counseling) for these students, it is necessary to spend time deeply understanding the causes of amotivation in each individual student and to find out the relevant factors and effects on each individual's amotivation. On that basis, appropriate and timely psychological interventions/therapy should be chosen (Nguyen et al., 2015; Nguyen, 2022).

Female students are more extrinsically motivated than male students. Females, in particular, show higher introjected regulation and external regulation than males; this result is consistent with earlier studies (Vallerand et al., 1992; Spittle et al., 2009; Stolk et al., 2018). It is explained that in college, female students connect better and more efficiently than male students (Spittle et al., 2009). One of HNUE's missions is that "HNUE seeks to attract a diverse group of talented students from across the nation and around the world and to educate them to be teachers, lecturers, researchers and scholars in schools, colleges, universities and institutions" (Hanoi National University of Education, 2016). Moreover, the majority of students entering pedagogy are female. As a result, additional research into the factors influencing male and female students' academic motivation, particularly in female students, will aid in the identification and timely resolution of the problem in order to improve academic motivation for both female and male students; and contribute to the implementation of HNUE's mission and vision.

Students from various socioeconomic backgrounds do not study because of IAM-toward achievement. Students in two majors and across all academic levels have the lowest IAM-toward accomplishment. IAM-toward accomplishment is the lowest motivator of many pupils from various socio-demographic backgrounds (female, majors, academic levels, authoritative parenting style, authoritarian parenting style, uninvolved parenting style). This result is in harmony with prior research, which found that only a few students study pedagogy with the motivation to outperform themselves, to make progress, and surpass themselves to attain increasingly challenging goals (Nguyen, Doan, 2013; Nguyen, Nguyen, 2016; Bui, 2016), while this is a very important type of academic motivation-helping students to overcome themselves and develop to their fullest

potential. Therefore, it is necessary to focus on promoting and developing IAM-toward accomplishment (Elliott et al., 2005; Dweck, 2012; Rafailă, 2014; Amoura et al., 2015; Bazelaïus et al., 2018; Tran, 2018; Truong, 2018; Rhew et al., 2018). More research on the manifestation of pedagogical students' academic motivation from other fields, such as physical education, scientific majors, elementary education, early childhood, and so on, is also required. (Massari, 2014; Rafailă, 2014; Bezverkhnya, Mayevsky, 2015; Ivanova et al., 2017; Yarmakeev et al., 2021; Yatsenko et al., 2021).

The research findings on the differences between the various types of students' academic motivation from families with different economic situations show that it is critical to focus on improving the students' IAM-to know and IAM-toward accomplishment for students from low, lower middle, middle, upper middle and high income households. Particularly for freshmen from high and upper middle income families, it is necessary to develop EAM-introjected regulation. Students from middle, lower middle and low income families have the highest expression in EAM-identified regulation; this demonstrates the need for aiding this group of students in fast transferring EAM-identified regulation to the IAM. If there is a smooth transition to IAM in the future, the education quality in this group of students will increase (Rafailă, 2014). In-depth research of variables associated with family economic status and pedagogical students' academic motivation is also required in order to propose the most appropriate and closest suggestions on improving students' academic motivation (Tran, 2011; Le, Bui, 2018).

In general, pedagogical students' IAM is lower than their EAM, which might be due to a variety of objective and subjective factors. When students graduate from high school, career orientation, major selection, and school choice all have a direct impact on academic motivation (Yatsenko et al., 2021). Many studies in Vietnam so far indicate that middle and high school students have a high need for career counseling (Duong, 2020; Vu, Tieu, 2020). According to current research, the majority of high schools in Vietnam are not meeting students' demands for career guidance and advice through counseling and consultation (Le, Bui, 2018; Duong, 2020; Vu, Tieu, 2020). Some research also suggests that pedagogical students' career choice is greatly influenced by the family's orientation, attitude, ambition and desire (Rafailă, 2014; Nguyen, Pham, 2018). Some students choose pedagogy based on their own preferences and interests, but lose interest, the drive to study, study ability, and so on during their school studies (Tran, 2011; Phi, 2012; Nguyen, Nguyen, 2016; Bui, 2016; Pham, 2016).

Future studies on pedagogical students' academic motivation should focus on providing solutions for career counseling and guidance for students who still have doubts about the pedagogical profession. It is necessary to research the form of training, the training program, the method of training pedagogical practice skills, the art of training and the diverse factors affecting the academic motivation continuum of pedagogical students to propose solutions to develop and improve autonomous academic motivation for pedagogical students in an appropriate and sustainable manner (Deci, Ryan, 2000a; Hazrati-Viari et al., 2012; Cigan, 2014; Massari, 2014; Ivanova et al., 2017; Fatima et al., 2018; Kertechian, 2018; Nguyen et al., 2020; Pham, 2020; Ngo, 2020; Le, 2020; Nguyen, 2020; Yarmakeev et al., 2021). Furthermore, research is required to address the demands of pedagogy counseling and career advising for middle and high school students who desire to study pedagogy (Tran, 2011; Duong, 2020; Yatsenko et al., 2021). Career counseling must begin as early as childhood or primary school. Vietnam's overarching general education reform program now incorporates vocational education beginning in primary school (Tran, 2010; Ministry of Education and Training, 2018a).

This article was driven by the need for a deeper insight into the sociodemographic features of prospective teachers and current situations that motivate them to study pedagogy. We believe that these empirical data contribute significant new knowledge about the characteristics of individuals who will teach the next generation in Vietnam, specifically their gender, major, academic level, family economic status and parenting styles, and that they advance existing knowledge about the student's current motivation for learning at the Pedagogical University.

However, our research has several limitations. The appraisal of the student's academic motivation is solely based on the analysis of self-reported questionnaire data, with no comparison to the assessment of parents and teachers, or researchers' observations and interviews. In addition, the survey was conducted online due to the Covid pandemic, so it also has certain limitations. Long-term observation, as well as the addition of interview data or case studies, can therefore help this study be deployed on a broader scale and become more accurate.

## 5. Conclusion

The quality of general education is determined by several elements, one of which is the teachers, therefore paying attention to teacher training is an indispensable link in any educational system (Wang et al., 2017). Many goals are required to achieve high-quality instructors' training and one of which is building academic motivation and sustaining and growing the academic motivation continuum towards autonomy for pedagogical students (Tran, 2011; Tran, 2018; Nguyen et al., 2020; Le, 2020).

From the results of this situation study, the following research directions for developing pedagogical students' academic motivation in Vietnam are suggested: (1) investigating solutions to meet the needs of career counseling and consultation about pedagogy for high school students; (2) studying the model of implementing early career education for high school students, including career guidance in pedagogy; (3) studying the academic motivation continuum and the conversion cycle of pedagogical students' academic motivation on motivation continuum in different school years (sophomore, junior, senior), various majors and related variables (culture, personality, demographics, capacity, interest, training environment, training program, lecturer style, approach to practical training, pedagogical art, teacher's salary, preferential regime of pedagogical students and so on); (4) research on career counseling and consultation strategies for pedagogical students, particularly freshmen, to promptly solve the problem of amotivation or the severely low IAM (Nguyen, 2017); (5) cross-cultural research, comparative examination of pedagogical students' academic motivation among pedagogical students among different countries, industries and cultures. New research directions should be associated with the fundamental and comprehensive innovation orientation of Education and Training of Vietnam (Ministry of Education and Training, 2018b), as well as the vision, mission and goals of HNUE's teacher training (Hanoi National University of Education, 2016).

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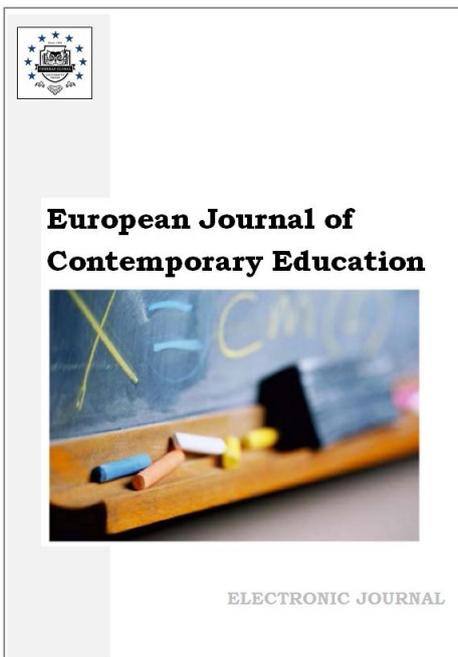
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## The History of Education

### The Public Education System and Culture of a Typical Uyezd Town in the Pre-Reform Russian Empire: The Case of Ostashkov, Tver Governorate

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#### Abstract

This work explores the system of public education and cultural life in the pre-reform uyezd town of Ostashkov, Tver Governorate.

The principal sources used for this study were materials from the *Memorandum Books* for Tver Governorate and pre-revolutionary periodical press materials from the newspaper *Tverskiye Yeparkhialnyye Vedomosti*. Methodologically, the work relied on the following fundamental historical principles: historicism, systematicity, and objectivity. This helped examine the system of public education system in the town of Ostashkov, Tver Governorate, in the period up to the abolition of serfdom in 1861 in a historical sequence, as well as systematize the available material into several groups – educational institutions, student body composition, institutions of culture, and cultural life.

The study's findings revealed that on the eve of the abolition of serfdom in 1861 out of the town's 10,876 residents 4,508 attended a civil primary school. A fairly large portion of the town's population went to an ecclesiastical educational institution (although not all of those students were native residents of the town – some came from the uyezd). Some of its residents received education prior to 1852, including privately. Overall, around 6,000 residents of the town had a primary education on the eve of the abolition of serfdom, or more than 50 % of its total population. The high literacy rate was conducive to a corresponding level of culture (boulevards, gardens,

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public libraries, and a theater). These factors set the town of Ostashkov apart from most conventional uyezd towns in the Russian Empire.

**Keywords:** town, Ostashkov, Tver Governorate, pre-reform period, abolition of serfdom, public education, theater.

### **1. Introduction**

The uyezd town of Ostashkov, located in the Russian Empire's Tver Governorate, was founded in 1770. By 1825, its population was 7,852 ([Statisticheskoe izobrazhenie..., 1829](#)). In 1862, i.e. right after the abolition of serfdom, the town had 10,876 residents (5,408 males and 5,468 females) ([Chislo zhitelei, 1863: 42-43](#)). There were 146 nobles, 280 persons of ecclesiastical status, 9,075 urban dwellers, inclusive of merchants and urban commoners, 44 rural dwellers, 1,170 members of the military estate, and 161 foreigners ([Chislo zhitelei, 1863: 42-43](#)). The present work's primary focus is on the system of public education in the town of Ostashkov. It will also take a look at the town's cultural sector in the pre-reform period, i.e. prior to the abolition of serfdom in 1861.

### **2. Materials and methods**

The principal sources used for this study were materials from the *Memorandum Books* for Tver Governorate ([Chislo zhitelei, 1863](#); [R-v, 1863](#)) and pre-revolutionary periodical press materials from the newspaper *Tverskiye Yeparkhialnyye Vedomosti* ([Tverskie eparkhial'nye vedomosti, 1878](#)).

Methodologically, the work relied on the following fundamental historical principles: historicism, systematicity, and objectivity. This helped examine the system of public education system in the town of Ostashkov, Tver Governorate, in the period up to the abolition of serfdom in 1861 in a historical sequence, as well as systematize the available material into several groups – educational institutions, student body composition, institutions of culture, and cultural life.

### **3. Discussion**

The historiography on the subject can be split into two groups of research works. The first group includes the research dealing with the pre-reform town of Ostashkov. The second group includes the research concerned with the socio-economic development of Tver Governorate.

The works in the first group, most notably, include protoireus V.P. Uspensky's 'A Note on the Past of the Town of Ostashkov', which covers the period from the emergence of slobodas in 1395 on the site of the future town to the early 19th century ([Uspenskii, 1893](#)), I.F. Tokmakov's 'The Town of Ostashkov and Its Uyezd', which explores the history of the town and its outskirts through the lens of a body of archeological and historical-statistical information ([Tokmakov, 1906](#)), and N.I. Rubtsov's 'An Essay on Ostashkov', which provides a detailed account of the town's socio-economic life ([R-v, 1863](#)). Attempts to provide a historical-statistical description of the town were undertaken by other authors as well ([Istoriko-statisticheskoe..., 1880](#)). Among the more specific topics relating to the town of Ostashkov that have been explored in the literature are the designing of the historical boulevard there ([Chernikov, 2018](#)) and the level of school education of members of the clergy in the town of Ostashkov in the 18th century ([Matison, 2012](#)).

The second group includes the works on the history of the Church in Tver Governorate and those on the history of civil institutions there. Those on the history of the Church include P.V. Znamensky's 'Ecclesiastical Schools in Russia in the Period up to the 1808 Reform' ([Znamenskii, 2001](#)), T.G. Leont'yeva's 'Ecclesiastical Fraternities in Tver Governorate: Their Purpose and Activity in the Second Half of the 19th and Early 20th Centuries' ([Leont'eva, 2021](#)), and V.A. Simora's 'Pilgrimage in the Parochial School of the Tver Diocese in the Late 19th and Early 20th Centuries' ([Simora, 2013](#)). The works on the history of civil institutions include D. Krylov's 'The 25th Anniversary of Tver Mariinsky Female Gymnasium (1858–1883): A Historical Note' ([Krylov, 1883](#)), A.Ye. Otorochkina's 'The Development of Female Education in the Governorates in the Upper Volga Region in the First Half of the 19th Century' ([Otorochkina, 2015](#)), A.Ye. Andreyev's 'Oversight of the Work of Administrative Institutions in Tver Governorate at the Turn of the 19th and 20th Centuries' ([Andreev, 2015](#)), and N.V. Sereda's 'Tver Merchants' Documents of Private Origin as a Cultural Asset' ([Sereda, 2021](#)).

To date there has been no dedicated research on the system of public education system in the pre-reform town of Ostashkov, Tver Governorate. The present work aims to fill this gap.

#### **4. Results**

##### *Educational institutions*

The uyezd town of Ostashkov was founded in 1770. Five years after it received the status of an uyezd town, an attempt was made to establish the town's first private school. This attempt was undertaken in 1775 by an urban commoner named Sukhorukova. Two years later, on January 7, 1777, the town became home to its first public school for children of merchants and urban commoners. The primary school's curriculum included traditional subjects such as Divinity, Arithmetic, Writing, and Drawing. Instruction in Reading was conducted via an ABC book and a Book of Psalms, and that in Writing and Drawing – via a textbook from Professor D.S. Anichkov (*Istoriko-statisticheskoe...*, 1880: 20). Instruction in Divinity and Mathematics was typically conducted by persons of ecclesiastical status, and that in Writing and Drawing – by urban dwellers. There were just 40 full-time students. The cost of tuition was 3 rubles per year for children of merchants and 1 ruble per year for children of urban commoners; a number of places were also available for the free education of disadvantaged students. Teachers had the following salaries: teachers of Divinity – 25; teachers of Reading and Writing – 15, and teachers of Drawing – 20 rubles per year (*Istoriko-statisticheskoe...*, 1880: 22). As early as the summer of 1778, the number of full-time students at the school reached 40, with 27 of these paying for their education (*Istoriko-statisticheskoe...*, 1880: 23). For some reason, the school closed down in 1786.

While fairly limited, these first attempts to create the town's education sector helped lay an important groundwork for its future public system and create a local educated workforce. As in other regions across the Russian Empire, the process of creation of private schools in Tver Governorate involved a number of challenges. Firstly, such schools were maintained through tuition fees, meaning that students' parents had to be fairly well-off. Secondly, private schools were often maintained through funding from benefactors. Hence, if the number of well-off parents in the area was low and there were no benefactors to rely on for funding, such schools would simply have to close down. This was the case with the schools opened in 1775–1777.

In 1786, the government of the Russian Empire adopted a law aimed at the opening of educational institutions in all towns across the country (four-grade schools in gubernia towns and two-grade schools in uyezd towns).

Consequently, on November 30, 1787, the town of Ostashkov became home to its first uyezd school, which would be maintained through funding from the state (*R-v, 1863: 170*). From there on out, the town's education system was distinguished by stability, ceasing to rely on charitable donations for funding. The newly established educational institution had two teachers. The first was paid 150, and the second – 120 rubles per year. Another 60 rubles would be paid to whoever taught Drawing (*Istoriko-statisticheskoe...*, 1880: 23).

As early as the early 19th century, in March 1805, the town became home to another two schools. These parish urban schools would be funded through charitable donations. In September 1853, the town became home to its third parish urban school, which, likewise, would be maintained through charitable donations. As of 1861, all of the town's three parish urban schools were maintained through funding from a collegiate councilor named Voronin, who provided 1,400 rubles toward the purpose yearly (*R-v, 1863: 170*).

In 1839, the town became home to a female school. Thus, as of 1839 education in Ostashkov was accessible to both boys and girls. In 1861, public funding for the female school amounted to 580 rubles per year. These funds were used to pay teacher salaries (*R-v, 1863: 170*).

As of 1861, the uyezd school was housed in a rented building, whilst the parish and female schools were housed in a charitable home that was part of the commercial bank owned by merchant K.A. Savin.

##### *Composition of the town's student body*

In the period from 1852 to 1861, the uyezd school had an enrollment of 807 students. In the same period, the town's three parish urban schools had a combined enrollment of 1,784 students, and the female school had an enrollment of 1,917 students (*R-v, 1863: 170-171*). Thus, in the decade from 1852 to 1861 the town of Ostashkov had a combined student body of 4,508. Its largest educational institution was the female school, which was attended by an average of 191 students per year, followed by the uyezd school (80) and then the parish schools (59 each).

Table 1 displays the data on the social estate composition of the town's student body in the period 1851–1861.

**Table 1.** Distribution of Students Across Ostashkov's Civil Educational Institutions by Social Estate in the Period 1851–1861 (R-v, 1863: 170-171)

Educational institution	Children of nobles	Children of officers	Children of clergy	Children of merchants	Children of urban commoners	Children of members of other social classes	Total
Uyezd school	55	33	26	330	358	5	807
Three parish schools	13	43	15	676	978	59	1,784
Female school	25	67	15	795	995	20	1,917
Total	93	143	56	1,801	2,331	84	4,508

As evidenced in Table 1, half of the town's total student body (4,508 students) was made up by urban commoners (51.8 %), followed by children of merchants (40 %) and then children of officers (3.1 %). The share of students from other social classes was negligible.

#### *Gender composition of the town's student body*

The large number of students at the female school is testimony to the fact that no females attended the town's other educational institutions at the time. The gender composition of the student body in the town of Ostashkov in the period from 1852 to 1861 was as follows – 2,591 boys (57.5 %) and 1,917 girls (42.5 %). That was quite a large percentage of female students for the pre-reform period.

In addition, the town had an ecclesiastical school (*Istoriko-statisticheskoe...*, 1880: 23). Founded in 1751, it was housed in a building of its own and funded by the Ecclesiastical Department. In terms of annual expenditure on the ecclesiastical school, 979 rubles went to salaries and 178 rubles went to the upkeep of the building. In the decade from 1852 to 1861, the ecclesiastical school was attended by a combined 1,131 students. All of them were boys (R-v, 1863: 171). It was a four-grade school; its course of study was similar to what was offered in the primary grades of ecclesiastical seminaries (Matison, 2012: 9). However, the school closed down in 1758. It reopened only in 1772. When it reopened, it still had four grades, which were similar in curriculum to the primary grades of Tver Ecclesiastical Seminary. Ostashkov graduates could continue their education at Tver Seminary (*Tverskie eparkhial'nye vedomosti*, 1878: 118-120).

#### *Institutions of culture and cultural life*

As early as 1805, on the initiative of urban teacher M. Savvich and with support from merchant K.A. Savin the town became home to a public theater. This facility operated up to 1825. It resumed work in 1836 after an interval. In the second period of the theater's existence, its troupe consisted of several theater enthusiasts. While all plays were free, they could be attended only through invitation from the theater's actors. In 1838, the theater moved from a private home to a building of its own. By 1843, the building was fitted out with boxes and a balcony through funding from merchant S.K. Savin. In 1858, it had 11 boxes, 34 armchairs, and 52 chairs. Inclusive of the seats for gallery spectators, the theater could seat 450 people (R-v, 1863: 173). The troupe consisted of the town's residents, and its repertoire included plays and comedies. For instance, in 1860 the theater offered a play entitled 'Why Other People Get Married' and a melodrama named 'Séraphine Lafaille'. Note that in the pre-reform period theaters were a rarity in the country's uyezd and gubernia towns alike.

In 1833, the town became home to Ostashkov Civil Library. In 1856, it was renamed as Ostashkov Communal Public Library.

The town also had a couple of leisure areas – a boulevard and a public garden.

The boulevard was opened in 1850 in a commercial plaza. Local residents spent 2,000 rubles on its development. The boulevard, about 500 meters long, was lined with birch trees. It had red railings.

The public garden began to be developed in 1857 next to a cathedral church through funding provided by the town's Mayor. Thanks to a mild climate, by 1861 the park was expanded, with a

wind band starting to perform there on public holidays (which, likewise, was made possible through funding from the Mayor).

According to contemporaries, thanks to the relatively large number of educational institutions in the town, the fairly high level of literacy among its residents, the robust work of its cultural institutions (the theater and the library), and the fact that it neighbored the Baltic provinces (Estland, Courland, and Livland Governorates)<sup>1</sup>, most of its residents were capable of “holding a conversation on just about any topic besides domestic and commercial matters... The high self-esteem and self-sufficiency of Ostashkov residents tend to produce a most favorable first impression on you when you first meet them. In fact, most Ostashkovites are naturally gifted individuals. Hence, there often are brilliant painters and wood engravers among them. The best testimony to their giftedness is that just about any worker at the local factory is both a musician, who is part of the factory owner’s band, and a decent actor, who won’t mess up his part in a play at the local theater” (R-v, 1863: 171-171).

## 5. Conclusion

On the eve of the abolition of serfdom in 1861, out of the town’s 10,876 residents 4,508 attended a civil primary school. A fairly large portion of the town’s population went to an ecclesiastical educational institution (although not all of those students were native residents of the town – some came from the uyezd). Some of its residents received education prior to 1852, including privately. Overall, around 6,000 residents of the town had a primary education on the eve of the abolition of serfdom, or more than 50 % of its total population. The high literacy rate was conducive to a corresponding level of culture (boulevards, gardens, public libraries, and a theater). These factors set the town of Ostashkov apart from most conventional uyezd towns in the Russian Empire.

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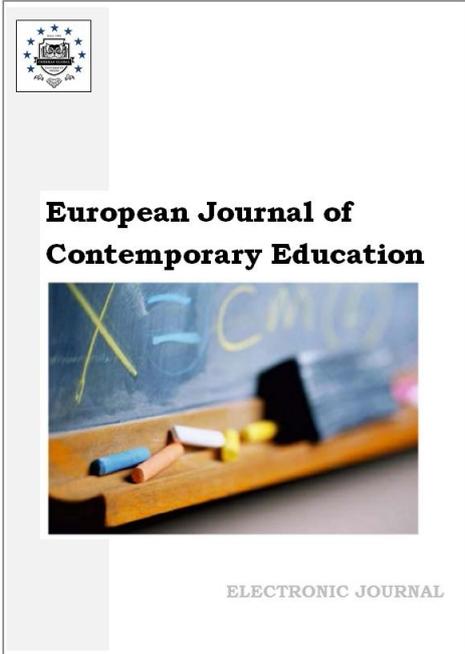
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## The System of Public Education in Kursk Governorate (1808–1917). Part 1

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### Abstract

This work examines the system of public education in Kursk Governorate in 1808–1917. This is its first part. It covers the period 1808–1900.

The principal sources used for this study are *The Most Faithful Report of the Chief Procurator of the Holy Synod* for 1900, the *Memorandum Books* for Kursk Governorate, and the annual statistical digest *Overview of Kursk Governorate*. Methodologically, the work relies upon the following fundamental historical principles: historicism, systematicity, and objectivity.

The study's findings revealed that the system of public education in Kursk Governorate traces its origins to 1808, when Kursk Male Gymnasium was established. However, up until the abolition of serfdom in the country in 1861 the region's achievements in the area were negligible. In 1861, the preconditions were created for the opening of the first female gymnasium in the region. Following the launch of the Zemstvo Reform of 1864, the region entered a period of brisk activity in terms of the establishment of educational institutions under the purview of the Ministry of Public Education, and in 1886 a similar process began there with educational institutions run by the Holy Synod. Consequently, by 1900 Kursk Governorate had across the three principal education levels (secondary, lower, and primary) a total of 853 ministerial educational institutions with a combined enrollment of 70,619 students, whereas the region's education sector run by the Holy Synod numbered a total of 856 primary schools with a combined enrollment of 35,538 students.

**Keywords:** system of public education, Kursk Governorate, period 1808–1900, gymnasiums, primary schools, parochial schools.

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### 1. Introduction

Kursk Governorate was one of the more populous regions of the Russian Empire in the 19th century. Based on the Census of 1897, it had a population of nearly 2.4 million people, of whom around 200,000 resided in cities. In this respect, Kursk Governorate ranked 14th among the country's 89 governorates and oblasts (Naselenie imperii, 1898: 27-29). One of the region's first educational institutions (a male gymnasium) was established in its capital, Kursk, in 1808, which may be considered the time when the process of the making and development of the region's system of public education was officially launched. This part of the work examines the period up to 1900.

### 2. Materials and methods

The principal sources used for this study are *The Most Faithful Report of the Chief Procurator of the Holy Synod* for 1900 (Vsepoddanneishii otchet, 1903), the *Memorandum Books* for Kursk Governorate (Pamyatnaya knizhka, 1890; Pamyatnaya knizhka, 1894), and the annual statistical digest *Overview of Kursk Governorate* (Obzor Kurskoi gubernii, 1901).

Methodologically, the work relies upon the following fundamental historical principles: historicism, systematicity, and objectivity. The use of these principles helped explore the development of the system of public education in Kursk Governorate in the period 1808–1917 in a historical sequence, systematize the existing material across the major education levels (secondary, lower, and primary), and analyze the events under examination through the lens of a significant amount of relevant material.

### 3. Discussion

The historiography on the subject may be split into the following two thematic groups: 1) the research devoted to the actual system of public education in Kursk Governorate; 2) the research devoted to the Kharkov Educational District, which Kursk Governorate was part of.

The first group includes the following sources: the work by V.O. Kalnin on the making and development of the system of parochial and zemstvo schools in Kursk Governorate in the 19th century (Kapnin, 2021), the two works by M.N. Vetchinova on Kursk Male Gymnasium and Kursk Mariinsky Female Gymnasium (Vetchinova, 2018; Vetchinova, 2014), the work by Ye.A. Antonenko devoted to the educational and charitable activity of the region's female monasteries in the early 20th centuries (Antonenko, 2014), the work by A.I. Chernyshev and V.I. Sviridov on the activity of the Kursk authorities with regard to the development of out-of-school education (Chernyshev, Sviridov, 2015), the work by N.N. Cherkasova on the establishment and funding of zemstvo schools in the region (Cherkasova, 2004; Cherkasova, 2004a), the work by A.A. Titova on the influence of public education on the daily life of Kursk Governorate residents during the prerevolutionary period (Titova, 2013), the work by T.P. Mamaeva on the role of the Kursk Zemstvo in the development of public education in the region (Mamaeva, 2011), the work by D.B. Mikhaylov on the organization of educational work at parochial schools within the Kursk Diocese during the imperial period (Mikhailov, 2012), and, lastly, the work by V.V. Korovin and A.V. Romanov on the development of the system of public education in the region during World War I (Korovin, Romanov, 2014).

The second group includes the following sources: the works by S.I. Degtyarev and colleagues on the institution of honorary supervisors within the system of public education in the Russian Empire in the first half of the 20th century (through the example of the Kharkov Educational District) (Degtyarev, Polyakova, 2020; Degtyarev et al., 2020), the work by A.A. Cherkasov and colleagues on the system of public education in Voronezh Governorate during the prerevolutionary period (Cherkasov et al., 2020; Cherkasov et al., 2020a), and the works by A.Yu. Peretyatko and colleagues on public education in the Don region (Peretyatko, Zulfugarzade, 2017; Peretyatko, Zulfugarzade, 2017a; Peretyatko, Zulfugarzade, 2019; Peretyatko, Zulfugarzade, 2019a; Peretyatko, Zulfugarzade, 2019a; Peretyatko, Svechnikov, 2022).

Overall, it may be stated that the above research explores the system of public education in Kursk Governorate in the prerevolutionary period only fragmentarily. The present work aims to fill these gaps.

#### 4. Results

The present paper will explore the system of public education in Kursk Governorate across the three principal education levels – secondary, lower, and primary. Each level is examined below in detail.

##### Secondary education

The first secondary educational institution in Kursk Governorate was established on February 23, 1808. It was Kursk Male Gymnasium (Vetchinova, 2018: 207). This school long remained the only secondary educational institution in the region. There were several reasons behind this, including a lack of demand for secondary education in the region and, most importantly, its underdeveloped primary and lower education sectors. Radical changes in this area took place right after the abolition of serfdom in Russia in 1861. More specifically, more than 50 years later, on December 6, 1861, Kursk became home to the region's first first-class female educational institution, which on February 3, 1871, was reorganized into Mariinsky Female Gymnasium (Vetchinova, 2014: 134). Thus, in 1871 secondary education became accessible in the region to women as well. In 1873, the region became home to Kursk Real School. In 1884, Kursk also became home to the region's first private female gymnasium of O.N. Krasovskaya.

As at 1888, Kursk Governorate had an entire network of secondary educational institutions, which included male gymnasiums and progymnasiums, female gymnasiums and progymnasiums, Kursk Real School, a teacher's institute, a teacher's seminary, and a zemstvo teacher's school (Pamyatnaya knizhka, 1890: vedomost' o chisle zavedenii). By 1892, the number of secondary educational institutions in the region reduced by one, which was the result of merging the region's zemstvo teacher's school and teacher's seminary into what would become the zemstvo teacher's seminary (Pamyatnaya knizhka, 1894: 262).

In the period up to 1900, Kursk became home to a feldsher school, a charity school for boys, and the region's second female gymnasium. In addition, the two female progymnasiums in the cities of Rylsk and Sudzha were reorganized into female gymnasiums (Obzor Kurskoi gubernii, 1901: vedomost' № 6). Table 1 displays the data on the region's secondary educational institutions in the period 1888–1900.

**Table 1.** Secondary Educational Institutions in Kursk Governorate in 1888–1900 (Pamyatnaya knizhka, 1890: vedomost' o chisle zavedenii; Pamyatnaya knizhka, 1894: 262-263; Obzor Kurskoi gubernii, 1901: vedomost' № 6)

Year	Type of educational institution							Total	Total number of students		
	Gymnasium		Progymnasium		Real school	Surveyor's school; charity schools for girls and boys; feldsher school	Teacher's institute; teacher's seminary; teacher's school		Boys	Girls	Total
	Male	Female	Male	Female							
1888	3	3	1	11	1	2	3	24	1,354	2,073	3,427
1892	3	3	1	11	1	2	2	23	1,316	2,175	3,491
1900	3	6	1	9	1	4	2	26	1,947	3,779	5,726

As evidenced in Table 1, the number of secondary educational institutions in the region did not change much in the period 1888–1900. This was associated with the fact that in the period up to 1888 Kursk Governorate became home to a large number of secondary schools. By 1900, the region's secondary educational institutions began to be overfilled with students. Whereas in 1888

there, on average. were 142 students per secondary educational institution in the region, the figure rose to 220 in 1900. It is also worth noting that the region had a significant gender imbalance at the time – whereas in 1888 girls attending secondary educational institutions in the region accounted for 61 % of all students, their percentage rose in 1900 to 66 %, i.e. two-thirds.

### Lower education

In the period up to 1900, the country's lower education sector typically comprised uyezd, urban, and tradesman's schools. By 1888, the governorate had an entire network of such educational institutions (9 uyezd three-grade schools, 5 urban four-grade schools, and 1 vocational lower educational institution (a tradesman's specialized school)) ([Pamyatnaya knizhka, 1890: vedomost' o chisle zavedenii](#)).

In the period from 1888 to 1892, the above network did not change. However, in the period from 1892 to 1900 Kursk Governorate became home to its first tradesman's school ([Obzor Kurskoi gubernii, 1901: vedomost' № 6](#)). [Table 2](#) displays the data on the region's lower educational institutions in 1888–1900.

**Table 2.** Ministerial Primary Educational Institutions in Kursk Governorate in 1888–1900 ([Pamyatnaya knizhka, 1890: vedomost' o chisle zavedenii](#); [Pamyatnaya knizhka, 1894: 262-263](#); [Obzor Kurskoi gubernii, 1901: vedomost' № 6](#))

Year	Type of educational institution			Total	Number of students		
	Urban school	Uyezd school	Tradesman's specialized school; tradesman's school		Boys	Girls	Total
1888	5	9	1	15	1,343	-	1,343
1892	5	9	1	15	1,376	-	1,376
1900	5	9	2	16	1,989	-	1,989

As evidenced in [Table 2](#), by 1900 lower education in Kursk Governorate was concentrated in cities (urban schools) and uyezds (uyezd schools). There were also two vocational tradesman's educational institutions (the specialized school and the regular school). In the period from 1888 to 1900, the region witnessed only a small rise in the number of lower educational institutions. However, just as in the case of secondary educational institutions, the region witnessed a gradual increase in the size of the student body in the sector. More specifically, in 1888 there were 89 students per lower educational institution, whilst in 1900 there were now 124 students. It is worth noting that the region's lower educational institutions were attended back then by boys only.

### Primary education

#### *Primary educational institutions under the purview of the Ministry of Public Education*

One of the first primary educational institutions in Kursk Governorate was established no later than 1837. It was Olkhovka Primary School in Dmitriyevsky Uyezd ([Narodnoe nachal'noe obrazovanie..., 1897: 7](#)). Two years later, in 1839, schools were opened in the sloboda of Pogorelovka and the village of Bobryshevo. In the early 1850s, a school was opened in the village of Cherepovka. In the early 1850s, the sloboda of Novostroyevka became home to another primary school ([Narodnoe nachal'noe obrazovanie..., 1897: 7, 9](#)). In addition, in the period up to the abolition of serfdom in 1861 there were a few other primary schools in the region – e.g., one in the village of Nikolskoye in Belgorodsky Uyezd, one in the village of Solokhino in Grayvoronsky Uyezd, one in the sloboda of Krasny Kut in the same uyezd, one in the sloboda of Krasnaya Yaruga in the same uyezd, and one in the supernumerary town of Khotmyzhensk ([Narodnoe nachal'noe obrazovanie..., 1897: 7](#)). Besides, there obviously were schools in Kursk and other major cities of

the governorate and quite a number of schools in the rural area. Based on available data, the region had a total of 25 functional schools before the abolition of serfdom ([Narodnoe nachal'noe obrazovanie..., 1897: 17](#)).

However, despite the significant increase in the number of primary educational institutions in the region in the period up to the abolition of serfdom, the condition of those schools and the level of instruction in them left much to be desired. Quite often, as was the case throughout European Russia at the time, teaching was performed by members of the clergy, retired petty officers, and graduates of ecclesiastical seminaries. Schools were often located in places not suited for the purpose (e.g., the back regions of manors). Some schools were mobile – i.e., classes were held at the houses of actual students, with each student making their house available for the purpose for one week.

Following the abolition of serfdom and the launch of the Zemstvo Reform, public education was given a significant amount of attention. Kursk Governorate witnessed a sharp increase in the number of educational institutions, including in places populated by numerous children of school age. As early as 1868, the number of primary schools in Kursk Governorate run by the Ministry of Public Education alone (there also were schools run by the Holy Synod) surpassed 100 (117 schools). In 1870, the figure surpassed 200 (218). In 1874, it surpassed 300 (347). Two years later, in 1876, the figure surpassed 400 (404). As early as the following year, which was marked by the Russo-Turkish War (1877–1878), the government sharply cut spending on public education. Consequently, the figure surpassed 500 only in 1885 (508 schools). Table 3 displays the data on the region's primary educational institutions under the purview of the Ministry of Public Education in 1888–1900.

**Table 3.** Primary Educational Institutions Under the Purview of the Ministry of Public Education in Kursk Governorate in 1888–1900 ([Pamyatnaya knizhka, 1890: vedomost' o chisle zavedenii; Pamyatnaya knizhka, 1894: 262-263; Obzor Kurskoi gubernii, 1901: vedomost' №6](#))

Year	Type of educational institution				Total	Number of students		
	Model school	Private school	Urban parish school	Rural primary school		Boys	Girls	Total
1888	25	33	30	495	583	33,444	5,059	38,503
1892	24	39	33	511	607	38,386	7,486	42,872
1900	49	23	41	698	811	50,719	12,185	62,904

As evidenced in [Table 3](#), there was a sharp increase in the number of primary educational institutions in the region. From 1888 to 1900 their number increased 25 % (from 583 to 811 schools), with the size of the student body in this sector growing 40 %. During the period under review, the region witnessed an increase in the number of model, urban, and rural schools, whereas the number of private schools there declined, as they were unable to withstand competition from the public sector. In terms of the gender composition of the student body in this sector, in 1888 girls accounted for just 13 % of all students. The figure rose to 19 % in 1900. We can also see that the region gradually witnessed an increase in the average number of students per school: in 1888 – 66, in 1892 – 70, and in 1900 – 77 students.

*Primary educational institutions under the purview of the Holy Synod*

For a long time, the role of the Orthodox Church in the development of public education in the region was only minimal. However, in 1886 the government provided the Holy Synod with some funding toward the establishment of a network of parochial schools. This resulted in the creation of the Kursk Diocesan School Council. In the period up to 1917, this institution would be

concerned with the establishment of schools, control over their activity, staffing matters, etc. (Kapnin, 2021: 65).

The region's educational institutions created by the Kursk Diocesan School Council were divided into two-grade, one-grade, and literacy schools. The operation of the literacy school sector was of an impermanent nature, with such schools tending to open up in places where there resided few children of school age.

Table 4 displays the data on the region's primary educational institutions under the purview of the Holy Synod in the period in 1888–1900.

**Table 4.** Primary Educational Institutions Under the Purview of the Holy Synod in Kursk Governorate in 1888–1900 (Pamyatnaya knizhka, 1890: vedomost' o chisle zavedenii; Pamyatnaya knizhka, 1894: 262-263; Vsepoddanneishii otchet, 1903: 64-65)

Year	Type of school			Total	Number of students		
	Two-grade	One-grade	Literacy school		Boys	Girls	Total
1888	357			357	8,740	695	9,435
1892	518			518	16,291	2,432	18,723
1900	9	445	402	856	25,706	9,832	35,538

As evidenced in Table 4, the region witnessed brisk development in its education sector run by the Holy Synod, which was associated with the provision of funding by the government toward parochial schools and literacy schools there. In the period 1888–1900, the number of such educational institutions in the region doubled, with the number of students increasing nearly 4 times. Of particular note is the gender composition of the student body in this sector. Whereas in 1888 the number of girls was 7.3 % and in 1892 it was 13 %, in 1900 the figure reached a record 27.6 % (i.e., over a fourth of the total number of students).

In addition, in 1888 the region had an entire fleet of ecclesiastical educational institutions run by the Holy Synod, including Kursk Ecclesiastical Seminary, several ecclesiastical schools (Kursk, Belgorod, Stary Oskol, Oboyan, and Rylsk), the diocesan female school in Kursk, the school at the Belgorod Female Monastery, and the two charity schools in Kursk (Pamyatnaya knizhka, 1890: vedomost' o chisle zavedenii). Since these educational institutions were not secular, no data on them were included in the table.

## 5. Conclusion

The system of public education in Kursk Governorate traces its origins to 1808, when Kursk Male Gymnasium was established. However, up until the abolition of serfdom in the country in 1861 the region's achievements in the area were negligible. In 1861, the preconditions were created for the opening of the first female gymnasium in the region. Following the launch of the Zemstvo Reform of 1864, the region entered a period of brisk activity in terms of the establishment of educational institutions under the purview of the Ministry of Public Education, and in 1886 a similar process began there with educational institutions run by the Holy Synod. Consequently, by 1900 Kursk Governorate had across the three principal education levels (secondary, lower, and primary) a total of 853 ministerial educational institutions with a combined enrollment of 70,619 students, whereas the region's education sector run by the Holy Synod numbered a total of 856 primary schools with a combined enrollment of 35,538 students.

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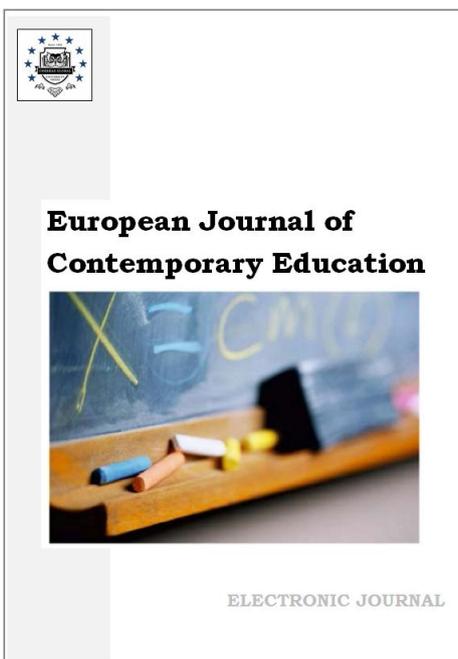
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## **The Institution of the Rectorship within the Higher Education System of the 19th and Early 20th Century Russian Empire: The Case of Imperial Novorossiia University**

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### **Abstract**

This paper examines the key milestones in the development of Imperial Novorossiia University in Odessa in the context of the development of the institution of the rectorship within the higher education system of the 19th and early 20th century Russian Empire.

The study's findings revealed that the mission of Imperial Novorossiia University was both centered on influencing intellectual, cultural, and social life in the region and aimed at expanding Russian imperial influence in the Balkans.

The paper mentions that thanks to the universities there developed in the cities where they were opened a special intellectual, conceptual, and axiological space. As a consequence, each such city received the status of a university city.

The study's findings revealed that, despite being young, Imperial Novorossiia University became a powerful academic and educational center in Ukraine alongside the already running universities in Kiev and Kharkov. In large part, this became possible thanks to the progressive educational policy implemented by the university's rectors for the purposes of closing education gaps, meeting students' special educational needs, and providing students with comprehensive support, including financial assistance for their education.

In part, this was possible through improvements in education quality via an effective staffing policy from the university's rectors, which included enlisting prominent scholars and pedagogues to work at it. In addition, the rectors contributed to the development of the university's own "talent foundry", helping get university graduates and talented gymnasium teachers hooked into science and teaching. All these measures contributed to the development of a special education model to help ensure sustainable development at the level of the university, the region, and the country as a whole.

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The paper also examines the distinctive characteristics of the institution of the rectorship at Imperial Novorossiia University vis-à-vis Imperial Kharkov University and the Imperial University of Saint Vladimir in Kiev.

**Keywords:** education, higher education, rector, education quality, financial aid for education, education gap, sustainable development in education, education policy, education reform.

### **1. Introduction**

The university as a social phenomenon is among humanity's most significant assets from the standpoint of sociocultural, axiological-ideological, and research-to-practice influence. The Russian university tradition, which originates from the second half of the 17th century, is no exception either. In addition to the statuses it already had, every city becoming home to such an educational institution would receive that of a university city. From there on out, the university would be an integral part of the city's image. At the same time, the university would also imbibe the local intellectual tradition accumulated before its emergence.

The institution that stood at the origins of Imperial Novorossiia University was Richelieu Lyceum (established in 1817), whose graduates officially were considered equivalent to university graduates. The discussions amongst the local elite on transforming the lyceum into a university began in the mid-19th century – more specifically, at the time when the Trustee of the Odessa Educational District was the eminent surgeon N.I. Pirogov.

The authorities, both local and central, were always favorable toward the university – the government and the state changed, but the idea of the university was always there. This, however, does not mean that the university itself did not change. Today, the archetype of the perception of the university in Odessa in a historical context is a composition of three chronologically successive images: a prerevolutionary-type university, a Soviet-type educational institution of higher learning, and a modern European university actively integrating into world science.

The emergence of the first university in the south of Ukraine had a significant effect on intellectual, cultural, and social life not only in that region itself but in neighboring regions and countries as well. The imperial government regarded it not only as an educational institution of higher learning for local needs but also as a factor in its influence in the Balkans in the context of the Pan-Slavic ideological doctrine.

During the first decades of its operation, the educational institution engaged a galaxy of brilliant scholars and instructors. The young university's calling card was the names of the professors M.D. Zelinsky, A.A. Kovalevsky, N.P. Kondakov, I.M. Sechenov, I.I. Mechnikov, and others. It is owing to the activity of these selflessly devoted individuals that the university met the standards of global science and consistently upheld that tradition.

Imperial Novorossiia University has an outstanding academic history. Here are just some of the revolutionary accomplishments achieved by the university's scholars in the first 50 years of its existence:

1) in 1886, Professor I.I. Mechnikov, a Nobel laureate, established in Odessa the Russian Empire's first and the world's second bacteriological station;

2) in 1892, V.A. Khavkin, a Novorossiia University graduate and disciple of I.I. Mechnikov, developed the first cholera vaccine; in 1897, he administered the world's first inoculations against plague;

3) in 1893, J.A. Timchenko, a mechanic at Novorossiia University, beat the Lumière brothers by three years as the creator of the first movie camera, which he demonstrated in action to Odessa residents;

4) in 1903, the ophthalmologist V.P. Filatov performed at the university's clinic the world's first corneal transplantation surgery.

Imperial Novorossiia University, founded in 1865 on the basis of Richelieu Lyceum, was the fourth (after Lvov University, Imperial Kharkov University, and the University of Saint Vladimir in Kiev) educational institution of higher learning in modern Ukraine. Its historical continuity is directly associated with the process of institutionalization of education and science in the country.

### **2. Materials and methods**

In putting this work together, analysis was conducted of various sources and documents associated with the development of the university space in the south of Ukraine in the 19<sup>th</sup> and

early 20<sup>th</sup> centuries. This includes ministerial ordinances and other statutory documents regulating the operation of the institution of the rectorship in the Russian Empire ([Tablitsa ustavov, 1901](#); [Dneprov, 2017](#)).

In addition, analysis was conducted of certain materials of a bibliographical nature containing information about professors and instructors at Imperial Novorossiia University, including its rectors ([Odeski istoryky, 2009](#); [Profesory, 2020](#); [Vcheni, 2003](#); [Zolotarev, 1992](#)).

A key source on the history of Imperial Novorossiia University is the Memorandum Book for the Borough of Odessa ([Pamyatnaya knizhka, 1869-1916](#)), which contains lists of public officers and includes specific data on the Trustees of the Odessa Educational District and the rectors of Imperial Novorossiia University.

The digitized holdings and archival collections of the academic library of Mechnikov Odessa National University helped access relevant early-printed and rare books, book collections, and periodical collections, including the personal archives of some of the university's professors and instructors, including A.G. Gotalov-Gotlib and N.N. Lange ([Arkhiv, 2022](#)).

A key source on the history of Imperial Novorossiia University is 'The Transactions of Imperial Novorossiia University', the university's academic-information publication issued in 1867–1913. It carried the findings from research studies spanning across a spectrum of disciplines, research and translations by the university's professors and instructors, and the proceedings of the Academic Board of Imperial Novorossiia University. 'The Transactions of Imperial Novorossiia University' was published in several volumes annually – a total of 113 ([Zapiski, 1867–1913](#)).

These and some other sources and documents helped explore the institution of the rectorship at Imperial Novorossiia University through the lens of its legal, social, social-estate, and organizational characteristics.

Methodologically, the study is grounded in the principles of objectivity, historicism, and analysis and verification of historical sources. Use was made of a number of general and special research methods. In terms of special research methods, use was made of the historical-analytical, classification, biographical, and comparative analysis methods. The last method was employed to explore the institution of the rectorship within the higher education system of 19<sup>th</sup> and early 20<sup>th</sup> century Ukraine through the example of the University of Saint Vladimir in Kiev ([Lebid, Lobko, 2022](#)) and Imperial Kharkov University ([Lebid, 2022a](#); [Lebid, 2022b](#); [Lebid, Shevchenko, 2021a](#)).

In terms of general research methods, use was made of the historical, logical, chronological, and structural-systems analysis methods.

### **3. Discussion**

There are a fairly large number of research works devoted to the history and activity of Imperial Novorossiia University. The research reported in the present paper makes it possible to view the university's history through the prism of the work of its rectors.

It is to be noted that the existing multiple works released in conjunction with the anniversaries of the university and its rectors do not provide a sufficient insight into the institution of the rectorship at Imperial Novorossiia University ([Odeski istoryky, 2009](#); [Popruzhenko, 1915](#); [Domin, Khmarskyi, 2010](#); [Yurzhenko, et al., 1965](#); [Odesskiy unyversytet, 1991](#); [Istoriia Odeskoho, 2000](#); [Odesskiy universitet, 1940](#)) – the insight they offer is only partial.

The corpus of research works on the history of Imperial Novorossiia University that can provide an insight into the development of the institution of the rectorship at it can be classified into several thematic areas.

Firstly, there is the literature of a bibliographical and reference nature that offers information on the rectors of Imperial Novorossiia University as representatives of the scholarly estate, members of the academic corporation, and representatives of the bureaucratic system of the Russian Empire ([Odeski istoryky, 2009](#); [Profesory, 2020](#); [Vcheni, 2003](#); [Zolotarev, 1992](#)).

Secondly, there are the works covering general issues and trends relating to the development of university education in Ukraine and the Russian Empire in the 19<sup>th</sup> and early 20<sup>th</sup> centuries ([Andreev, 2009](#); [Andreev, Lebid, Shevchenko, 2021b](#); [Posohov, 2012](#); [Posohov, 2014](#); [Posohov, 2017](#); [Siropolko, 2001](#); [Ursu, 2014](#)). These and some other works analyze general issues relating to the development of the institution of the rectorship in the context of the operation of the bureaucratic system of the Russian Empire, issues relating to the sociocultural influence of the

universities and the development of the corresponding intellectual space in the region, and legal and some other aspects of the operation of the institution of the rectorship.

The third thematic block includes the research works covering the key milestones in the life and career of the rectors of Imperial Novorossiia University (e.g., Bondaruk, 1995; Tsiganova, 1959; Esipov, 1914; Kiro, 1955; Nepomnyashchiĭ, 2016; Popelyanskiĭ, 1991; Zalenskiĭ, 1909).

Worthy of separate mention are the reminiscences of the rectors' contemporaries and the obituaries. These materials contain valuable facts from the life of the rectors of Imperial Novorossiia University, which give an idea of their contribution to the university's development (Golovkinskiĭ, 1897; Kirpichnikov, 1897; Lagorio, 1897; Modestov, 1884; Pamyati, 1906; Vasil'ev, 2019; Volyarovich, 1956; Zolotarev, 2002).

Of certain interest are the scholarly works by the actual rectors of Imperial Novorossiia University as representatives of the scholarly estate, which provide information of both a scholarly and biographical nature (Derevickij et al., 1898; Golovkinskiĭ, 1872).

#### 4. Results

The Rector was the icon of the educational institution of higher learning they worked for. The historiographical experience indicates that the figure of the first person – the Rector – always was of major significance to and had a great influence on the life of the university and the city that was home to it, where a unique space was being built as a “city-planning phenomenon” (Posohov, 2014: 254). On one hand, it was a state-run institution providing educational services and offering an academic product. On the other hand, it was a powerful creative workshop of ambitious individuals with a high intellectual level and a corresponding creative atmosphere.

The rector, like any human being, was a product of their era. Their personal qualities and work influenced the fate of the university by determining the strategy for its future development. When assuming the post of Rector, each of those individuals, essentially, became a public official and a major figure in the social life of the city and the region (Posohov, 2017).

The appointment of a new head of the university was always a procedure. This mechanism was engendered by a certain era. The Statute of 1863, which was adopted right before Imperial Novorossiia University was established, came out during the Era of Great Reforms in the Russian Empire and was a liberal document that augmented the electiveness principle – the Rector was elected by the Academic Board (Tablitsa ustavov, 1901). Whereas the first rector – the mathematician I.D. Sokolov – was *appointed* to the post, the next one – the law historian F.I. Leontovich – was *elected* by the university's Board. It was during the latter's rectorship and later that of his successor, the geologist N.A. Golovinsky, that the young university, which had already become known throughout the country, engaged prominent scholars such as M.A. Umov, I.M. Sechenov, I.I. Mechnikov, and A.A. Kovalevsky.

The Statute of 1884 restricted the autonomy of universities in the Russian Empire – the Rector was now appointed by the Minister of Public Education from among ordinary professors of the university (Tablitsa ustavov, 1901). The first rectors under the new conditions were the mathematician S.P. Yaroshenko, a Novorossiia University graduate, and the philologist I.S. Nekrasov. On the cusp of the 19<sup>th</sup> and 20<sup>th</sup> centuries, Imperial Novorossiia University became home to its Faculty of Medicine. This was a time when the school witnessed grandiose construction projects with Rector F.N. Shvedov in charge.

The revolutionary events that took place in the early 20<sup>th</sup> century had an effect on both the atmosphere at the university and the work of its administration. For instance, the conservatism of the philologist A.M. Derevitsky did not find support with either the majority of the student body or most of the teaching staff.

Following the passage of the edict on the autonomy of universities in the Russian Empire, the university's Board elected to the post of Rector the mathematician I.M. Zanchevsky. This rector's adamant position regarding the protection of the university's autonomy and democratic freedoms during the revolution cost him his post. In the complicated atmosphere of the post-revolutionary years, World War I, and the new revolutions, the university was headed by the rectors S.V. Levashov, D.P. Kishensky, A.P. Dobroklonsky, V.M. Petriashvili, once more I.M. Zanchevsky, and A.D. Bilimovich. Some of them had a tragic fate.

The revolutionary events and the armed struggle for power resulted in the exodus of a large portion of the Odessa intelligentsia and professoriate abroad. Some of them were able to continue

their academic career in emigration – the universities in Bulgaria, France, and other countries. Among the university's instructors and scholars scattered across the world were individuals whose work would leave a major mark on the foreign land (e.g., the former rector D.P. Kishensky).

**Table 1.** Rectors of Imperial Novorossiia University (1865–1917)

	<b>Rector</b>	<b>Specialization</b>	<b>Term</b>
1	I.D. Sokolov	Mathematics	1865–1869
2	F.I. Leontovich	History of law	1869–1872; 1872–1877
3	N.A. Golovkinsky	Geology	1877–1881
4	S.P. Yaroshenko	Mathematics	1881–1890
5	I.S. Nekrasov	History of literature	1890–1895
6	F.N. Shvedov	Physics	1895–1903
7	A.N. Derevitsky	Philology	1903–1905
8	I.M. Zanchevsky	Mathematics	1905–1907; 1917–1918
9	S.V. Levashov	Medicine	1907–1912
10	D.P. Kishensky	Medicine	1913–1917

The first rector of Imperial Novorossiia University – I.D. Sokolov – was a native of Pskov Governorate and came from the ecclesiastical estate. He was a disciple and follower of Academician M.V. Ostrogradsky, a prominent mathematician. In 1839, he was appointed to the post of Adjunct Professor in the Department of Applied Mathematics at Imperial Kharkov University. In 1841 he became Extraordinary Professor, and in 1843 he took up the post of Ordinary Professor, in that department. Along with his ample academic and educational work, I.D. Sokolov shouldered a fair amount of organizational work at Imperial Kharkov University (1840–1843 – Secretary in the Faculty of Physics and Mathematics; 1845–1858 – Dean of the Faculty of Physics and Mathematics).

In May 1865, Professor I.D. Sokolov was appointed to the post of Rector at Imperial Novorossiia University, newly established in Odessa, where he lectured on theoretical mechanics, algebra, and applied mechanics (Tsiganova, 1959: 20-213). In 1866–1867, he served as Trustee of the Odessa Educational District, the post previously held by N.I. Pirogov, who in his own time contributed to the establishment of a university in Odessa. In 1869, the first rector of Novorossiia University, I.D. Sokolov, was transferred to the city of Kazan to fill the position of Aide to the Trustee of the Kazan Educational District (Profesory, 2020: 12-15).

The second rector – F.I. Leontovich – was a native of Chernigov Governorate. He attended Bezborodko Nezhin Lyceum. He later graduated from the Faculty of Law at the University of Saint Vladimir in Kiev. Much of his pedagogical career was associated with Imperial Novorossiia University (Esipov, 1914). He progressed from being Extraordinary Professor to being Distinguished Professor in the Department of the History of Russian Law. F.I. Leontovich is credited with having laid the foundations of teaching the history of law in the country (Bondaruk, 1995). He took active part in the development of university self-governance in the south of Ukraine. He held the elected office of Rector at Imperial Novorossiia University for two terms (1869–1872 and 1872–1877) and served as Dean of the Faculty of Law (1877–1881) and later as Prorector (1881–1884). Thus, he was the university's first elected, as opposed to appointed, rector, which was in harmony with the University Statute of 1863.

F.I. Leontovich put in a considerable effort to help enhance the university's infrastructure. He initiated the organization of permanent professor apartments, helped enlarge the stock of the university's library, petitioned the Minister of Public Education for the allocation of funding toward the establishment of the observatory, the printing house, the Faculty of Medicine, and the history archive.

F.I. Leontovich played a major role in building the university's teaching workforce. It is through his efforts that Imperial Novorossiia University engaged eminent scholars such as I.I. Mechnikov, I.M. Sechenov, and A.A. Kovalevsky and lawyers such as M.L. Duvernois and

P.P. Tsitovich. F.I. Leontovich was a member of the commission set up by the Minister of Public Education in Saint Petersburg to develop the University Statute of 1884 (Muzychko, 2005).

The third rector – N.A. Golovinsky – was a native of Kazan Governorate. He was descended from the family of a judicial officer (investigator). He graduated from Imperial Kazan University with a candidate's degree. Owing to his brilliance, he was asked to stay at the university and engage in academic work. He prepared there for teaching work (Romanovskii, 1979). In 1871, N.A. Golovinsky was invited to Imperial Novorossiia University, where he became Ordinary Professor in the Faculty of Mineralogy (Lagorio, 1897).

In 1875, N.A. Golovinsky was elected to the post of Dean of the Faculty of Physics and Mathematics. In 1877, he was asked to head up the Faculty again, but he refused. Subsequently, at one of its sittings the university's Board unanimously elected Professor N.A. Golovinsky as Rector of Imperial Novorossiia University, the post he held until 1881, when he retired of his own accord (Golovkinskii, 1897; Kirpichnikov, 1897).

The fourth rector – S.P. Yaroshenko – was a native of Kherson Governorate. He went to Richelieu Lyceum, and later attended the Faculty of Physics and Mathematics at the University of Saint Vladimir in Kiev. He was among the first graduates of the Department of Mathematics in the Faculty of Physics and Mathematics at Imperial Novorossiia University.

In 1870, S.P. Yaroshenko was elected to the post of Associate Professor in the Faculty of Pure Mathematics at Imperial Novorossiia University and also appointed Secretary in the Faculty of Physics and Mathematics. In 1871, he was the first instructor at the young university to defend a doctoral dissertation. In 1881, S.P. Yaroshenko was elected Rector at a sitting of the university's Board by a vote of 30 to 11. He soon received the title of Court Councilor, In 1875, he was granted the title of State Councilor. In 1887, he received the title of Active State Councilor. S.P. Yaroshenko was awarded the Order of Saint Stanislaus (2nd class), the Order of Saint Anna (2nd class), and a silver medal in commemoration of the reign of Emperor Alexander III (Kiro, 1955; Profesory, 2020: 30-34).

The fifth rector – I.S. Nekrasov – was a native of Moscow Governorate. He was a graduate of the Faculty of History and Philology at Imperial Moscow University. Over a period beginning in 1869 and continuing up until his death, his administrative, pedagogical, and academic work was associated with Odessa and Imperial Novorossiia University. He was Dean of the Faculty of History and Philology (1874–1890), the post he held longer than anyone else in the university's history. He held the post of Rector in 1890–1895. He served as Trustee of the Odessa Educational District. He was awarded the Order of Saint Anna (1st class and 2nd class), the Order of Saint Vladimir (3rd class), and the Order of Saint Stanislaus (1st class) (Budde, 1896: 112-118).

The sixth rector – F.N. Shvedov – came from Bessarabia Governorate. He received his secondary education at Richelieu Lyceum and his higher education at the Faculty of Physics and Mathematics at Saint Petersburg Imperial University, from which he graduated in 1862 with a candidate's degree and where he stayed to pursue a course of study in pedagogy.

In 1894, F.N. Shvedov received the title of Distinguished Ordinary Professor. Along with academic-pedagogical work, he engaged in administrative work as well – he served as Dean of the Faculty of Physics and Mathematics (1877–1880 and 1889–1895) and Rector of Imperial Novorossiia University (1895–1903).

F.N. Shvedov went down in the history of Imperial Novorossiia University as a builder rector (Volyarovich, 1956). It is through his efforts that the building of the university's Physics and Chemistry Institute was erected. It was one of the first physics institutes at educational institutions of higher learning in the Russian Empire. After leaving the office of Rector for health reasons in 1903, F.N. Shvedov, keen to complete the engineering-construction project he had initiated, retained the title of Chairman of the Construction Commission (Pamyati, 1906).

The seventh rector – A.N. Derevitsky – was a native of Kharkov. He received his higher education via the Faculty of History and Philology at Imperial Kharkov University. After graduating from that university, he stayed there to pursue his professorial title.

In 1893, A.N. Derevitsky was transferred to Imperial Novorossiia University to fill the post of Ordinary Professor. In 1894 he became Dean of the Faculty of History and Philology, and in 1903–1905 he served as Rector. In addition, A.N. Derevitsky was in charge of the Odessa Educational District in 1903.

As a consequence of a wave of student unrest, he had to leave the office of Rector and was moved to the post of Trustee of the Kazan Educational District (fall of 1905). In late 1911, he took up the office of Trustee of the Kiev Educational District. He would go on to receive the rank of Privy Councilor. In 1916–1917, A.N. Derevitsky served as Trustee of the Orenburg Educational District ([Nepomnyashchii, 2016](#); [Netushil, 1908](#)).

The eighth rector – I.M. Zanchevsky – was born in Odessa into the family of a military person. He graduated from Richelieu Lyceum, and in 1879 he entered the Department of Mathematics in the Faculty of Physics and Mathematics at Imperial Novorossiia University.

In 1892 I.M. Zanchevsky was appointed to the post of Extraordinary Professor in the Faculty of Mechanics, and in 1896 he became Ordinary Professor. In December 1904, I.M. Zanchevsky was appointed Dean of the Faculty of Physics and Mathematics. In September 1905, he was elected Rector by the university's Board.

His term as Rector overlapped with the First Russian Revolution of 1905–1907 ([Revolucionnoe, 1909](#)). During that period, I.M. Zanchevsky supported the student revolution movement, gave the green light to the activity of student unions within the university, petitioned for the release of students detained by the police, and saw to it that the university's hospital provided medical help to the wounded ([Zalenskii, 1909](#)).

Despite being the holder of a set of awards for his accomplishments in the development of public education and science in Russia (Order of Saint Vladimir (4th class), Order of Saint Stanislaus (2nd class), and Order of Saint Anna (3rd class)), I.M. Zanchevsky opposed the government during the Revolution of 1905–1907. Consequently, legal action was taken against him, resulting in his dismissal as Rector in 1907 ([Golotyuk, 1999](#)).

The ninth rector – S.V. Levashov – was a descendant of a noble family in Tula Governorate. He was a graduate of the Saint Petersburg Academy of Medicine and Surgery. He stayed at the academy to pursue his professorial title and was later appointed to the post of Institute Physician at the Botkin Clinic.

In 1886, S.V. Levashov was appointed Professor in the Department of Intermediate-Level Therapy in the Faculty of Medicine at Imperial Kazan University. In 1903, he took up the post of Professor at Imperial Novorossiia University. During the Odessa period, S.V. Levashov combined teaching with academic work and medical practice. In 1907, he was elected Dean by the Board of the Faculty of Medicine at Imperial Novorossiia University. S.V. Levashov was actively involved in social work. He served as a councilor in the Odessa City Duma and was an honorary justice of the peace.

In late 1907, Professor S.V. Levashov assumed the duties of Rector via an ordinance of the Minister of Public Education. In 1911, he was reelected for a second term. In 1912, in conjunction with the reelection of S.V. Levashov as a deputy from the city of Odessa to the 4th State Duma of the Russian Empire, he left the office of Rector and would go on to become one of the more active deputies and a member of the Council of Elders of the State Duma. S.V. Levashov was murdered by the Bolsheviks in 1919 ([Popelyanskiĭ, 1991](#); [Zolotarev, 2002](#)).

The last rector of Imperial Novorossiia University – D.P. Kishensky – came from Tver Governorate. He was a graduate of Imperial Moscow University. In 1902, he took up the post of Extraordinary Professor in the Faculty of Pathological Anatomy at Imperial Novorossiia University, in which he worked until 1919.

Concurrently with being in charge of the Faculty, D.P. Kishensky worked as a prosector at Staraya City Hospital (1908–1912). He took part in eradicating the epidemics of plague and cholera in Odessa ([Vasil'ev, 2019: 213-233](#)). In 1913, Professor D.P. Kishensky became Rector of Imperial Novorossiia University. In 1916, he was reelected Rector for three years. He happened to serve his term during the tough times of World War I.

D.P. Kishensky belonged to a group of professors who stood up for academism at the university. Arguing that the university's academic life had been injected with partisanship and political struggle, D.P. Kishensky requested that the Ministry relieve him of his duties as Rector. In April 1917, his request was satisfied. In 1919, fearing for his life following the Bolsheviks' entry into Odessa, he had to emigrate and move his family to the Kingdom of Serbia, Croatia, and Slovenia, where he would continue his pedagogical, academic, and medical work ([Profesory, 2020: 68-74](#)).

In terms of academic specialization, most of the university's 10 rectors specialized in mathematics and medicine. Most had entered the post with some administrative experience under

their belt. This trend was common to the rest of the Ukrainian universities operating in the period under review – Imperial Kharkov University (Lebid, 2022a: 1314) and the Imperial University of Saint Vladimir (Lebid, Lobko, 2022: 977).

The administrative component was the determining factor in selecting a candidate for the position. Once again, most of the rectors of Imperial Novorossiia University had some executive experience at the time of taking up the post, like having worked as a faculty dean or a university prorector (e.g., I.D. Sokolov, F.I. Leontovich, and F.N. Shvedov).

Combining the administrative post of Rector with the academic activity of a professor at Imperial Novorossiia University contributed to one's further career growth. Specifically, Rector S.V. Levashov was elected a deputy from Odessa to the 4th State Duma. Rector S.P. Yaroshenko was elected Mayor of Odessa in 1905. However, he later was exiled to Vologda Governorate for anti-government activity. Rector A.N. Derevitsky served as Trustee of the Odessa, Kazan, Kiev, and Orenburg Educational Districts.

Of interest is the age of the university's rectors at the time of taking up the post. The university's youngest rectors were F.I. Leontovich and S.P. Yaroshenko (36 and 34 years, respectively). The oldest were I.S. Nekrasov and D.P. Kishensky (55 years each). The average age of rectors at Imperial Novorossiia University was 47 years. By comparison, the average age of rectors was 41 years at Imperial Kharkov University (Lebid, 2022a: 1314) and 44 years at the University of Saint Vladimir in Kiev (Lebid, Lobko, 2022: 977).

Just two of the university's rectors (S.P. Yaroshenko and I.M. Zanchevsky) were graduates of Imperial Novorossiia University – both attended its Faculty of Physics and Mathematics. Another three were graduates of Saint Petersburg's higher education sector and two – graduates of Moscow University. The University of Saint Vladimir in Kiev, Imperial Kharkov University, and Kazan University had produced one graduate among the university's rectors each.

In terms of the ethnic background of rectors at Imperial Novorossiia University, six of them were Ukrainians and four were Russians. No such diversity was there in terms of social background. Four of the rectors of Imperial Novorossiia University were from a noble background, three from an ecclesiastical background, and three from a military background.

According to researcher S.I. Posokhov, in the Russian Empire, "the average length of service as Rector was 6 years" (Posokhov, 2017: 127). In the case of Imperial Novorossiia University, the average length of service as Rector was 5.2 years, which was a little less than at the University of Saint Vladimir – 5.5 years (Lebid, Lobko, 2022: 978), but more than at Imperial Kharkov University – 4.5 years (Lebid, 2022a: 1315). The way in this respect was led by S.P. Yaroshenko (9 years in the post of Rector), F.I. Leontovich (8 years), and F.N. Shvedov (8 years).

Not all of the university's rectors served out their term to the end. There were different reasons for that. For instance, I.S. Nekrasov passed away (the only such case in the history of Imperial Novorossiia University), A.N. Derevitsky stepped down due to social resistance, and I.M. Zanchevsky was dismissed for his anti-government position.

Of particular note is the pedagogical activity and staffing policy of rectors at Imperial Novorossiia University. In addition to conducting academic and administrative work, most of its rectors were well-respected pedagogues keen on implementing innovation in the educational process. In particular, as an instructor Rector I.D. Sokolov always strived to combine theory and practice, which reflected the general trend in the development of universities in the Russian Empire at the time (this trend led to the overhaul of their charters).

A factor considered as determining in recruiting a scholar was their academic potential. Rector F.I. Leontovich believed that talented youth ought to engage as soon as possible in activity at a university "not to be lost for science". The major components in the administrative activity of Rector F.I. Leontovich was ensuring guardianship over student affairs, exempting poor students from tuition fees, setting up a fund for needy students, engaging them in learning, and boosting their interest in science.

Some of the professorial posts went unfilled during the events of 1905–1907. Sometimes, instruction was even entrusted to non-specialists. For the purposes of training future scholars, the Rectorate would keep at the university most of its more gifted graduates with a view to appointing them to a professorial rank. However, the Ministry made only a limited number of scholarships available. Then Rector S.V. Levashov provided this funding from the university's own budget,

sought funding from private investors, and held special sponsorial events intended to help raise funds for disadvantaged students and young scholars.

Looking after poor students was a matter of honor for Rector D.P. Kishensky as well. It is he who appealed through the press to the public in the city of Odessa seeking donations for the Fund for Needy Students at Imperial Novorossiia University. As a result, this charitable organization received significant funding. In addition, in November 1914 D.P. Kishensky authorized the launch of the Employment Bureau for Students within the Fund.

Worthy of mention are also a few other achievements from the rectors of Imperial Novorossiia University. Specifically, Rector I.D. Sokolov read public lectures on mechanics on an annual basis. At the initiative of Rector N.A. Golovinsky, in addition to lectures at the university, the Novorossiia Society of Nature Explorers, which he was Vice-President of, offered between 1872 and 1897 a public class that included popular-science lectures for the public.

A small club was also set up in Odessa by the university's professors (Rector N.A. Golovinsky, Professor I.M. Sechenov, Professor I.I. Mechnikov, Professor N.A. Umov, Professor A.A. Kovalevsky, and others); its motto was 'Science in the Loftiest Sense'. In addition to academic disputes, the club was also used for literary and music events.

The time of the appointment of F.N. Shvedov as Rector overlapped with the time of the election of V.M. Ligin, a math professor at Imperial Novorossiia University, as Mayor of Odessa. Through concerted efforts by the two, funding was obtained toward construction work for the Faculty of Medicine. Rector F.N. Shvedov was appointed Chairman of the Construction Commission. He personally designed the development plan and looked for building materials. F.N. Shvedov also made possible the construction work relating to the library, the Faculty of Law, and the Faculty of Philology at the university.

## 6. Conclusion

There were several objectives behind the establishment of Imperial Novorossiia University in Odessa. On one hand, the university was a vanguard for Russian imperial influence in the region from the standpoint of its expansion into the Balkans, with the Rector acting in this respect as a crucial link in the hierarchical bureaucratic system. On the other hand, its emergence reinforced the government's intention to continue the policy of building the system of Russian universities.

During the relatively short time it was in operation (50 years), Imperial Novorossiia University established itself as a powerful intellectual center with a well-developed research and educational infrastructure, which employed such world-famous luminaries of science as I.I. Mechnikov, I.M. Sechenov, and V.A. Khavkin. And although there were a number of tough periods in the university's history (Revolution of 1905–1907; World War I; February Revolution of 1917; October Coup of 1917), the university managed to get through these trials. A significant role in this process was played by the university's rectors. Many of them were selflessly devoted to their cause and were committed pursuers of a lofty mission.

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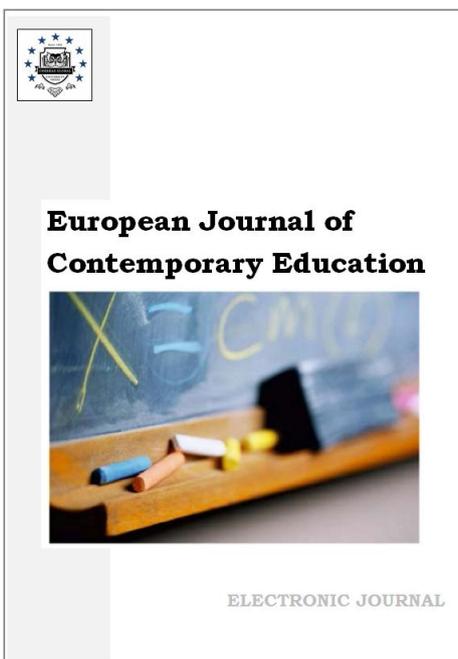
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## Statutory Regulation of the Operation of Female Gymnasiums and Progymnasiums in the Russian Empire

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### Abstract

This paper addresses the statutory regulation of the operation of female gymnasiums and progymnasiums in the Russian Empire.

The principal sources used for the study were a set of relevant statutory instruments, including *Regulation on Female Gymnasiums and Progymnasiums Under the Purview of the Ministry of Public Education*, *Additions and Explanations to the Regulation on Female Gymnasiums and Progymnasiums Under the Purview of the Ministry of Public Education*, and *Rules for Conferring Imperial Awards*.

Methodologically, use was made of sets of legal, historical, and general research methods, including the hermeneutical method, the legal analysis method, the formal-legal method, the historical-systematic method, the historical-typological method, content analysis, synthesis, and systems analysis.

The study's findings revealed that the brisk development in the nation's female gymnasium sector (gymnasiums and progymnasiums) was the result of the liberal reforms initiated by Emperor Alexander II, with attempts made by the government to establish a statutory framework for institutions in this sector.

A foundational statutory instrument was *Regulation on Female Gymnasiums and Progymnasiums Under the Purview of the Ministry of Public Education*, which laid out general terms for the operation of such institutions, covered their key administrative, curricular, and economic matters and issues related to government assistance for students, and established the legal status of their executives and students.

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All fine-tuning with regard to legal status was performed via *Additions and Explanations to the Regulation on Female Gymnasiums and Progymnasiums Under the Purview of the Ministry of Public Education*, released each time new major issues arose regarding the operation of such schools. Intended to help close such loopholes, the *Additions* were legally convenient in the sense that they were of no clear-cut structure and were introduced as needed. There also was a separate set of statutory instruments concerned with refining particular elements.

**Keywords:** system of education in the Russian Empire, female gymnasiums, statutory regulation of educational activity in the Russian Empire, secondary education.

### 1. Introduction

Until recently, women's role in public life in most traditional societies (as was the case in the Russian Empire) was not expected to be very active, with their primary duties (which even was the case with the privileged estate of nobility) mainly reduced to housework and child-rearing. Hence, little premium was placed on their education. However, Russia had to fall in line with the worldwide trend toward gender equality, with the fair sex increasingly taking an active part in the life of Russian society. To engage in academic, entrepreneurial, or educational activity, women would need a corresponding level of education. The liberal reforms initiated by Emperor Alexander II sped up the development of female education in Russia. The present paper seeks to provide an insight into the statutory regulation of female gymnasiums and progymnasiums in prerevolutionary Russia.

### 2. Materials and methods

The principal sources used for the study were a set of relevant statutory instruments, including *Regulation on Female Gymnasiums and Progymnasiums Under the Purview of the Ministry of Public Education* ([Polozhenie o zhenskikh gimnaziakh...](#), 1870), *Decision of the State Council on a Draft Regulation on Female Gymnasiums and Progymnasiums Under the Purview of the Ministry of Public Education Imperially Signed into Law on May 24, 1870* ([Mnenie Gosudarstvennogo Soveta...](#), 1870), *Additions and Explanations to the Regulation on Female Gymnasiums and Progymnasiums Under the Purview of the Ministry of Public Education* ([Dopolneniya i raz'yasneniya...](#), 1871), and *Rules for Conferring Imperial Awards* ([Pravila ob isproshenii...](#), 1898).

Methodologically, use was made of sets of legal (hermeneutical, legal analysis, and formal-legal), historical (historical-systematic and historical-typological), and general research (content analysis, synthesis, and systems analysis) methods.

### 3. Discussion

The operation of female gymnasiums and progymnasiums in the Russian Empire has been covered in the literature fairly extensively.

Among the prerevolutionary authors, of particular mention are Ye. Likhacheva (with her multivolume collection 'Materials for the History of Female Education in Russia' ([Likhacheva, 1901](#))), V. Ovtsyn (with his fundamental work 'Development of Female Education: A Historical Essay' ([Ovtsyn, 1887](#))), and P.G. Oldenburgsky (with his collection of instructional and didactic materials 'Guidelines for the Education of Students at Female Educational Institutions' ([Ol'denburgskii, 1852](#))).

Among the Soviet-period works, of particular note is G.A. Tishkin's 'The Women's Question in Russia in the 1850s–60s', which, among other things, examines the systems of higher, secondary, lower, and primary female education in the Russian Empire ([Tishkin, 1984](#)).

Contemporary research on the subject is a lot more numerous. Much of this research is focused on the regional aspect. It also tends to provide a fairly detailed coverage of individual schools, with extensive use made of relevant archival materials.

Of particular note are the works by M.M. Regalyuk ([Regalyuk, 2008](#)), Ye.G. Isakova ([Исакова, 2008](#)), S.P. Vasil'yeva ([Vasil'eva, 2010](#)), A. Kalachev ([Kalachev, 2007](#)), V.M. Konstantinov and I.B. Nedosekina ([Konstantinov, Nedosekina, 1992](#)), N.A. Dmitriyeva ([Dmitrieva, 2008](#)), Ye. Orlova ([Orlova, 1999](#)), and O.I. Shafranova ([Shafranova, 2013](#)).

At the same time, there are relatively few works exploring the statutory regulation of the operation of female gymnasiums and progymnasiums in the Russian Empire. One of the few such works is the article by N.F. Katsalova, which provides an insight into the development of the organizational-legal foundations of female education in late 19th and early 20th century Russia through the example of a set of relevant statutes ([Katsalova, 2013](#)). Consequently, there appears to be relevance

in gaining a better insight into the statutory regulation of the operation of the female gymnasium sector in the Russian Empire.

#### 4. Results

Without doubt, one of the most important statutory documents regulating the operation of female gymnasiums and progymnasiums in the Russian Empire is *Regulation on Female Gymnasiums and Progymnasiums Under the Purview of the Ministry of Public Education* (hereinafter ‘Regulation’). Of particular mention is Item 1 of the *Regulation*, according to which “female gymnasiums and progymnasiums under the purview of the Ministry of Public Education have the felicity to operate under the auspices of Her Imperial Highness Grand Duchess Maria Pavlovna” ([Polozhenie o zhenskikh gimnaziakh..., 1870: st. 1](#)).

The *Regulation* includes the following sections:

- general provisions (key categories and concepts; goals and objectives of female gymnasiums and progymnasiums; size and duration of the course of study);
- management of gymnasiums and progymnasiums (general provisions regarding the work of the boards of regents and the teachers councils, administrators, and instructors);
- educational part (academic disciplines);
- economic part and government subsidies (administrative-and-facilities management; requirements for government scholarship recipients; conditions for receipt of one-time government assistance);
- rights and entitlements at female gymnasiums and progymnasiums (legal status of executives, employees, and students).

The document stipulated that such educational institutions were to cater to “female students from all social and religious backgrounds” ([Polozhenie o zhenskikh gimnaziakh..., 1870: st. 2](#)). They were to be answerable to the Trustee of the Educational District, and could be opened with his permission “in any cities where it will be possible to have them in operation via public or private donations” ([Polozhenie o zhenskikh gimnaziakh..., 1870: st. 3](#)). As we can see, while the government did seek to make such educational institutions accessible to all, it did not wish to be the only provider of funding for the purpose.

Female gymnasiums offered a course of study consisting of seven 1-year-long grades. There also was an additional, preparatory, course with a length of 1 to 2 years ([Polozhenie o zhenskikh gimnaziakh..., 1870: st. 4](#)). By comparison, progymnasiums had a course of study consisting of at least three 1-year-long grades. Interested schools that could afford it could have its size increased ([Polozhenie o zhenskikh gimnaziakh..., 1870: st. 5](#)).

Special treatment was given to the institution of honorary trustees: “The Governor’s title makes him the Honorary Trustee of all female gymnasiums and progymnasiums in a given governorate. To ensure that the best practices for obtaining funding for the support of already existing female gymnasiums and progymnasiums, as well as opening new educational institutions of this kind, are employed, there may be formed in each governorate, at the direction of the Governor, special committees from individuals willing to help facilitate the achievement of this objective. While taking no direct part in managing female gymnasiums, the Governor may, should he spot a disruption, give relevant directions to the Board of Regents of a given gymnasium or progymnasium; in particularly severe circumstances he may inform the Trustee of the Educational District or directly apprise the Minister of Public Education of it” ([Polozhenie o zhenskikh gimnaziakh..., 1870: st. 6](#)).

An exception was made for the Caucasus Educational District, where it was allowed for the post of Honorary Trustee to be filled by any person who would agree to fund the education of at least six scholarship recipients and contribute to the cause at least 720 rubles every year ([Polozhenie o zhenskikh gimnaziakh..., 1870: Prim. 1](#)). Honorary trustees could also be appointed “from above” – by the Minister of Public Education or even by the Emperor himself (e.g., the appointment of P.P. Demidov, the 2nd Prince of San Donato, who funded the operation of a number of secondary schools in Nizhny Tagil).

The Regulation’s Section 2 set out the rules for administrating female gymnasiums and progymnasiums. Each school of this kind was to be governed by two governing bodies ([Polozhenie o zhenskikh gimnaziakh..., 1870: st. 7](#)):

- Board of Regents, focused on issues related to a school’s development and funding (both funds from the public (e.g., charitable contributions) and those from the Board’s members);

– Teachers Council, concerned strictly with educational work at a given school.

The duties of managing the pedagogical team and organizing the pedagogical process were to be handled by the director of a given gymnasium or progymnasium, and it had to be a female director exclusively. One would be appointed to the post by the Minister of Public Education (with gymnasiums) or the Trustee of the Educational District (with progymnasiums) ([Polozhenie o zhenskikh gimnaziakh...](#), 1870: st. 8). This approach is testimony to the importance of the role assigned to secondary educational institutions by top education officials and the Emperor personally – gymnasiums and progymnasiums served as the breeding ground for the future elite of the intelligentsia, above all pedagogues, i.e. individuals who upon completion of their course of study would themselves engage in teaching youth in accordance with the ideological guideposts nurtured in them. Taking into consideration that the liberal reforms initiated by Alexander II kick-started the revolutionary movement, it is hard to overstate the role of those in charge of gymnasiums in lobbying the interests of the autocratic government and, what is particularly important, in inculcating students with the corresponding political views.

Assistants to the director, referred to as supervisors, were appointed by the Trustee of the Educational District (or, to use present-day terminology, the regional education minister) ([Polozhenie o zhenskikh gimnaziakh...](#), 1870: st. 8).

All female gymnasiums and progymnasiums had the Board of Regents elect a female trustee (from among a given city's more distinguished women). The *Regulation* expressly states that her role was to seek out and bring in sponsor funds for the school ("The Trustee will be elected by the Board of Regents from among the city's more distinguished persons capable of contributing, through their influence, to the prosperity of a given gymnasium or progymnasium" ([Polozhenie o zhenskikh gimnaziakh...](#), 1870: st. 11)). There were exceptions too. For instance, one would be elected to the position of Trustee of Askhabad Female Gymnasium by the Trustee of the Educational District ([Polozhenie o zhenskikh gimnaziakh...](#), 1870: Prim. k st. 11). Decisions regarding election to the post of trustee of a gymnasium were typically made at a very high level of government – by Grand Duchess Maria Pavlovna herself upon recommendation of the Minister of Public Education, with the latter normally making those concerning appointment to the post of trustee of a progymnasium ([Polozhenie o zhenskikh gimnaziakh...](#), 1870: st. 12).

The Board of Regents was vested with the following powers and duties: "1) electing the Trustee and the Director; 2) seeking out funding to help improve the material condition of the school; 3) budgeting expenditure; 4) managing payroll; 5) keeping track of the expenditure of the school's funds; 6) determining the size of tuition fees, which at all events must be lower in progymnasiums; 7) exempting disadvantaged students from paying tuition fees; 8) providing financial assistance to the poorest students distinguished by assiduity and good conduct; 9) ensuring the school is kept in good order and condition at all times" ([Polozhenie o zhenskikh gimnaziakh...](#), 1870: st. 15).

The Teachers Council was concerned with the following: "1) admitting students and transferring students from one grade to another; 2) issuing the certificate of school completion to graduating students and issuing the certificate for the title of home teacher to those who completed the special additional course; 3) conferring awards on students distinguished by good conduct, assiduity, and progress; 4) appointing the Secretary of the Council and the Librarian from among the school's instructors; 5) drawing up the rules for the storage and dispensation of books at the library; 6) considering the yearly report on the educational part; 7) enforcing the rules for penalizing misbehaving students; 8) determining the volume of learning material available to students; 9) dealing with any directives on instruction and education not covered in Items 1 through 45 and in the special instruction from the Minister of Public Education" ([Polozhenie o zhenskikh gimnaziakh...](#), 1870: st. 19).

The law strictly regulated the curriculum for gymnasiums and progymnasiums as well. The following core subjects were to be taught at three-grade progymnasiums: 1) Divinity; 2) Russian (explanatory reading; grammar basics); 3) Russian History and Geography (a condensed course incorporating a geographic survey of the parts of the world); 4) Arithmetic (the four fundamental operations with integers; concrete numbers; fractions; possibility of practical application to accounting); 5) Penmanship; 6) Handicraft ([Polozhenie o zhenskikh gimnaziakh...](#), 1870: st. 24). The note to Item 24 of the *Regulation* tells us that at female progymnasiums with more than three grades "the course of study is to be modeled after that used at gymnasiums" ([Polozhenie o zhenskikh gimnaziakh...](#), 1870: prim. k st. 24).

The following core subjects were to be taught at female gymnasiums: 1) Divinity; 2) Russian (grammar; familiarization with top works on philology); 3) Arithmetic (with application to accounting) and Geometry (basics); 4) Geography (world geography and Russian geography); 5) History (world history and Russian history); 6) Natural History and Physics (key concepts; information related to home management and hygiene); 7) Penmanship; 8) Handicraft; 9) Gymnastics (where there were suitable premises available for the purpose) ([Polozhenie o zhenskikh gimnaziakh..., 1870: st. 25](#)).

The following subjects were elective: French, German, Drawing, Music, Singing, and Dancing ([Polozhenie o zhenskikh gimnaziakh..., 1870: st. 26](#)).

In 1871, the Ministry of Public Education released *Additions and Explanations to the Regulation on Female Gymnasiums and Progymnasiums Under the Purview of the Ministry of Public Education* (hereinafter ‘Additions’), intended to help fine-tune information related to the legal status of schools’ executives and students ([Dopolneniya i raz'yasneniya..., 1871](#)). Changes to the *Regulation* would be made as new issues arose regarding the operation of such schools.

In particular, the first two *Additions* addressed in a more detailed manner and through the example of the Kiev Educational District issues of subordination with female gymnasiums and progymnasiums. They also introduced changes to Items 10 and 17 (dealing with Board of Regents membership) ([Dopolneniya i raz'yasneniya..., 1871: p. 1-2](#)).

The third *Addition*, adopted on March 8, 1875, fine-tuned the regulation of certain administrative issues, namely oversight of the work of female gymnasiums and progymnasiums on the part of the Ministry of Public Education – directors of male gymnasiums could no longer oversee the work of female secondary educational institutions, with this function now vested in an officer from the Ministry – in this case, the Trustee of the Educational District. The Trustee could delegate his powers to a person on the staff of his office, more specifically the Public Schools Inspector ([Dopolneniya i raz'yasneniya..., 1871: p. 3](#)).

The implementation of the counter-reforms and the resulting use of tougher censorship measures and heightened surveillance of educational organizations by the police led to the adoption of the addition whereby “any societies based at educational institutions must inform the local authority of the day, time, and place of their meetings and specify the subjects for discussion at them” (*Proposal from the Minister of Public Education No. 10656 of July 9, 1893* ([Dopolneniya i raz'yasneniya..., 1871: p. 6](#))). Societies would have to provide all that information to the “civil authority” at the instance of the Ministry of Internal Affairs.

The addition *On Empowering the Administration of an Educational District to Set, in Opening Female Gymnasiums and Progymnasiums, Requirements on the Material Part of Their Operation* regulated requirements on the material part set by a region’s education authority. It reads as follows: “As regards the issue of whether the Administration of an educational district has the right to set down, in opening female gymnasiums and progymnasiums, special requirements for their founders with regard to the material aspect, it clearly follows from the purport of the law on the opening of female gymnasiums and progymnasiums (Article 2682, Vol. 11, Part 1, *Code of Laws*, 1893) that before it gives permission to open such a school the Administration not only may, but must, ascertain whether the facility has the capability and resources to operate efficiently. In this regard, the Ministry finds that it would be perfectly appropriate to request detailed receipts and expenditure statements. In addition, given that nothing is known yet of a school’s workforce, the Administration of an educational district may, to be on the safe side, change the size of salaries to be paid to its staff and seek the establishment of minimum pay rates as an essential condition for opening the educational institution” ([Dopolneniya i raz'yasneniya..., 1871: p. 12](#)). As we can see, the objective behind setting such requirements was to ascertain that a school had both solid material-and-technical foundations and a robust social component (e.g., ability to make timely salary payments).

A separate set of statutory instruments regulated the legal status of officers at such schools. This includes the following: *On Hiring, Transferring, and Dismissing Staff* ([Ob opredelenii na sluzhbu..., 1871](#)); *On Hiring Women for Work in Government Agencies* ([Ob opredelenii na sluzhbu..., 1871: p. 1](#)); *On Appointment to Teaching Positions at Secondary Educational Institutions Under the Purview of the Ministry of Public Education* ([Ob opredelenii na sluzhbu..., 1871: p. 2](#)); *On the Appointment of Full-Time Pedagogy Teachers in Female Gymnasiums Under the Purview of the Ministry of Public Education* ([Ob opredelenii na sluzhbu, 1871: p. 4](#)).

The ordinance *On the Chairman of the Teachers Council at Female Gymnasiums and Progymnasiums Under the Purview of the Ministry of Public Education* regulated the legal status of the Chairman of the Teachers Council at such schools (O Predsedatelyakh Pedagogicheskikh Sovetov..., 1874). *On the Director and the Trustee of Female Gymnasiums and Progymnasiums Under the Purview of the Ministry of Public Education* regulated that of those in charge of such schools (O nachal'nitse i popechitel'nitse..., 1905). *On Doctors at Female Gymnasiums and Progymnasiums* regulated that of medical personnel (O vrachakh..., 1871).

Overall, it can be concluded that the *Regulation* provided general principles for statutory regulation of the operation of female gymnasiums and progymnasiums, whilst it is via particular ordinances and directives from either the Emperor or the Minister of Public Education that certain issues would be regulated to fill gaps arising in the context of the operation of such schools.

## 5. Conclusion

The study yielded the following conclusions:

1. The brisk development in the nation's female gymnasium sector (gymnasiums and progymnasiums) was the result of the liberal reforms initiated by Emperor Alexander II, with attempts made to establish a statutory framework for institutions in this sector. Specifically, in 1870 the government adopted the foundational statutory instrument *Regulation on Female Gymnasiums and Progymnasiums Under the Purview of the Ministry of Public Education*, which laid out general terms for the operation of such institutions, covered their key administrative, curricular, and economic matters and issues related to government assistance for students, and established the legal status of their executives and students.

2. All fine-tuning with regard to legal status was performed via *Additions and Explanations to the Regulation on Female Gymnasiums and Progymnasiums Under the Purview of the Ministry of Public Education*, first introduced in 1871 under the aegis of the Ministry of Public Education. This document was released each time new major issues arose regarding the operation of such schools. Intended to close such loopholes, the *Additions* were legally convenient in the sense that they were of no clear-cut structure and were introduced as needed.

3. There also was a separate set of statutory instruments concerned with refining particular elements, which, just like the *Additions*, were published up until the Revolution of 1917 began. These instruments more accurately regulated the work of the administration, the teaching councils, and medical personnel and issues related to remunerating staff.

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### **The System of Public Education in Astrakhan Governorate in the Second Half of the 19th and Early 20th Centuries. Part 3**

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#### **Abstract**

This set of articles relies on reference and memorandum books from the period 1873–1917 to explore the development of the system of public education in Astrakhan Governorate. This is the third piece in the set. It addresses the period 1895–1907, which covers the entire reign of Emperor Nicholas II.

The principal source used in this work is the Memorandum Books for Astrakhan Governorate spanning 1895–1907.

Methodologically, use was made of sets of historical (historical-systematic, historical-comparative, historical-typological, historical-genetic, and historical-statistical) and general (synthetic analysis, content analysis, and systems analysis) research methods.

The study's findings revealed that between 1895 and 1907 the system of public education in Astrakhan Governorate witnessed brisk development, with the number of secondary and lower educational institutions in the region increasing 2 times and that of primary schools there growing 3.3 times. The largest growth was registered in 1898–1903, which can be attributed to demographic growth. The number of lower educational institutions in the region rose evenly year on year, whereas its secondary and primary schools posted a sharp quantitative increase in certain years.

Despite the Russo-Japanese War of 1904–1905 and the Revolution of 1905–1907, the system of public education in Astrakhan Governorate continued its brisk development. In fact, Astrakhan Governorate even outperformed some of the country's other regions in this respect.

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**Keywords:** public education, system of public education, public schools, Astrakhan Governorate, education in Astrakhan Governorate.

### **1. Introduction**

This work is the third piece in a set exploring the development of the system of public education in Astrakhan Governorate in 1895–1907. A comparative analysis was conducted to explore differences between the system of education in Astrakhan Governorate and its counterparts in certain regions of the Caucasus Educational District, Vologda Governorate, Voronezh Governorate, and Volyn Governorate.

The timeframe 1895–1907 represents a complicated period in Russian history. It witnessed an industrial boom, the rapid development of the rail industry, and a demographic surge, which was associated not with migration but with the development of capitalism and increases in people's standard of living. Of particular note is the financial reform undertaken by S.Yu. Witte, which placed the Russian ruble on the gold standard. Based on this reform, the Russian government began minting 5- and 10-ruble gold coins with a face value close to the real value of the precious metal such coins were made of. Among the negative events, of particular note is the Russo-Japanese War of 1904–1905, which was highly unpopular with the people and would eventually have far-reaching implications for the Russian Empire. The war was not over yet when the country witnessed the First Russian Revolution (1905–1907), which would result in uprisings, strikes, and industrial disturbances and, as a consequence, in a decline in the material well-being and morale of the people. The event would also bring about a new form of government in the country – Russia moved from absolute to constitutional monarchy and adopted a party-based system, with the State Duma becoming its representative top lawmaking body. Naturally, both the nation's economic and social spheres reacted quite sensitively to the war and the revolution. The present work aims to investigate the development of public education in Astrakhan Governorate during that complicated period.

### **2. Material and methods**

The principal source used in this work is the Memorandum Books for Astrakhan Governorate spanning 1895–1907 ([Pamyatnaya knizhka, 1895](#); [Pamyatnaya knizhka, 1896](#); [Pamyatnaya knizhka, 1897](#); [Pamyatnaya knizhka, 1898](#); [Pamyatnaya knizhka, 1899](#); [Pamyatnaya knizhka, 1900](#); [Pamyatnaya knizhka, 1901](#); [Pamyatnaya knizhka, 1902](#); [Pamyatnaya knizhka, 1903](#); [Pamyatnaya knizhka, 1904](#); [Pamyatnaya knizhka, 1905](#); [Pamyatnaya knizhka, 1906](#); [Pamyatnaya knizhka, 1907](#)). These sources offer fairly detailed information with regard to the number, whereabouts, type, and name of educational institutions in the region, as well as the teaching staff of most of them. However, they do not provide certain types of data (e.g., number of students). Besides, some of them offer no data on parochial schools and literacy schools in the region. Hence, these sources cannot be regarded as exhaustive. At the same time, the Memorandum Books are informative enough to provide a general idea of the development of the system of education in Astrakhan Governorate in the period 1895–1907.

Valuable data on the region's social makeup are available from the First General Census of the Russian Empire of 1897 ([Perepis'..., 1897](#)). An insight into the characteristics of legislation in the area of education at the time can be gained from 'The Complete Collection of Laws of the Russian Empire' ([PSZRI, 1914](#)).

In terms of methodology, use was made of both historical (traditional and non-traditional) and general research methods. The following traditional historical research methods were used: historical-systematic, historical-comparative, historical-typological, and historical-genetic. The only non-traditional historical research method used in this work was the historical-statistical method. The general research methods employed in this work were synthetic analysis, content analysis, and systems analysis.

### **3. Discussion**

Below is a brief review of the historiography on the subject.

In terms of the prerevolutionary literature, of particular note are the works of N.F. Kazansky ([Kazanskii, 1898a](#); [Kazanskii, 1898b](#); [Kazanskii, 1898c](#); [Kazanskii, 1898d](#)), A.N. Shtyl'ko ([Shtyl'ko, 1897](#)), T.N. Ostroumov ([Ostroumov, 1914](#)), and V. Kalegulov ([Kalegulov, 1918](#)).

In terms of the works produced during the Soviet period, of particular note are the works of I.M. Bogdanov (Bogdanov, 1964), V.Z. Smirnov (Smirnov, 1963; Smirnov, 1956), and A.G. Rashin (Rashin, 1951) and the essays on the history of pedagogical thought in Russia (Ocherki..., 1976; Ocherki..., 1991).

In terms of the modern works covering the history of education in Astrakhan Governorate, of particular note are the works of D.Yu. Arapov (Arapov, 2004), V.M. Viktorin (Viktorin, 2008), I.Ye. Krapotkina (Krapotkina, 2011), A.M. Treshchev, G.V. Alferova, and Ye.A. Tarabanovskaya (Treshchev i dr., 2001), A.B. Olneva (Ol'neva, 1988), I.K. Zagidullin (Zagidullin, 1992), R.M. Islemisova (Islemisova, 2013; Islemisova, 2014; Islemisova, 2015), R.G. Rezakov and F.M. Rekesheva (Rezakov, Rekesheva, 2014), and Ye.A. Tarabanovskaya (Tarabanovskaya, 2016).

As part of the present study, a comparative analysis was also conducted of the development of the system of public education in Astrakhan Governorate during the period under review vis-à-vis a number of other regions in the Russian Empire, including Vologda Governorate (Cherkasov et al., 2019), Volyn Governorate (Cherkasov et al., 2022), and certain areas within the Caucasus Educational District (e.g., Magsumov et al., 2020, Magsumov et al., 2021, Mamadaliev et al., 2022b, and Molchanova et al., 2019). The purpose behind comparing the region's education system with that of other regions in the Russian Empire was to form an objective understanding of the state and pace of the development of the system of public education in Astrakhan Governorate.

#### **4. Results**

A classification of educational institutions in the Russian Empire by type was provided in the second piece of the set (Magsumov et al., 2022a).

Based on a set of relevant statutory instruments (PSZRI), Astrakhan Governorate's educational institutions can be divided into the following types: higher (universities, institutes (exclusive of teacher's institutes), and academies), secondary (gymnasiums, progymnasiums, teacher's institutes, ecclesiastical seminaries, teacher's seminaries, real schools, and technical schools), lower (urban schools, tradesman's (industrial) specialized schools, tradesman's schools, higher primary schools, Mariinsky schools, uyezd schools, madrasas<sup>1</sup>, ecclesiastical schools, and diocesan schools), and primary (primary schools, parochial schools, parish schools, stavka schools, literacy schools, and maktab<sup>2</sup>). It is to be noted that at different times certain types of educational institution were referred to differently.

The present work will not consider the system of higher education in the region.

As at 1895, Astrakhan Governorate had the following 153 educational institutions:

– in the city of Astrakhan: secondary educational institutions – 1 male gymnasium, 1 Mariinsky female gymnasium, and 1 real school; lower educational institutions – 1 urban four-grade male school, 2 urban three-grade schools, 1 Armenian Agababov uyezd school, 1 urban four-grade female school, 1 tradesman's school of Emperor Alexander II, 1 male tradesman's school, 1 Armenian male tradesman's school, 1 female tradesman's school, and 1 deaf-and-dumb school; primary educational institutions – 8 male parish schools, 6 female parish schools, 1 nautical school, 1 non-Slavic Tatar one-grade school, 1 central Kalmyk male school, and 7 private schools;

– in Astrakhan Uyezd: lower educational institutions – 1 three-grade urban male school in the city of Krasny Yar; primary educational institutions – 1 parish female school in the city of Krasny Yar, Petropavlovskoye Primary School, Teplinskoye Primary School, and Nikolskoye Primary School;

– in Yenotayevsky Uyezd: lower educational institutions – 1 two-grade urban male school in the city of Yenotayevsk; primary educational institutions – 1 parish male school, 1 parish female school, and 11 uyezd primary schools;

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<sup>1</sup> A lower religious Muslim (normally three- or four-grade) educational institution that provided free instruction in mathematics, literacy, and Islam. It was to be attended after completing one's schooling at a maktab. Education at a madrasa was similar to that at an ecclesiastical seminary. It empowered one to enter a university (i.e., attending a madrasa was identical to going to a secondary school). Yet the laws of the Russian Empire subsumed madrasa education under the lower level, i.e. the second level of education (after primary education).

<sup>2</sup> An elementary religious Muslim educational institution that provided instruction in grammar, counting, and the fundamentals of Islam.

– in Chernoyarsky Uyezd: lower educational institutions – 1 two-grade urban male school in the city of Cherny Yar; primary educational institutions – 1 parish male school, 1 parish female school, and 18 uyezd primary schools;

– in Tsarevsky Uyezd: lower educational institutions – 1 two-grade urban male school in the city of Tsarev; primary educational institutions – 31 uyezd primary schools;

– in the Kalmyk Steppe: primary educational institutions – 6 primary schools;

– in the Bukey Horde: lower educational institutions – 1 madrasa; primary educational institutions – 1 stavka two-grade school, 1 stavka female school, 4 primary schools, and 1 two-grade Russian-Kirgiz school;

– in the territory of the Astrakhan Cossack Host: primary educational institutions – 12 male stanitsa schools, 11 female stanitsa schools, and 4 township schools.

In addition, Astrakhan Governorate had 1 ecclesiastical seminary, 1 model school based at the seminary, 1 ecclesiastical school, 1 diocesan female ecclesiastical school, a network of parochial schools, 1 Armenian male ecclesiastical school, and 1 Armenian diocesan female ecclesiastical school.

As at December 31, 1907, Astrakhan Governorate had the following educational institutions:

1. Secondary educational institutions – Astrakhan Gubernia Male Gymnasium, Astrakhan Real School, 1 private real school of G.S. Sobolev in the city of Astrakhan, Astrakhan Mariinsky Female Gymnasium, Astrakhan Female Gymnasium of N.S. Shaverdova, 1 female gymnasium of N.A. Vutecic in the city of Astrakhan, 1 female gymnasium of Ye.N. Paltseva in the city of Astrakhan, and Astrakhan Ecclesiastical Seminary.

2. Lower educational institutions – Astrakhan Male Ecclesiastical School, 1 diocesan female school in the city of Astrakhan, Astrakhan Music School, Astrakhan School of Short-Distance Navigation, Astrakhan First-Class School of Horticulture and Gardening, Astrakhan School for Feldshers and Nurse Midwives, 1 first-class obstetric school, 1 artistic and technical-drawing school, 5 four-grade male urban schools (based on the 1872 regulation), 2 four-grade female urban schools (based on the 1872 regulation), 1 four-grade stavka urban school in the Bukey Horde (based on the 1872 regulation), 1 Armenian uyezd school, 4 uyezd urban schools (based on the 1872 regulation) in the cities of Krasny Yar, Tsarev, Cherny Yar, and Yenotayevsk and 1 madrasa in the Bukey Horde. There also were 6 tradesman's schools (the male tradesman's school of Emperor Alexander II, Nikolayevskaya Lower Tradesman's School, the male tradesman's school run by a charitable society, the Armenian male tradesman's school, the female tradesman's school run by a charitable society, and the tradesman's school for deaf-and-dumb children) and 12 second- and third-class private schools (those of V.V. Werner, M.M. Gosteyeva, O.A. Gulyanitskaya, U. Dzhemshidova, O.F. Dembitskaya, L.V. Drevskaya, K.P. Zhukova, S.V. Lanhammer, K.I. Likhacheva, Ye.S. Semenovskaya, A. Serebryakova, and A.A. Fedorova).

3. It is impossible to determine the exact number of primary educational institutions in the region based on the Memorandum Books alone. The 1907 Memorandum Book ([Pamyatnaya knizhka, 1907: 70-264](#)) lists 15 male and 14 female parish schools in the city of Astrakhan, 1 Kalmyk male school, 2 non-Slavic Tatar one-grade schools, 1 Jewish school, 31 stanitsa schools of the Astrakhan Cossack Host, 22 parochial schools in the city of Astrakhan, 16 primary public schools, 48 parochial schools, 21 literacy schools and 2 Sunday schools in Astrakhan Uyezd, 1 parish male and 1 parish female schools in the city of Krasny Yar, 5 one-grade primary schools in the city of Krasny Yar, 16 parochial schools and 16 literacy schools in Krasnoyarsk Uyezd, 1 parish male and 1 parish female school in the city of Yenotayevsk, 2 two-grade and 12 one-grade schools in Yenotayevsk Uyezd, 1 parish male and 1 parish female schools in the city of Cherny Yar, 21 parish schools in Chernoyarsk Uyezd, 1 parish male school in the city of Tsarev, 2 parish schools, 2 two-grade schools, 52 one-grade schools, 66 parochial schools and 43 literacy schools in Tsarev Uyezd, 6 schools in the Kalmyk Steppe, 1 one-grade Russian-Kirgiz female school, 5 uchastok schools, 2 two-grade schools, and 1 maktab in the Bukey Horde, 7 starshinstvo schools, and 2 mobile aul female schools.

The quantitative statistical data on educational institutions in the region are provided in [Table 1](#). The Memorandum Books spanning the period under review offer no quantitative data on the region's student body.

**Table 1.** Numbers of Educational Institutions (with a breakdown by type) and Students in Them in Astrakhan Governorate in the Period 1895–1907 (Pamyatnaya knizhka, 1895: 75-156; Pamyatnaya knizhka, 1896: 64-151; Pamyatnaya knizhka, 1897: 68-170; Pamyatnaya knizhka, 1898: 61-166; Pamyatnaya knizhka, 1899: 70-169; Pamyatnaya knizhka, 1900: 66-165; Pamyatnaya knizhka, 1901: 73-180; Pamyatnaya knizhka, 1902: 72-178; Pamyatnaya knizhka, 1903: 77-191; Pamyatnaya knizhka, 1904: 75-189; Pamyatnaya knizhka, 1905: 59-183; Pamyatnaya knizhka, 1906: 66-244; Pamyatnaya knizhka, 1907: 70-264)

Year	Educational institutions				Number of students
	Secondary	Lower	Primary	Total	
1895	4	21	128 <sup>1</sup>	153 <sup>2</sup>	N/A
1896	4	22	136 <sup>3</sup>	162	N/A
1897	5	24	157 <sup>4</sup>	186	N/A
1898	6	25	181 <sup>5</sup>	212	N/A
1899	7	27	206 <sup>6</sup>	240	N/A
1900	7	28	230 <sup>7</sup>	265	N/A
1901	7	29	254 <sup>8</sup>	290	N/A
1902	7	33	291 <sup>9</sup>	331	N/A
1903	7	36	322 <sup>10</sup>	365	N/A
1904	7	39	359 <sup>11</sup>	405	N/A
1905	8	39	375 <sup>12</sup>	422	N/A
1906	8	39	399 <sup>13</sup>	446	N/A
1907	8	40	428 <sup>14</sup>	476 <sup>15</sup>	N/A

As evidenced in [Table 1](#), the number of educational institutions in the region increased in the period under review progressively. It was particularly pronounced during the prewar years.<sup>16</sup> The largest increase in the number of secondary educational institutions was posted in the period from 1897 to 1899. There was a more or less even increase in the number of lower educational institutions. The number of primary educational institutions increased particularly sharply at the turn of the century (i.e., in 1898–1903), which can be attributed to the demographic surge witnessed by the Russian Empire in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. The Russo-Japanese War and the Revolution of 1905–1907 did not stop that growth. Overall, in the period from 1895 to 1907 the number of secondary and lower educational institutions in the region grew 2 times and the number of primary schools there rose nearly 3.5 times. If we compare the system of education in Astrakhan Governorate with those in other regions in the Russian Empire, like certain areas within the Caucasus Educational District (e.g., [Magsumov et al., 2020](#), [Magsumov et al., 2021](#),

<sup>1</sup> The data are incomplete, as this information does not factor in parochial and religious schools in the region's uyezds.

<sup>2</sup> Data incomplete

<sup>3</sup> Data incomplete

<sup>4</sup> Data incomplete

<sup>5</sup> Data incomplete

<sup>6</sup> Data incomplete

<sup>7</sup> Data incomplete

<sup>8</sup> Data incomplete

<sup>9</sup> Data incomplete

<sup>10</sup> Data incomplete

<sup>11</sup> Data incomplete

<sup>12</sup> Data incomplete

<sup>13</sup> Data incomplete

<sup>14</sup> Data likely incomplete

<sup>15</sup> Data incomplete

<sup>16</sup> In 1904–1905, the Russian Empire was engaged in the Russo-Japanese War.

Mamadaliyev et al., 2022b, and Molchanova et al., 2019), Vologda Governorate (Cherkasov et al., 2019), and Volyn Governorate (Cherkasov et al., 2022), this growth appears quite substantial.

## 5. Conclusion

The study produced the following conclusions:

1. Between 1895 and 1907, the system of public education in Astrakhan Governorate witnessed brisk development, which can be illustrated by the following facts:
  - The number of secondary educational institutions increased 2 times – from 4 to 8;
  - The number of lower educational institutions increased nearly 2 times: from 21 to 40;
  - The number of primary educational institutions increased 3,3 times – from 128 to 428.
2. The largest increase in the number of schools in the region occurred at the turn of the century (1898–1903). This can be attributed to the sharp demographic surge experienced in the late 1890s. The number of lower educational institutions in the region rose evenly year on year, whereas its secondary and primary schools posted a sharp quantitative increase in certain years.
3. Despite the Russo-Japanese War of 1904–1905 and the Revolution of 1905–1907, which was a period characterized by economic recession in the Russian Empire and a decline in the standard of living of its citizens, the system of public education in Astrakhan Governorate continued its development.
4. In the period under review, Astrakhan Governorate's performance in the development of public education was fairly strong, with the region measuring up strongly against other regions in the Russian Empire and even outperforming some of them significantly (e.g., Vologda, Penza, and Stavropol Governorates).

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## The Russian Prerevolutionary Periodical Press on Out-Of-School Education (1907–1917)

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### Abstract

This work examines the Russian prerevolutionary periodical press on out-of-school education.

The study's source base was a diverse body of literature exploring the periodical press of the Russian Empire period. The use of the chronological method helped gain an insight into the impact of World War I on the nation's periodical press on out-of-school education, and the use of the content analysis method helped establish which of the journals were produced by individual publishers and which were published by academic societies.

The study's findings revealed that out-of-school education was covered in prerevolutionary Russia by 12 academic pedagogical journals, which were produced from 1907 to 1917. Due to their distinctive nature, these journals were edited and published by private societies or private publishers. It was rare for most of them to be produced for a long time (e.g., *Samoobrazovaniye* and *Izvestiya Samarskogo Obshchestva Narodnykh Universitetov* were published from 1909 to 1917 and from 1910 to 1916, respectively). Half of the journals, 6 of the 12, lasted between 1 and 3 issues, which mainly was due to the outbreak of World War I and the use of tougher censorship measures.

**Keywords:** periodical press, Russian Empire, pedagogy, out-of-school education, period 1907–1917.

### 1. Introduction

Issues related to out-of-school education were typically treated in the Russian Empire as narrowly focused pedagogical ones, and predominantly were addressed during the later imperial

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period. This was due to the brisk development of the so-called folk high school sector and the establishment of various pedagogical courses in the period following the First Russian Revolution. The objective behind promoting out-of-school education was to engage large masses of the population in self-education beyond the walls of educational institutions. Consequently, journals on out-of-school education began to come out in Russia only in 1907.

## **2. Materials and methods**

The study's source base was a diverse body of literature exploring the periodical press of the Russian Empire period. This, most notably, includes L. Belyayeva's 'A Bibliography of Russian Periodicals, 1901–1916' (Belyaeva, 1958) and N. Ablov's 'Pedagogical Periodical Press (1803–1916)' (Ablov, 1937).

The use of the chronological method helped gain an insight into the impact of World War I on the nation's periodical press on out-of-school education, and the use of the content analysis method helped establish which of the journals were produced by individual publishers and which were published by academic societies.

## **3. Discussion**

The historiography on the subject can be divided into several independent groups.

The first group deals with issues related to out-of-school education, and includes the following works: V. Alekseeva and T. Aminov's 'Concepts Underpinning the Education of School-Age Children in the Pedagogical Science of Late 19th and Early 20th Century Russia' (Alekseeva, Aminov, 2016). M. Venikova's 'Creation of Moscow Folk School in the Context of the Development of Civil Society in Russia in the Late 19th and Early 20th Centuries' (Venikova, 2016), and the same author's 'Institutionalization and Educational Activity of Folk High Schools in Imperial Russia' (Venikova, 2017).

The second group of publications deals with specialists in the area of out-of-school education. Specifically, the legacy of one such prominent specialist, V. Charnolusky, is examined in the following works: N. Parshikov and Yu. Stolyarov's 'V.I. Charnolusky – The Founder of Russian Pedagogical Bibliography' (Parshikov, Stolyarov, 2016) and T. Butorina and L. Ul'yanovskaya's 'The Issue of the Essence of Out-Of-School Education in the Works of V.I. Charnolusky' (Butorina, Ul'yanovskaya, 2015). V. Charnolusky's work was explored with keen interest during the Soviet period as well. Of particular note are P. Pidkasishty and S. Stepanov's 'The Preeminent Figure in Public Education' (Pidkasishty, Stepanov, 1966) and S. Stepanov's 'V.I. Charnolusky' (Stepanov, 1985).

The third group deals with the narrowly focused periodical press. This topic has seen a renewed interest recently. Specifically, the periodical press of the Ministry of Public Education was researched by R. Allalyev and colleagues (Allalyev et al., 2022), and that of the Kazan Educational District was explored by V. Muzykant and colleagues (Muzykant et al., 2022). In addition, the author of the present paper and his colleagues explored the periodical press of the Ecclesiastical Department (Mamadaliyev et al., 2022), that of the Caucasus Educational District (Mamadaliyev et al., 2022a), and that of the Kiev Educational District (Mamadaliyev et al., 2023).

It is to be noted that up to now there has been no dedicated research on Russia's periodical press on out-of-school education. The present work aims to fill this gap.

## **4. Results**

Russia's first periodicals on out-of-school education emerged only in the later imperial period – in the early 20th century.

The first such periodical was the journal *Yezhegodnik Vneshkolnogo Obrazovaniya* (Russian: 'Out-Of-School Education Yearbook'). Its first issue was published in 1907 in Moscow by a publishing house run by I. Sytin. The periodical was published under the editorship of V. Charnolusky. It had two issues published. The second issue was published in Saint Petersburg in 1910 by the publishing house Znaniye. Through this periodical, V. Charnolusky sought to give the reader "a comprehensive picture of the current state of affairs in all types and levels of public education" (Stepanov, 1985: 119-120). *Yezhegodnik Vneshkolnogo Obrazovaniya* carried various reference materials related to out-of-school education. Information provided in these reference materials was gathered from first-hand sources, which explains their significance for the history of public education in Russia.

Since V. Charnolusky will be mentioned in the present work more than once, it may be worth saying a few words on his biography. Vladimir Ivanovich Charnolusky (1865–1941) was a recognized specialist in the area of public education and a prominent figure in the social-pedagogical movement. He was one of the founders of the All-Russia Teacher's Union and the founder of Russian pedagogical bibliography (Parshikov, Stolyarov, 2016: 49).

The First All-Russia Congress of Folk High School Figures was held in January 1908. As is commonly known, the idea behind folk high schools was placing a premium on out-of-school education. The event resulted in the production of 'Diary of the First All-Russia Congress of Folk High School Figures'. Published daily in January 1908, it carried the program, presentation abstracts, and other materials for the Congress (Belyaeva, 1958).

In 1909, Moscow became home to the journal *Samoobrazovaniye* ('Self-Education'), focused on students preparing for their exams independently. The journal's publisher was M. Gur'yanova, and its editor was P. Gur'yanov. Published from 1909 to 1917, the journal catered to individuals preparing for exams to enter an educational institution or for school finals (the high school level). The journal did not aim to be a pedagogical platform on out-of-school education – it was primarily focused on independent preparation for exams. Hence, it typically carried course notes and exemplary problems designed to help one prepare for an exam (Ablov, 1937: 79).

The journal *Vestnik Narodnykh Universitetov* ('Folk High School Bulletin') was launched in 1910. It was published by the Board of the Saint Petersburg Society for Folk High Schools. The journal's publisher was V. Filosofov, and its editor-in-chief was M. Gran. Produced from May 1910 (Issue 1) to April 1911 (Issue 8), the publication was devoted to the work of the Saint Petersburg Society for Folk High Schools. It also carried learning plans and outlined best practices employed by pedagogical staff. The journal, which brought together specialists in the area of out-of-school education, published writings by prominent scholars such as A. Kremlev, N. Mogilyansky, M. Novorusky, V. Pekarsky, V. Svyatlovsky, V. Syromyatnikov, and V. Filosofov (Belyaeva, 1958).



**Fig. 1.** Title page of the journal *Izvestiya Samarskogo Obshchestva Narodnykh Universitetov*

The journal *Izvestiya Samarskogo Obshchestva Narodnykh Universitetov* ('Proceedings of the Samara Society for Folk High Schools') began to be published in Samara at the same time as *Vestnik Narodnykh Universitetov*. Its editor from Issue 1 to Issue 9 for 1910 was N. Shishkov. Subsequently, beginning with Issue 10, the post was held by P. Preobrazhensky, who would remain

in it all the way until 1916. In 1910, 20 issues of the journal were published. It is not known how many issues of it were published in the years since. The journal was concerned with the activity of the Samara Society for Folk High Schools and its participation in the educational work of Samara Folk High School. In addition, the journal carried discussions on various narrowly focused issues related to education (e.g., cinema's effect on education ([Obrazovatel'nyi kinematograf, 1914](#))). It published writings by prominent scholars such as A. Borovoy, Ye. Jelačić, N. Kareyev, N. Preobrazhensky, M. Rubinstein, N. Rumyantsev, and B. Syromyatnikov.

The journal *Narodnyy Universitet* ('Folk High School') was launched in 1911 in Moscow. It was produced by the Moscow Society for Folk High Schools. The journal was published monthly beginning in October 1911. It carried materials on the activity of the Moscow Society for Folk High Schools, course notes, information on core and additional learning resources, etc. ([Ablov, 1937: 98](#)).

In 1914, Petrograd became home to the first issue of the monthly journal *Vneshkolnoye Obrazovaniye* ('Out-of-school Education'). The project's editor and publisher was A. Valyayev. The journal was an appendix to the publication *Zemstvo i Narodnoye Obrazovaniye* ('The Zemstvo and Public Education'), and was focused on informing the public about the work done by the Zemstvo in the area of out-of-school education. However, the outbreak of World War I and the subsequent introduction of tougher censorship measures would result in the discontinuation of the journal ([Belyaeva, 1958](#)).

In early 1914, Saint Petersburg became home to the journal *Volnyy Universit* ('Free University'). The journal was positioned as a popular science and social publication. Its editor and publisher was Ya. Dushechkin. Overall, 16 issues of the journal were published in 1914. *Volnyy Universit* was produced jointly with the journal *Uchitel i Shkola* ('Teacher and School'). It carried popular science articles on various pedagogical issues, with a focus on self-education. The journal published writings by prominent scholars such as D. Aleksandrov, L. Kupriyanova, Ye. Kuskova, V. Levitsky, V. Lvov-Rogachevsky, K. Pozhitnov, Ye. Smirnov, and M. Smit. It was announced in Issue 16 that the publication would be discontinued until the end of World War I and the "advent of suitable conditions for the production of the journal" ([Ot redaktsii, 1914](#)).

In 1915, Chita became home to *Voskresnaya Shkola*, the journal of Chita Sunday School. Its first issue, which came out in November 1915, was dedicated to the school's 20th anniversary. The initial plan was to produce three issues a year. However, the publication would eventually last just as many issues. The journal's first issue provided a review of the work of Chita Sunday School, facts about its history, articles by students, reminiscences, and some other materials ([Ablov, 1937: 104](#)).

In September 1916, Penza became home to the first issue of *Vestnik Vneshkolnogo Obrazovaniya* ('Out-Of-School Education Bulletin'). It was published by the Penza Society for the Support of Out-Of-School Education. Its editor-in-chief was I. Iosinsky. Its editorial board sought to unite the local cultural forces around the journal, familiarize the public with the Society's work, and keep the public informed about educational work in the city of Penza ([Ot redaktsii, 1916: 1](#)). However, due to World War I the journal was discontinued, with just its first issue produced.

In 1916, Petrograd became home to the journal *Vneshkolnoye Obrazovaniye i Samoobrazovaniye* ('Out-Of-School Education and Self-Education') ([Figure 2](#)). It was positioned as a monthly desk reference for out-of-school education institutions. Its editor and publisher was Ye. Proskuryakov. The journal was produced with participation from V.I. Charnolusky, the prominent specialist in this area. In 1916, three issues of it were released. While the journal was an extraction from the pedagogical reference publication *Vestnik Narodnogo Obrazovaniya* ('Public Education Bulletin'), it was primarily concerned with issues relating to out-of-school education. It published laws, carried circulars and explanations from the Governing Senate, and listed new books on out-of-school education, new academic books, new children's books, and banned books. It had a section entitled 'From Literature and Life' and a separate section concerned with self-education ([Soderzhanie, 1916: 1-2](#)).



Fig. 2. Title page of the journal *Vneshkolnoye Obrazovaniye i Samoobrazovaniye*

In 1916, the same editor and publisher team (editor and publisher Ye. Proskuryakov, in conjunction with V. Charnolusky) launched in Petrograd another monthly desk reference, *Narodnaya Shkola* ('Folk School'), which was focused on folk schools and folk teachers. As was the case with the reference *Vneshkolnoye Obrazovaniye i Samoobrazovaniye*, the publication lasted only three issues. The journal carried materials of relevance to folk schools and their teachers. It published official notices from the Ministry of Public Education and bibliographical pieces on new books and study guides (Soderzhanie, 1916a: 1-2).

## 5. Conclusion

Out-of-school education was covered in prerevolutionary Russia by 12 academic pedagogical journals, which were produced from 1907 to 1917. Due to their distinctive nature, these journals were edited and published by private societies or private publishers. It was rare for most of them to be produced for a long time (e.g., *Samoobrazovaniye* and *Izvestiya Samarskogo Obshchestva Narodnykh Universitetov* were published from 1909 to 1917 and from 1910 to 1916, respectively). Half of the journals, 6 of the 12, lasted between 1 and 3 issues, which mainly was due to the outbreak of World War I and the use of tougher censorship measures.

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## The Role of Youth Movements and Organizations in the Formation of Civic and Patriotic Consciousness

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### Abstract

This article characterizes the role of youth movements and organizations in the formation of civic-patriotic consciousness. The author turns to the history of youth organizations and movements in Germany in the post-war period (1920-s). The chronological framework of the work covers the time period from the late 10-s to the 1920-s of the twentieth century. The purpose of this article is to characterize youth organizations in Germany at the beginning of the twentieth century and their role in the formation of civic and patriotic consciousness of the younger generation. The role of social movements and organizations in the issues of socialization of youth and the formation of civic-patriotic consciousness in these conditions is emphasized. It is social activity that is the most effective school for the education of citizenship, patriotism, and high moral qualities of young people. The role of social movements and organizations is significantly increasing in the issues of socialization of young people and the formation of civic-patriotic consciousness in these conditions. Youth public associations serve as a special institution of socialization. General scientific and private scientific approaches form the methodological basis of the study. These are historical, comparative, and systematic approaches. Applied methods are also used. This article will be useful to teaching staff, educators, heads of educational organizations on issues of civil and patriotic education of the younger generation, their involvement in creative activities and participation in various collective creative affairs and events.

**Keywords:** youth movements and organizations, civic and patriotic consciousness, education, the younger generation, Germany, the beginning of the twentieth century.

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### **1. Introduction**

In this article, the authors turn to the history of youth organizations in Germany in the post-war period (1920-s). The chronological framework of the work covers the time period from the late 10-s to the 1920-s of the twentieth century. This time is a controversial period in the history of the development of the state. One side is the time of the formation of a democratic social movement. The other side is the formation of confrontation and anarchy. The relevance of the appeal to the period we have chosen is due to the intensive formation of the economy of state, the formation of the foundations of law and civil society.

Deep knowledge of the historical experience of setting and solving the problem of civic and patriotic education of the younger generation by means of various youth associations and movements will help today's pedagogical theory and practice to avoid mistakes due to biased one-sidedness and hasty intellectual borrowing.

### **2. Materials and methods**

Archival data is an important historical source. Archival sources significantly improve the presentation of specific historical and pedagogical material and indicate the main directions in the development of the problem in the present time. Materials of the State Archive of the Russian Federation (F. 102. I. 233. P. 13. Case 1800 Involvement of teenagers in organizations; F. 102. Police Department 1880–1917. Special Department. 1905. I. 233. Part 3. D. 110. Note about various organizations among students in various educational institutions of the Privy Councilor Speshkov) serve as a valuable material carrier of information establishing the historical facts of the existence of youth organizations in Germany at the beginning of the 20th century. Archival materials helped the authors of the article to get closer to understanding the role of youth organizations and associations in the formation of civic and patriotic feelings of the younger generation.

General scientific approaches and private scientific methods form the methodological basis of the research. These are historical, comparative, and systematic approaches. Applied methods are also used.

The historical method of research implies the use of methods, means and techniques for the study and interpretation of psychological and pedagogical sources and literature in strict chronological order and the search for other evidence, the presentation of historical and pedagogical events during the presentation of the article. The historical approach necessarily implies the use of archival sources. They are the foundation in the construction of research material and the basis for the presentation of scientific historical and pedagogical facts.

The comparative method implies a comparison of the youth associations of Russia and Germany of the period under consideration, the allocation of common and different in them for the purpose of general characteristics and typology.

The system method involves the use of a system method of cognition. It implies the study of the system of youth organizations in Germany at the beginning of the twentieth century, the connections of its components and their connections with the external environment. In the course of the study, we identified the relationships and their interactions. They manifested themselves in the emergence of the state system of public youth organizations in Germany during the period under review.

Private scientific methods include the study and analysis of documents, information collection, data processing.

The provisions of social psychology, pedagogy, the history of pedagogy and education play an important methodological role. The authors are guided by the principles of scientific objectivity, criticality and creative approach to the analysis of the reality in question in the process of preparing and writing this article.

### **3. Discussion**

The analysis of historical and pedagogical publications shows insufficient knowledge of the activities of youth organizations and movements for the formation of civil and patriotic consciousness of the younger generation.

The chosen topic of the scientific publication involves the analysis of scientific literature in three directions:

- 1) The study of the concepts of citizenship and patriotism and the problems of civic and patriotic education of young people;
- 2) Characteristics of the processes of formation of civil-patriotic consciousness of youth, issues of socialization of personality;
- 3) Description of the youth movement in Germany during the period under review.

All scientific and literary sources on the problem under study are grouped accordingly.

Publications of Russian teachers, philosophers and public figures on issues of citizenship, patriotism, patriotic education of the younger generation belong to the first group of works. Their research is devoted to theoretical and methodological issues of civic and patriotic education of the younger generation in the second half of the XIX – early XX centuries.

Teachers and researchers paid special attention to theoretical and methodological issues of civic and patriotic education. A significant contribution to their consideration was made by well-known theorists of pedagogical thought B. Bim-Bad, M. Boguslavsky, A. Vigdorov, S. Belentsov et al. (Bim-Bad, 2003; Boguslavsky, 2005; Vigdorov, 1958; Belentsov et al., 2019).

M. Boguslavsky in his work “History of Russian pedagogy (the first third of the twentieth century)” (2005) examines the development of the school in the early twentieth century. It touches upon the issues of the formation of civic and patriotic qualities of the younger generation. Special emphasis is placed on the formation of love for the Motherland, a kind attitude to the small Homeland, respect for historical heritage (Boguslavsky, 2005).

B. Bim-Bad embodies the ideas of pedagogical human studies in his works. His work is a self-study of historically accumulated historical wisdom of mankind in matters, including patriotic education of the younger generation (Bim-Bad, 2003).

The work of the Russian author A. Vigdorov is devoted to the research of the youth movement in Russia and abroad. It is notable for its great attention to the problems of education of civic culture, citizenship and youth activity (Vigdorov, 1958).

The second group of works is research on the formation of civil-patriotic consciousness of youth, the processes of socialization of personality, civil-patriotic education.

Understanding of patriotism and citizenship in the context of an important direction of consciousness of the younger generation allows us to identify the close connection of the processes of formation of civic-patriotic consciousness with the problems of growing up of youth.

Studies of the problems of the youth movement in Germany during the period under review belong to the third group of works. These are the works of German teachers, public figures H. Siemering, V. Engelhardt, F. Glacel (Siemering, 1922; Engelhardt, 1918; Glacel, 1920). F. Glacel was one of the founders of the Young German Union and described its goals and the content of its activities (Glacel, 1920). H. Siemering considered the ideological foundations, the content of the activities of the youth union “New Gang”. He represented it in the form of an association of young people to organize various holidays and events. H. Siemering saw the main purpose in promoting the cultural and general development of youth (Siemering, 1922).

The main theoretical approaches to the consideration of public organizations of youth of the period under consideration are sufficiently fully considered in the monograph by V. Miroshvsky. He presented a generalizing historical and pedagogical work “Bourgeois youth organizations in Germany” (1924). The author has considered in detail the main directions and content of the youth movement in Germany of the period under review. He paid special attention to the formation of the civic position of the future citizen, the role of the state and the church in matters of their growing up (Miroshvsky, 1924).

#### **4. Results**

The appeal to the consideration of the problem of youth organizations and movements and their role in the formation of civic and patriotic qualities of the individual connects us with the characteristics of these processes in Germany at the beginning of the twentieth century. Their creation and activity testifies to the high level of consciousness of the younger generation, the desire of the state to develop their minds and moods in a positive and creative direction.

During the First World War and the Revolution in Germany, a number of new youth organizations were created. As a rule, they all had new programs and carried out modern forms of activity.

V. Miroshevsky in his work "Bourgeois youth organizations in Germany" (Moscow-Leningrad, 1924) divided them into three groups:

1. Organizations with a clear, pronounced pro-state form of their activities (German great-power nationalism). These are the "Young German Union" and the "Union of Young Nationalists". They were in a fairly close ideological "kinship" with state movements. Meanwhile, the Young German Union built its work on the basis of organizational independence and self-activity of its members.

2. These are religious and moral organizations - these are "New Creativity" and "New Gang". Their goal was determined by the tasks of spiritual and moral education of the younger generation. They were different from the church-controlled youth unions.

3. Youth unions with views and ideas of the struggle for the justice of public order. "Monistic Youth", "International Youth Union", "Wayfarer", "Youth groups of the Order of the Beautiful Temple" and others (Miroshevsky, 1924).

#### **Free state unions**

"The Young German Union".

Information about the Young German Union was found by us in the State Archive of the Russian Federation. A note about various organizations among students in various educational institutions of Privy Councilor Speshkov testified to the presence of pro-state unions in the youth movement of Germany. Similar organization was established in 1919. Groups of young front-line intellectuals led by Otter Gref were their predecessors. They were talking, "We believed in the war. We believed in victory. But the war did not bring the long-awaited victory, it brought only defeat and national shame. The war is not to blame for it. Defeat in the war is to blame. We will fight under the old banners for the new Germany. We will build a victorious Germany" (GARF. F. 102. Op. 233. Ch. 13. D. 1800. L. 6-7).

They remained adherents of German statehood. The Young German Union is one of their organizations.

Frank Glacel, one of the founders of this organization, wrote, "We are the successors of the struggle for unity, freedom and rights of Germany, which has been going on for centuries" (GARF. F. 102. Op. 233. Ch. 13. D. 1800. L. 6-7).

Our emblem has three gold rings on a green field. Green color marks the flowering of life. The golden color is the color of truth and ideal aspirations. We are fighting for ideals, for truth, for life itself. Three interlocking rings mark national unity. The German nation is now gravitating towards three ideals: Christianity, nationalism and socialism. They completely merge in the ideological direction. There are no religious contradictions in this union. Both Catholics and Protestants are equally Christians. Class contradictions also do not divide us. A nation is a single organism with vital parts for the whole. There are also no party contradictions. After all, parties are a diverse expression of the sentiments of a single national mass (Glacel, 1920: 23).

The main goal of this youth movement is also characterized by the words of Frank Glacel. We strive to come to positive idealism from negative idealism with its constant criticism of existing social and state forms. We want to practically participate in the construction of the future society and state. We really want to move forward and not stand still on the ground of utopias (Glacel, 1920: 24).

Glacel considered the Young German movement as part of the "new front" of the struggle for a new Germany. This movement had as its starting point "the mobilization of the natural feelings of the nation against the destruction of society" (Glacel, 1920: 24). German society is decomposed by materialism and rationalism. These two deadly sins were the cause of the collapse of morality, law, faith and, finally, the state (Glacel, 1920: 26).

#### **Union of Young Nationalists**

We found information about this youth association in the State Archive of the Russian Federation in the case "Involving teenagers in organizations" (GARF. F. 102. Op. 233. Ch. 13. D. 1800. L. 12). This organization was close to the Young German Union in its content. There were no ideological differences between them.

The Union of Young Nationalists emerged in August 1919. It numbered about 150 people.

The prospects of these youth associations depended on the economic conditions of the development of the state. They will gradually approach the ideology of the movement of ordinary segments of the population (GARF. F. 102. Op. 233. Ch. 14. D. 1898. L. 15-16).

**Table 1.** Free state unions in the early XX centuries

№	Name of the organization	Purpose of the activity	Year of foundation
1.	“The Young German Union”	The mobilization of the natural feelings of the nation against the destruction of society	1919
2.	Union of Young Nationalists	This organization was close to the Young German Union in its content	1921

Source: the table is compiled by the author

So, the pro-state youth associations clearly had a significant impact on the formation of the civic and patriotic qualities of the younger generation (love for the Motherland and the small Motherland, solidarity of the participants, responsibility for the future of their Fatherland). We substantiate the possibility of the participants of these movements showing individuality in the process of collective interaction.

#### **Free religious unions**

Dr R. Drill testified to the creation of a new movement “New Creativity» in Germany. It has arisen in 1919. This union was created by a group of members of the German Democratic Party of the Protestant (Lutheran) faith. Ebergard Arnold, Georg Fleming, Emil Engelhardt, Heinrich Schultheis formed its basis (Engelhardt, 1918: 14-15).

“New Creativity” originally had a political program of action. Pretty soon it turned into an apolitical, non-partisan movement with a pronounced religious tinge.

Public reports were periodically organized by members of the organization in order to spread religious ideas. The participants of the movement preached adherence to the old ideals of the structure of German society. Capitalism and industrialism are unnatural. The situation is different with craft. Hymns of praise for the craft sound by themselves everywhere where it has been preserved (Lebensbuch, 1921). In fact, we all feel about some serious changes in society. We're not going to die. We will live in the sense of the all-inspiring idea of life (Lebensbuch, 1921).

Thus, “New Creativity” is an organization of artisan youth with speeches against the industrial development of society. V. Miroshevsky considers such thoughts and, in general, the program of this organization as an indicator of the mental disorder of German youth (Miroshevsky, 1924). The desire for spiritual search and moral development of young people very revealingly prove the necessity and relevance of the existence of such youth organizations.

#### **“The New Gang”**

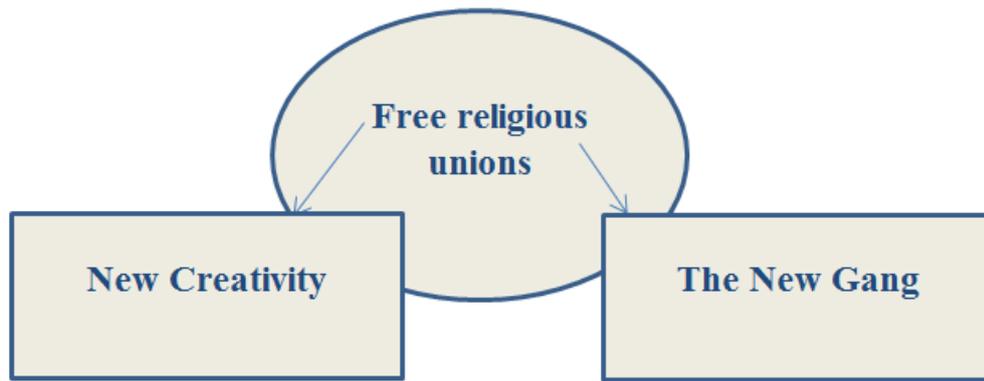
We find information about the existence of this organization in H. Siemering. He was writing, “This movement originated in 1920” (Siemering, 1922: 24).

25 boys and girls led by Muck Lamberti wandered through Thuringia. They sang divine and other various hymns. They visited villages and towns, they gathered people in squares. Young people organized celebrations. They made speeches and distributed proclamations. The youth called themselves the “New Gang» (Siemering, 1922: 19).

The youth preached the unity of the people without differences and classes. They called on the people to abandon their material worries and give themselves up to a sense of joy with a calm and courageous attitude to life. They called for an end to “life-poisoning clever reasoning” and return to the simple and naive faith of their ancestors (Siemering, 1922: 19).

All the boys and girls of the “New Gang” represented rather a religious and mystical sect. This organization consisted of only a few dozen people. They were high school students and students for the most part.

Several craft artels were created and several workshops were opened. Former high school students produced handmade products in them.



**Fig. 1.** Free religious unions in the early XX century  
Source: the figure is compiled by the author

Thus, the main task of free religious unions was to form the free choice of young people as the basis of civic and patriotic qualities. Striving for spiritual search and moral development are integral components of this process. We consider this group of youth organizations as independent public formations for joint activities. They contributed to the self-development and self-determination of adolescents.

“Union of Young Monists”.

Monism is a philosophical trend with the assertion of matter as one dominant principle in nature. The so-called spirit is only a form of manifestation of matter. The “spirit”, ideas, thoughts of a person are only one of the functions, one of the physiological functions of the material being of a person. Monism is the foundation of philosophical materialism.

The young intelligentsia of the early twentieth century tuned in to the “materialistic way” mainly to improve the economic standard of living of the citizens of the state. On the other hand, the transition from idealism and religiosity to materialism and science was only the first step towards faith in the creative forces of society.

The fate of a small organization of German youth, the Union of Young Monists, is characteristic in the sense of awareness of creative forces and their application in complex, difficult conditions of modern reality. This union emerged in 1919 as an association with the aim of facilitating its members to “develop a free worldview on a strictly scientific basis”.

It was an organization of a purely cultural type with the task of joint study and discussion of various scientific problems.

The youth association had the following characteristics of its activity:

1. Every young man should perceive the results of scientific development as available cultural values. Everyone who joins the ranks of monists should show a firm desire to contribute to their mental development. This is done by participating in discussions and working in one of the groups of the society.

2. The ability to think critically should be one of the important results of the movement. We demand that everyone renounce indifference and stagnant ideological traditions. Every young man should learn to know and evaluate the outside world and himself clearly and objectively.

3. Knowledge and personal creativity are required to form the worldview of the future citizen. We can achieve this only with the help of life practice. Therefore, we attach great importance to joint spiritual and physical exercises, walks, travel and the establishment of comradely relationships.

4. Friendly relations give each of us the opportunity to manifest our social activity. Physical health is a successful prerequisite for this.

5. The personal independence of each young man is ensured by the very nature of the youth organization. We don't need dictatorial leaders or bureaucratic allied officials. Each of the members is a common leader and educator to a greater or lesser extent ([Das Programm..., 1921](#)).

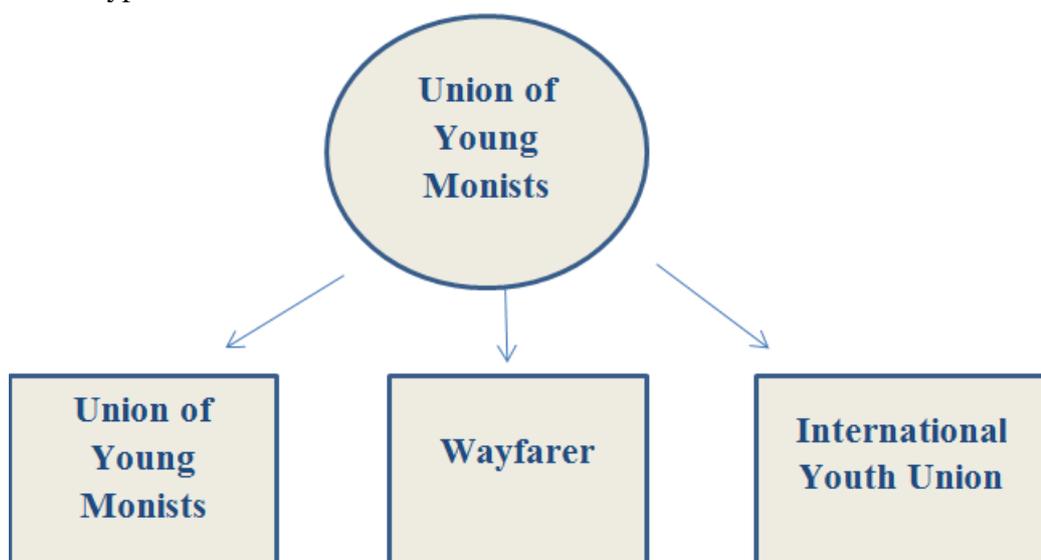
This program emphatically emphasized the most essential and characteristic features of the union. “Young monists” are critically minded young intellectuals in search of new ways of life, truths, new deeds...

The Union of Young Monists in full force joined the ranks of the German Komsomol in May 1923.

Several other unions with a similar activity program have also been organized in Germany. This is the “Wayfarer” or “International Youth Union”. The ideas of the “Free Germans” served as the basis of the program activity here. A holistic worldview emerged from them.

The influence of the monists was also very strong in the so-called “Youth Groups of the Order of the Beautiful Temple”. It was an organization of pacifists and alcoholics. It originated in the 80-s of the XIX century and numbered about 70 people.

Young monists used extremely cautious and seasoned tactics in relation to all organizations of this type.



**Fig. 2.** Youth unions in the struggle for justice in the early XX century  
Source: the figure is compiled by the author

In our opinion, this type of youth organizations was the most popular among German youth. Participation in them presupposed the formation and development of critical thinking as one of the most important qualities of a future citizen and patriot of his Homeland. Every teenager learned to objectively know and evaluate the outside world and himself. The education of citizenship and patriotism in these public organizations of youth is conditioned by the definition of activities based on age and social characteristics, special needs and interests of youth in different areas of life.

### 5. Conclusion

1. If the youth organizations of Germany at the beginning of the twentieth century played a very significant role in the social life of Germany, then the activities of all the movements considered, in turn, were entirely determined by the objective environment of the youth's stay in it. Teachers, researchers, and teaching staff should familiarize themselves with it for the purposes of civic and patriotic education of modern youth.

2. Our attention was drawn to the situation of the younger generation of intellectuals – students. It formed the basis of the German youth movement. All the guiding ideas grew out of the youth movement of the period under review. Youth unions arose precisely in the youth environment. They had a significant cultural and historical significance.

3. The powerful development of economic foundations has brought to life an acute need for the “production of the intelligentsia”. Engineers were needed to manage industrial enterprises, workers needed advanced training, teachers were needed to educate the younger generation. These were all citizens in the correct sense of the word, with formed civic-patriotic qualities.

4. We have found out the essence, main types and activities of the German unions of the early twentieth century in our article. We stressed. The youth movement played a significant role in the formation and development of civic and patriotic qualities of the younger generation. All the activities of the youth unions of the time under consideration were of great importance in the formation of future citizens of a free democratic state.

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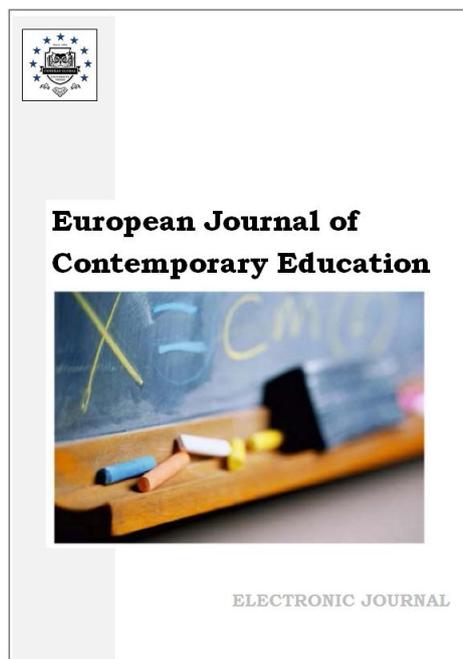
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## Cherkas Global University Hiking Club (1996–2022)

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### Abstract

This work examines the history of the Cherkas Global University Hiking Club.

The principal source used for this paper was the newspaper *Vestnik Leib-Gvardii* for 1996–1997. Use was also made of relevant materials of private origin and academic publications dealing with expedition activity at Cherkas Global University.

The findings revealed that the Hiking Club at Cherkas Global University was launched in 1996. Over the period from 1996 to 2022 inclusive, members of the teaching and administrative staff of Cherkas Global University completed nearly 100 mountain hikes, some of which included as many as ten overnight stops. Whereas the highest peaks ascended in 1996 did not exceed 1,000 meters above sea level (the Western Caucasus), as early as 1999 regular ascensions were also seen by peaks as high as 2,000 to 3,000 meters. Beginning in 2005, trips were also made to peaks as high as 5,000 meters (the Greater Caucasus – Mounts Elbrus and Kazbek). So far, staff members of Cherkas Global University have gone on hiking trips in the US, Norway, Georgia, Russia, and Armenia. These expeditions involved some research, its outcomes including several publications in top-rated journals and a number of rational proposals.

**Keywords:** Cherkas Global University, Hiking Club, history, period 1996–2022.

### 1. Introduction

The role played in the life of academic institutions by mass sporting activities is just about as important as the one played by the educational process. Doing sports tends to be given a great deal of attention by them, with a focus on creating proper conditions for both the educational process and sports training to be an integral part of life in them. As early as primary school, many educational institutions offer their students an opportunity to attend a club specializing in a particular sport, be it soccer or swimming. Apart from volleyball, rugby, water polo, and other sports, some universities are

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now offering hiking, a sport that involves walking in a scenic mountainous area. This paper will examine the activity of the Hiking Club at Cherkas Global University.

## 2. Materials and methods

The principal source used for this paper was the newspaper *Vestnik Leib-Gvardii* for 1996–1997. Use was also made of relevant materials of private origin and academic publications dealing with expedition activity at Cherkas Global University.

The nature of this study is such that use had to be made of the descriptive and chronological methods in order to reconstruct the picture of the Hiking Club's activity in the period from 1996 to 2022.

## 3. Discussion

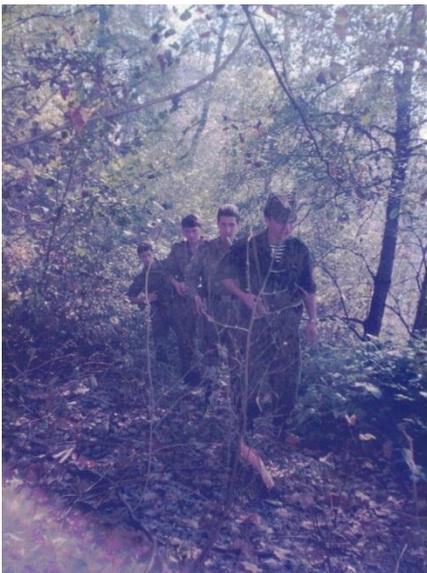
The historiography on the subject is represented by a set of publications on Cherkas Global University. The first such article, which summarizes the results of the 5-year activity of the International Network Center for Fundamental and Applied Research, was published in 2019 (Tarakanov, Ponomareva, 2019). In 2021, there came out an article describing the history of Cherkas Global University in the period 1992–2014 (Taran, 2021). A summarizing work on the history of the university was released only in 2022. Entitled 'Cherkas Global University (1992–2022): Yesterday, Today, and Tomorrow', it was dedicated to the Organization's 30th anniversary (Cherkasova, 2022).

At different times attempts have also been made to describe the history of the university's publishing house, Cherkas Global University Press (Rajović, 2021; Cherkasova, 2022a), as well as the history of its shooting sports society, the Rifle Association (Cherkasova, 2022b).

Despite the attempts undertaken, the historiography on Cherkas Global University remains thin at this time.

## 4. Results

The first trips to the mountains in the context of military sporting events were made back in 1996, when members of the Military Historical Society were undergoing sport shooting training in the mountains. Chosen as the venue for the sporting activities was Mount Semenovsky Spire, which towers 998 meters above sea level (the foothills of the Western Caucasus in the vicinity of Krasnaya Polyana (home to the Rosa Khutor alpine ski resort, which hosted the Alpine and Nordic events of the 2014 Winter Olympics in Sochi)). These trips were described in the article 'From the History of the Rifle Association in the Cherkas Global University (1992–2022)' (Cherkasova, 2022: 1048-1061).



**Fig. 1.** Group of members of the Military Historical Society during a mountain field trip (November 17, 1996)

This period in the history of the Organization can be illustrated by the photo shown in [Figure 1](#) (taken from the *Vestnik Leib-Gvardii* newspaper) ([Budni i prazdniki, 1996: 2](#)).

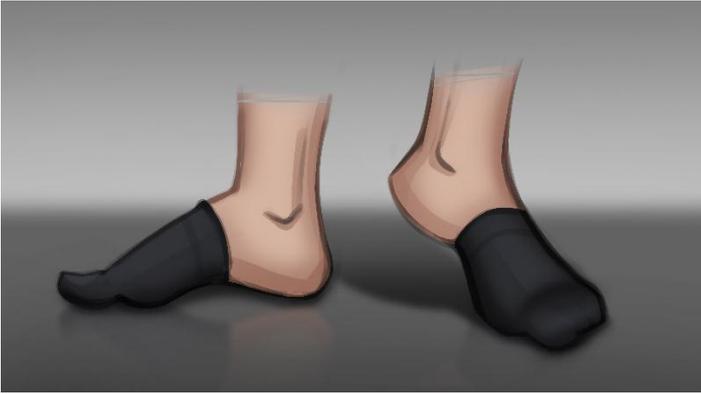
Ascensions of peaks with a height of up to 1,000 meters took place in the period 1997–1998 as well ([Budni i prazdniki, 1997: 2](#)). Yet, as more experience was gained, ascensions also began to be seen by peaks that were more complex. Specifically, an attempt was undertaken in 1999 to climb Mount Achikhsho (2,391 meters), which would not be completed. A group, which included Aleksandr Cherkasov, Roman Nekhoroshev, and a few other members of the Society, attempted to climb the mountain head-on. They got to the cliff section, stayed there for the night, and then returned. Subsequently, Mount Achikhsho saw numerous ascensions. For instance, the period 2004–2005 saw as many as 15 climbs of the mountain with overnight stops, including in the winter months.



**Fig. 2.** Aleksandr Cherkasov on Mount Achikhsho in December 2003

Although most trips were made in the summer months, quite many were undertaken in other times of the season as well. Trip length varied from 1 to 10 days, and the height above sea level varied from 2,000 to over 5,500 meters above sea level. Some routes had a climbing difficulty of 4B, requiring the use of mountaineering equipment.

The multiple mountain trips led to a number of rational proposals. For instance, Aleksandr Cherkasov, who had spent more than one cold night sleeping in a sleeping bag inside a tent, once noticed that sleeping with his socks on would result in troubled sleep due to increased temperature and sleeping without them would get his toes freezing cold, resulting in troubled sleep due to reduced temperature. Eventually, Aleksandr got in the habit of sleeping with his socks halfway on his feet, with his heels left bare – this was the most comfortable option. This is how Aleksandr Cherkasov “invented” in 2005 a pair of half-socks to be worn during an overnight stop in the mountains ([Figure 3](#)).



**Fig. 3.** “Cherkasov half-socks”

In August 2004, a group composed of Mikhail Maydan, Aleksandr Cherkasov, Roman Nekhoroshev, and a few others undertook an expedition to Mount Elbrus (5,642 meters). The plan was to complete the ascension in an extremely short time – go up and down in just 3 days. The group set base camp at a height of 4,200 meters (The Shelter of the Eleven). On the second day, they undertook a radial ascension of Pastukhov Rocks (4,800 meters), and all managed to reach the point. At 2 in the morning of the third day, the group began their ascension of Mount Elbrus. Out of the five participants, two exited the activity at the Pastukhov Rocks stage, and another two halted at the mountain’s saddle at a height of 5,300 meters, with only Mikhail Maydan conquering the peak on the first attempt.

It is worth noting that the group had trained pretty hard before undertaking their Elbrus climb. [Figure 4](#) displays one of the photos taken on a snowy trail on Mount Achikhsho in March 2004.



**Fig. 4.** Aleksandr Cherkasov on Mount Achikhsho in March 2004

Most of the winter photos were taken with sunglasses on, as the sun’s rays reflecting off the snow could lead to eye damage and it was problematic to move through the snow without them. Another important characteristic of those trips was that members of the groups would set out on the snowy trails without snowshoes on, which seriously complicated the trips, as they often involved wading through some very deep snow.

The hiking life consisted of several stages. These stages will be illustrated through the example of a climb of Mount Achikhsho that took place in 2007. The first stage involved arriving at the slope of the mountain (Figure 5). This was preceded by a period of preparation for the climb, which involved sorting out how much food to take with you, choosing the right time (weather) to do it, and splitting up the hiking gear among members of the crew.



**Fig. 5.** Mikhail Maydan and Irina Cherkasova, left, on the slope of Mount Achikhsho (September 22, 2007)



**Fig. 6.** Posing on Mount Achikhsho (Aleksandr Cherkasov closest to the camera) (September 22, 2007)

The second stage involved climbing the mountain (Figure 6). It was divided into the following two parts: 1) moving toward the base camp; 2) moving toward the summit. There were times when the base camp was established at the very summit. During the ascension, the way was led and the rear was brought up at all times by the group's more experienced members. When walking, the group would take their cues from the member bringing up the rear, which helped prevent the group from getting stretched out along the route and, thus, boost the safety of the hikers. Every time someone moving in the middle was seen to be lagging behind the rest of the group, the rearmost member would command the group to interrupt the journey, and they would then make a stop for rest.

The third stage involved setting camp, a highly important part of any trip (Figure 7). Camp was normally set up either at the summit of the mountain or in immediate proximity to it. It is from the camp that radial hikes would be undertaken of various sites, including those of increased difficulty. The crew would first set up the tents, and would then split up into three groups. One of the groups would be in charge of getting some wood in a forest area, the second would do the cooking, and the third would take care of the camp's infrastructure (e.g., the tents and the campfire area). Finally, on resolving all their principal needs, the hikers could get some rest to be ready for their climb in the morning.



**Fig. 7.** Camping on Mount Achikhsho (September 22, 2007)

It is worth noting that the trips were also significant in terms of applied research. Specifically, in 2008 Aleksandr Cherkasov published a monograph entitled 'A War in the Mountains: Pages in the History of the Defense of the City of Sochi (1942–1943)' (Cherkasov, 2008), concerned with the military action that took place during World War II in the mountains of the Western Caucasus in the USSR. The hikes in this region helped gain a better idea of the nature of the military action in the mountains and form a more realistic picture of the events. Another example is the expedition to Shatili. More specifically, in October 2018, Aleksandr Cherkasov and Aleksandr Volkov undertook an expedition to Georgia with the aim of visiting Shatili, a fortress situated high up in the mountains (Figure 8). Participants in the expedition explored the surrounding area to gain a deeper insight into the siege of the fortress undertaken by Russian troops in 1813 and arrived at a number of interesting inferences (Cherkasov et al., 2019: 166-175).



**Fig. 8.** Aleksandr Cherkasov posing against the backdrop of Fortress Shatili, Georgia, in October 2018

The 2010s saw climbs of Mount Elbrus in Kabardino-Balkaria, the Alibek glacier in the mountains of Dombay in Karachay-Cherkessia, Mount Agepsta in Abkhazia, and a number of peaks of the Western Caucasus in the vicinity of the cities of Sochi and Tuapse.

Between 2016 and 2019, Aleksandr Cherkasov each year took part in Arctic Floating University expeditions (Novaya Zemlya, Franz Josef Land, and Svalbard). [Figure 9](#) displays one of the photos taken in the Novaya Zemlya archipelago from the direction of the Kara Sea in August 2018.



**Fig. 9.** Posing in Novaya Zemlya in August 2018

In 2019, Mikhail Maydan conquered another 5-thousander – Eastern Kazbek (5,033 meters).

In March 2020, a radial hike was undertaken in the vicinity of Las Vegas (USA) of the world famous Grand Canyon, the rocks at the bottom of which are nearly two billion years old.

One of the last hikes was the ascension of Mount Elbrus undertaken by Mikhail Maydan, a staff member of Cherkas Global University Press, via its western slope on August 17, 2022 ([Figure 10](#)).



**Fig. 10.** Mikhail Maydan climbing Mount Elbrus (August 17, 2022)

Despite the adverse weather conditions, the ascension was successful again ([Figure 11](#)).



**Fig. 11.** Mikhail Maydan, left, standing at the top of Mount Elbrus (August 17, 2022)

On December 22, 2022, the year's last radial hike was undertaken. The participants in this hike of the trails of Sequoia National Park (California, USA), covered by lots of snow at that time already, were Aleksandr, Irina, and Anastasia Cherkasov and Igor Koshkin. Sequoia National Park is known for being home to the General Sherman tree – the largest known living single-stem tree on Earth (Figure 12).



**Fig. 12.** Sequoia National Park, California, USA (December 22, 2022)

Figure 12 illustrates the contrast in height and size between some of the trees in Sequoia National Park and humans.

## 5. Conclusion

The Hiking Club at Cherkas Global University was launched in 1996. Over the period from 1996 to 2022 inclusive, members of the teaching and administrative staff of Cherkas Global University completed nearly 100 mountain hikes, some of which included as many as ten overnight stops. Whereas the highest peaks ascended in 1996 did not exceed 1,000 meters above sea level (the Western Caucasus), as early as 1999 regular ascensions were also seen by peaks as high as 2,000 to 3,000 meters. Beginning in 2005, trips were also made to peaks as high as 5,000 meters (the Greater Caucasus – Mounts Elbrus and Kazbek). So far, staff members of Cherkas Global University have gone on hiking trips in the US, Norway, Georgia, Russia, and Armenia. These expeditions involved some research, its outcomes including several publications in top-rated journals and a number of rational proposals.

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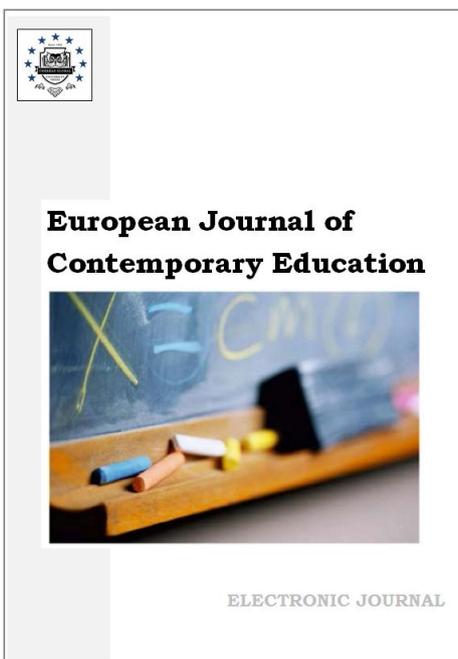
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## International Activity of Cherkas Global University (1992–2023)

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### Abstract

This paper explores the international activity of Cherkas Global University in the period from 1992 to 2023. Consideration is given to the principal vectors of that work – organizational (contests and participation on editorial councils) and research (publication activity).

Based on the study's findings, Cherkas Global University has been involved in multiple international projects, including attracting international specialists to the academic journals of the university's publishing house (Cherkas Global University Press), putting together the full-text database Open Academic Journals Index, undertaking scientific expeditions (Norway, USA, Georgia, and Armenia), holding membership in American and British scholarly societies, and engaging in collaboration in the area of academic publications. Among the institutions that Cherkas Global University has engaged in joint research projects with are some of the world's top 100 institutions of higher learning, namely the University of Geneva and Tel Aviv University.

**Keywords:** Cherkas Global University, international activity, period 1992–2023, publication activity.

### 1. Introduction

Today, international activity is an important part of the work of research universities, as it helps develop ties between universities and forge collaboration between researchers, which subsequently results in joint research projects and publications.

Activity of this kind is typically conducted in a number of focus areas, including holding international contests for the best research project, engaging in international cooperation in publication activity, and taking part in international expeditions. This is precisely the case for Cherkas Global University, which embarked on this kind of journey in the early 21st century.

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## 2. Materials and methods

The principal sources used for this study were the official documents of Cherkas Global University dealing with international activity. This includes sets of relevant regulations (e.g., those dealing with the holding of international contests), charters (that of ANO MSTsFiPI and that of OOO Nauchny Izdatelsky Dom Issledovatel), and other types of documents from the collection ‘Cherkas Global University (1992–2022): A Collection of Documents’ (Cherkas Global..., 2022).

Use was made of a traditional methodological set – the principles of historicism and systematicity and the chronological method. The use of this methodological set helped reconstruct an accurate picture of the international activity of Cherkas Global University and identify its key focus areas.

## 3. Discussion and results

Cherkas Global University was established in 1992 as a military historical society. Based in the city of Sochi (Russia), it was headed by Aleksandr Arvelodovich Cherkasov. The above society was long engaged in educational work. The organization’s first activities on an international level took place only in the late second decade of its existence. Specifically, one of its first international projects kicked off with the launch of the academic journal *European Researcher* on November 15, 2010. This involved inviting a large number of foreign specialists to join the publication’s editorial council. Over the subsequent years, this practice only expanded due to the launch of new journals.

July 4, 2013, saw the launch of the large international project Open Academic Journals Index (oaji.net), a full-text database of academic journals. As of January 2023, it numbered over 3,300 academic journals from 122 countries.



**Fig. 1.** Vice-President of the Georgian National Academy of Sciences Roin Metreveli and Director of the INCFAR Aleksandr Cherkasov. Tbilisi, Georgia, September 2014

On May 26, 2014, the Sochi-based military historical society was reorganized into ANO MSTsFiPI, i.e. the autonomous nonprofit organization International Network Center for Fundamental and Applied Research (Cherkas Global..., 2022: 37). The post of Chairman of the Military Historical Society was replaced with that of Director of the Center, with A.A. Cherkasov

becoming Director of ANO MSTsFiPI. At the same time, there was in operation the organization's publishing house – OOO Nauchny Izdatelsky Dom Issledovatel, i.e. the limited liability company Researcher Academic Publishing House. It, likewise, was headed by A.A. Cherkasov.

In September 2014, a series of working meetings were held in Georgia – in the Georgian National Academy of Sciences in the city of Tbilisi (Figure 1) and in Telavi State University in the city of Telavi (Figure 2).

The visits to the Georgian National Academy of Sciences helped forge working ties and establish the vectors for future cooperation. Specifically, subsequently A.A. Cherkasov took part in the International Kartvelological Congress, held in Tbilisi in 2015 and 2018.<sup>1</sup> This cooperation bore fruit in terms of publication activity as well. For instance, in 2014 *Bulletin of the Georgian National Academy of Sciences* published the article 'The Nobility and Commoners in Ubykh Society: The Reasons Behind the Social Conflict' (Cherkasov et al., 2014: 64-72), and in 2016 the journal *Annales: Anali za Istrske in Mediteranske Studije. Series Historia et Sociologia* (Slovenia) carried a joint article by A.A. Cherkasov and Roin Metreveli on the causes behind the destruction of monuments of historical and cultural significance on the coast of the Black Sea in the late 18th and first half of the 19th centuries (Cherkasov et al., 2016: 1-12). That same year, 2016, the journal *Terra Sebus* published another joint article by the two scholars – it was focused on the work of the Red Cross on the Caucasus front during World War I (Cherkasov et al., 2016: 319-333).



**Fig. 2.** Rector of Telavi State University Avtandil Gelagutashvili and Aleksandr Cherkasov. Telavi, Georgia, September 2014.

In September 2014, as part of a working visit to Telavi State University there took place a working meeting with Rector of Telavi State University Avtandil Gelagutashvili. As a result, the two organizations entered into a cooperation agreement and mapped out key areas for cooperation, including in the area of publication activity. Subsequently, similar cooperation agreements were entered into with the Faculty of Philosophy at Matej Bel University (Slovakia), University of Novi Sad (Serbia), Lithuanian Sports University (Lithuania), Ivane Javakhishvili Tbilisi State University (Georgia), Southern Scientific Center of the Russian Academy of Sciences (Russia), KAD International (Ghana), and a few other academic organizations.

The year 2013 marked the start of productive cooperation with Matej Bel University (Banská Bystrica, Slovakia). On October 3, 2016, A.A. Cherkasov received the title of Visiting Professor at

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<sup>1</sup> First International Kartvelological Congress, organized by the Georgian National Academy of Sciences (Tbilisi, Georgia, November 11–13, 2015); Second International Kartvelological Congress, dedicated to the 100th anniversary of Tbilisi University (Tbilisi, Georgia, September 26–29, 2018)

the above institution (Figure 3). Of note is the fact that as of 2016 OOO Nauchny Izdatelsky Dom Issledovatel, based in Sochi, Russia, produced 54 academic journals and was in the top five publishing houses for the number of academic journals produced in Russia.



**Fig. 3.** A.A. Cherkasov holding the Decree conferring on him the title of Visiting Professor at Matej Bel University. Banská Bystrica, Slovakia, 2016. Left to right: Prof. Michal Šmigel', Prof. Aleksandr Cherkasov, Vice-Rector for Research Alexandra Bitušíková, and Rector Vladimír Hiadlovský



**Fig. 4.** Plenary session of the Second International Kartvelological Congress. Tbilisi, Georgia, September 28, 2018

As a result of his regular trips to Slovakia, on January 4, 2018, A.A. Cherkasov established a publishing house in its capital (Bratislava) – Academic Publishing House Researcher sro. Fifty-one journals were moved from Russia to the Slovakia-based publishing house, and just one stayed with the Russian office of OOO Nauchny Izdatelsky Dom Issledovatel (Cherkas Global..., 2022: 54).

On February 4, 2018, ANO MSTsFiPI (Sochi, Russia) was reorganized into International Network Center for Fundamental and Applied Research LLC (INCFAR), based in Washington, DC, USA ([Cherkas Global..., 2022: 55](#)).

In late September 2018, A.A. Cherkasov attended the Second International Kartvelological Congress in Tbilisi, dedicated to the 100th anniversary of Tbilisi University. On the first day of the Congress, September 28, A.A. Cherkasov co-chaired its plenary session ([Figure 4](#)).

On September 29, 2018, as part of the Congress's activities program, a visit was made to the residence of Catholicos-Patriarch of All Georgia Ilia II ([Figure 5](#)).



**Fig. 5.** Catholicos-Patriarch of All Georgia Ilia II, left, in the company of Congress participants. Tbilisi, Georgia, September 29, 2018 (Photo by A.A. Cherkasov)

In October 2018, A.A. Cherkasov took part in a field expedition to Georgia with the aim of visiting a fortress situated high up in the mountains in the historic village of Shatili. The findings from that expedition, organized to gain a deeper insight into the siege of the fortress undertaken by Russian troops in 1813, formed the basis of the article 'Expedition in Khevsureti in 1813. The Assault of Shatili' ([Cherkasov et al., 2019](#)).

In the period 2016–2019, A.A. Cherkasov took part in four Arctic expeditions organized as part of the 'Arctic Floating University' program (2016 – Novaya Zemlya's western coast; 2017 – Franz Josef Land; 2018 – Novaya Zemlya's eastern and western coasts; 2019 – Spitsbergen).

In 2018, A.A. Cherkasov became a member of the American Historical Association (Washington, DC, USA). In 2020, A.Yu. Peretyatko (PhD in History), Deputy Head of the Laboratory for World Civilizations, became a member of this organization, too. In 2019, T.A. Magsumov (PhD in History), Deputy Head of the Laboratory for Professional and Pedagogical Training, became a member of the History of Education Society (UK).

In January 2020, A.A. Cherkasov attended the 134th Annual Meeting of the American Historical Association, held January 3 through 6 in New York.

On January 8, 2021, the INCFAR was reorganized into Cherkas Global University ([Cherkas Global..., 2022: 61](#)). On July 4, 2021, the Slovakia-based publishing house Academic Publishing House Researcher s.r.o. was reorganized into Cherkas Global University Press ([Cherkas Global..., 2022: 73](#)).



**Fig. 6.** Aleksandr Cherkasov attending the 134th Annual Meeting of the American Historical Association. New York, USA, January 3, 2020

An important component of the organization's international collaboration is publication activity. The first international contacts in this area were made back in 2010, when A.A. Cherkasov began to publish jointly with scholars from Finland and Belarus, namely J. Bäckman and V.I. Menkovsky (Cherkasov, Bekman, 2010; Cherkasov, Menjkovsky, 2010). Beginning in 2013, M. Šmigel' was long a permanent co-author. He took part in a number of publication projects on the history of Eastern Europe and the Caucasus in the 19th and first half of the 20th centuries (Cherkasov, Šmigel', 2013; Cherkasov, Smigel, 2016; Cherkasov et al., 2018). Around the same time, the international team of Cherkas Global University was joined by S.I. Degtyarev (Sumy, Ukraine), a prominent Ukrainian historian focused on the history of the public education system (Degtyarev, Polyakova, 2020; Zavhorodnia et al., 2019).

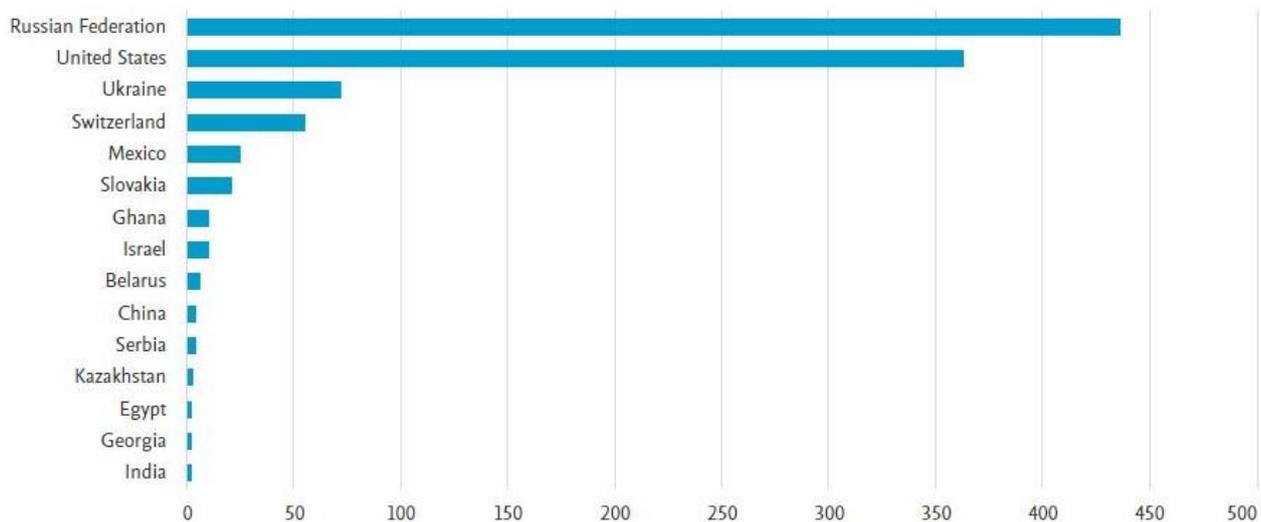
In 2016, the university's team was joined by a specialist from Africa – J. Owusu Sarfo (PhD in Health Promotion), who currently holds the post of Head of the Laboratory for Professional and Pedagogical Training. Focused on research on contemporary education, this scholar has engaged in projects involving multiple researchers (e.g., 'Gender Differences in Mathematics Anxiety Across Cultures: A Univariate Analysis of Variance Among Samples from Twelve Countries' (Sarfo et al., 2020)).

One of the outcomes of collaboration between Sumy State University (Ukraine) and Cherkas Global University was S.I. Degtyarev getting appointed International Expert to the National Agency for Higher Education Quality Assurance (NAQA) via competitive selection in October 2022. Based in Ukraine, the above agency specializes in implementing the state's policy in the area of assuring the quality of higher education. It is an associated member of the European Association for Quality Assurance in Higher Education (ENQA) and a full member of the following four international organizations focused on quality assurance and academic integrity: International Network for Quality Assurance Agencies in Higher Education (INQAAHE), Central and Eastern European Network of Quality Assurance Agencies in Higher Education (CEENQA), International Center for Academic Integrity (ICAI), and Global Academic Integrity Network (GAIN).

A significant effect on the organization's publication activity came from the international expeditions undertaken each year between 2016 and 2019 as part of the Arctic Floating University program. As a result of these expeditions, academic ties were successfully established with researchers from Switzerland, Canada, and China. The closest was the organization's cooperation with the University of Geneva (Switzerland) – as of 2019, 25 publications, all of which would be indexed by the scientometric system Scopus, were produced jointly with the University of Geneva (Tarakanov, Ponomareva, 2019: 986). In addition, as of that same year, 2019, based on Scopus

data, Cherkas Global University now had to its name 80 publications affiliated with the United States, 20 publications produced jointly with Slovakia, and a number of publications produced jointly with specialists from Belarus, Ukraine, Mexico, Israel, Serbia, and a few other countries (Tarakanov, Ponomareva, 2019: 986).

As of January 2023, these figures were up even more (Figure 7).



**Fig. 7.** International publication activity of researchers from Cherkas Global University. Based on data from Scopus (as of January 2023)

Over a period of just 3 years the number of the organization's publications affiliated with the United States increased from 80 in 2019 to 363, Ukraine – 72, Switzerland – 55, Mexico – 25, and Slovakia – 21 publications (Figure 7).

A significant amount of attention was paid to organizational activity as well. Specifically, in 2020 the organization launched 'Slavery in the Past and Present', an annual international contest for research works on slavery with a prize of \$2,250. So far, three such contests have been held. In addition, that same year, 2020, the organization staged an international contest for the best research work, which was dedicated to the fifth anniversary of the East European Historical Society. Cherkas Global University also co-organized a number of academic activities (e.g., Second International Scientific and Methodological Conference 'The Values-Based Approach in Education and the Challenges of the European Integration Process' (May 28–29, 2021, Sumy, Ukraine) (Cherkas Global..., 2022: 170)).

#### 4. Conclusion

Cherkas Global University has been involved in multiple international projects, including attracting international specialists to the academic journals of the university's publishing house (Cherkas Global University Press), putting together the full-text database Open Academic Journals Index, undertaking scientific expeditions (Norway, USA, Georgia, and Armenia), holding membership in American and British scholarly societies, and engaging in collaboration in the area of academic publications. Among the institutions that Cherkas Global University has engaged in joint research projects with are some of the world's top 100 institutions of higher learning, namely the University of Geneva and Tel Aviv University.

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