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Assessment of the Development Level of Future Primary School Teachers' Special Competences at the University

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Abstract. The authors investigate the leading problem of the formation of future primary school teachers' special competences in the process of professional training. This study was conducted to identify the initial level of special competences the future primary school teachers of Karaganda Buketov University have. The results of the study have shown that the students demonstrate a generally low level of formation of special competences, which can significantly complicate the process of improving the quality of training a future primary school teacher of a new type for the pedagogical activity in the 21st century. The study has revealed that the first-year students with low academic performance and lack of knowledge, skills and abilities necessary for future pedagogical activity have a low level of formation of the components of future primary school teachers' special competences, which confirms our hypothesis. The article argues that the low level of special competencies of students cannot contribute to the successful formation of the professional competence of graduates of higher educational institutions.

Keywords: special competence, future primary school teachers, assessment, professional training, modernization of education.

Research area: pedagogy.

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Оценка уровня развития специальных компетенций будущих педагогов начальной школы в вузе

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Аннотация. Авторы поднимают здесь ведущую проблему формирования специальных компетенций у будущих педагогов начальной школы в процессе профессиональной подготовки. Исследование было проведено для выявления базового уровня специальных компетенций студентов Карагандинского университета имени академика Е. Букетова. Результаты продемонстрировали в целом низкий уровень сформированности таких компетенций, что может существенно усложнить процесс повышения качества подготовки будущего педагога начальной школы нового типа в XXI веке. При этом первокурсники со слабой успеваемостью и отсутствием необходимых для предполагаемой педагогической деятельности знаний, умений и навыков имеют и низкий уровень сформированности компонентов специальных компетенций, что подтверждает нашу гипотезу. Вместе с тем недостаточный уровень специальных компетенций студентов не может способствовать успешному формированию профессиональной компетентности выпускников высших учебных заведений.

Ключевые слова: специальная компетенция, будущие учителя начальной школы, оценка, профессиональная подготовка, модернизация образования.

Научная специальность: 13.00.00 – педагогические науки.

Introduction

Nowadays the Kazakhstani education system places new requirements on the level of professional competence of graduates of higher educational institutions. However, what level of professional competence of graduates of higher educational institutions can we talk about, if originally Kazakhstani pedagogical higher educational institutions mainly train students with rather low academic performance, who, in their turn, having completed their studies at the university, go to work in secondary schools and train weak students as well. Then, students of a huge number of specialties obtain second-rate education and are not adjusted to teaching after graduation. The reasons for the low level of novice teachers' competence include both the quality of the educational process in universities and the little appeal of the profession itself. At the present days the latter is a big problem, which devalues the whole education system in the country.

The research on the problem of developing the special competence of the future teacher presents that it is to be solved in the succeeding directions: the use of varied means of information, game and developmental technologies in the formation of a future teacher's professional competence; fullfillment of the industrial (pedagogical) practice potential in the development of a future teacher's special competence. Furthermore, recently there have been a number of studies aimed at the formation of different types of competences in the process of professional training of psychological, psychological and pedagogical, information and professional, communicative, autopedagogic, social and psychological competences.

The versatility of our research on the problem of developing the special competence of

a future primary school teacher has led to the urge to appply various approaches to the study of the core of this phenomenon – systemic (synthesis of versatile knowledge about the object into a single whole), personality-oriented (orientation to the person as a goal, subject and result of the effectiveness of the educational process), and competence-based (focus of professional training on the formation of the basic components of special competence, reflecting the features of a primary school teacher's activity).

Grossman, Hammerness, McDonald, and Sleeter state that challenges in pointing out the mechanisms of formation of primary school teachers' professional competences are due to their intricacy, synthesis, as well as the presence of a personal component (Borko, 2004; Guskey, 2002). Methods of improving the teacher's professional skills and the formation of their personal qualities are distinguished (Jacobs et al., 2014; Armour et al., 2012).

Special professional competences are competences (i. e. readiness and eagerness), needed for the activity of a primary school teacher (Qualters, 2001; Kahn et al., 2005; Desimone, 2009; Neustroeva et al., 2018; Gluzman et al., 2018).

The development of special competences has also been examined by many researchers (Halász, 2011; Hopfenbeck, 2018; Kot et al., 2020).

In his research Ertmer states that special competence is of peculiar importance because of the fact that the education system is currently undergoing substancial contemporary transformations (Ertmer, 2003).

Ertmer, Ottenbreit-Leftwich, Friedrich, Trainin and others identify the consecutive elements in the structure of the teacher's professional competence: the condition of readiness and the desire for activity. These are the motivational and personal fundamentals of the activity, which include motivation, knowledge, skills, and experience (Ertmer et al., 2010).

In this case, attention is concentrated on the development of abilities, knowledge, skills, motives, views, beliefs and values vital for a prosperous professional activity (Desimone et al., 2014).

The motives correlating with the interest in the chosen profession become a resource and an imperative for the further professional development. Besides, these motives should be permanent and joined with the sufficient knowledge in the chosen profession (Rocío et al., 2015).

The process of development of the special competence will be successful, if one has determined a set of professional competences needed by a future primary school teacher for solving professional tasks (Valente et al., 2020).

It is crucial that the future teacher possesses professional knowledge and skills to involve students in the system of public relations, the development of their value attitude to knowledge, etc (Misbah et al., 2015; van Dinther et al., 2014).

Neustroeva, Pavlova, Borısova, Okoneshnıkova, and Sıdorova have found out that a special competence is a set of special knowledge, skills, and personal qualities that meet the professional requirements (Neustroeva et al., 2018).

Special competence is a professional stance, value interests, and professional autonomy; special competence is knowledge, skills, personal experience, skills (Grigoryeva et al., 2019; Drach Slobodianiuk, 2020; Ertmer, 2003; Oliver et al., 2020).

The special competence of the future primary school teacher is defined both as an array of decisive psychological and pedagogical, subject and methodological knowledge and skills, and as a readiness for their practical appliance (Brockmann et al., 2008).

The accomplishment of the signtificant importance of the teaching motive for academic efficiency has led to the justification of the principle of motivational support of the educational process (Eccles et al., 2002).

Nowadays there are many systems for evaluating the level of a future primary school teacher's professional qualifications. At the same time, it should be noted that many of them are aimed at analyzing the formation of only the knowledge and activity components of professional competences (O'Neill et al., 2011; Wahyuddin, 2016; Emmer et al., 1991).

The future specialist's competences in their particular composition include, in our opinion, general competences (for graduates of all universities) and special (for a definite field of work). In each group respectively, it is also possible to identify the socio-psychological competence and the professional competence.

The phenomenon of a primary school teacher's professional activity lies in the integrity of theoretical knowledge and practical readiness for a set of primary school subjects; personal functions and experience of dealing with younger students; the readiness to construct cognitive needs, the ability to provide the unity of the cognitive, emotional and behavioral components of the student's personality. We suggest the following structural components of special competence: motivational, activity and reflexive competences.

A significant part of teachers meet great difficulties in adapting to rapidly changing social, economic, and professional conditions, and then lack of professional competence can lead to serious social and psychological problems of a person (Campbell, 2017).

We are highly interested in the works on the formation of the special competence of the future primary school teachers. Nevertheless, the available sources devoted to our field of interest represent the specifics of the development of the future primary school teachers' special competence quite poorly.

Indeed, there is no universal approach to the development of special competencies in Kazakhstan yet. It is necessary to take into account the fact that Kazakhstani pedagogical higher educational institutions enlist students with low academic performance, who, in their turn, having graduated, start working in schools and teach identically weak students. This has led us to formulating the research problem: What is the initial level of professional competences (in particular, the block of special competences) of future primary school teachers in the process of professional training?

The aim of the research is to detect the initial level of the formation of future primary school teachers' special competence components.

Methodology

Participants

300 students of three educational institutions in the central Kazakhstani region were requested to take part in the research. A total of 240 of them are future primary school teachers who have expressed their willingness to voluntarily participate in the study. Only students with low scores on the entrance exams (n = 121) were selected for the given study.

Among the 121 participants aged 17–22 44.6 % were female and 25.4 % were male, and their average age was 19.4 years. All students have the Kazakhstani citizenship and study at a state university. The testing was conducted by trained researchers and lasted about 2.5 hours.

Measures

To determine the degree of the formation of special competences the following methods have been used:

1. The diagnosis of the formation of the motivational component was conducted using a questionnaire due to the methods of K. Zamfir under A. Rean's modification (Gubina, 2020).
2. The initial level of the cognitive component formation was determined by testing, including the monitoring of the participants' progress in natural science disciplines).
3. Diagnostics of the cognitive component formation was carried out by experts. These were teacher methodologists of the Department of Pedagogy and Primary Education.
4. The formation of the reflexive component was determined using reflection maps, self-assessment, and questionnaire.

Procedure

All participants of the study were absolutely aware of the core of the study and were guaranteed the confidentiality of all obtained data before beginning the study. The study was carried out on the recommendation and approval of the Ethics Committee of Karaganda Buketov University (Karaganda, Kazakhstan). All procedures were organized with the permission of the university administration, the teaching staff, and the participants.

Results

Table 1 shows that future primary school teachers are grouped according to the level of formation of the first indicator in the control and experimental groups.

The results demonstrate that the formation of the motivational component in the control and experimental groups is at a low level from 87,5 % to 96,29 %, from 3,70 % to 12,5 % at a medium level, and the high level is not detected.

The table below reveals the data on the formation of the cognitive component of students' special competences.

As seen in Table 2, future primary school teachers' cognitive component formation in the control and experimental groups is at a low level from 80,00 % to 90,62 %, from 9,37 % to 13,33 % at a medium level, and the high level is not revealed.

The data on the formation of the activity component of the special competences is presented in Table 3.

The results shown in Table 3 prove that the future primary school teachers have a low level of the activity component formation in the control and experimental groups from 71,87 % to 88,88 %, from 11,11 % to 28,12 % at middle level, and there is no high level.

Table 4 includes the data on the formation of the reflective component of the special competences.

The results of the analysis shown in Table 4 display that the formation of the reflexive component both in the control and experimental groups of future primary school teachers is at a low level from 78,13 % to 85,18 %, from 14,81 % to 20,00 % at a medium level, and high level is absent.

Table 1. Students' data on the levels of formation of the motivational component of the special competences

Groups	Number of students	Low level		Medium level		High level	
		number	%	number	%	number	%
CG	30	27	90,00	3	10,00	0	0.00
EG-1	27	26	96,29	1	3,70	0	0.00
EG-2	28	26	92,8	2	7,14	0	0.00
EG-3	32	28	87,5	4	12,5	0	0.00

Table 2. The data on the formation of the cognitive component of students' special competences

Groups	Number of students	Low level		Medium level		High level	
		number	%	number	%	number	%
CG	30	26	86,66	4	13,33	0	0.00
EG-1	27	24	80,00	3	11,11	0	0.00
EG-2	28	25	83,33	3	10,00	0	0.00
EG-3	32	29	90,62	3	9,37	0	0.00

Table 3. The data on the formation of the activity component of the special competences

Groups	Number of students	Low level		Medium level		High level	
		number	%	number	%	number	%
CG	30	26	86,66	4	12,5	0	0.00
EG-1	27	24	88,88	3	11,11	0	0.00
EG-2	28	23	85,18	5	17,85	0	0.00
EG-3	32	23	71,87	9	28,12	0	0.00

Table 4. The data on the formation of the reflective component of the special competences

Groups	Number of Students	Low level		Medium level		High level	
		number	%	number	%	number	%
CG	30	24	80,00	6	20,00	0	0.00
EG-1	27	23	85,18	4	14,81	0	0.00
EG-2	28	22	78,57	6	21,42	0	0.00
EG-3	32	25	78,13	5	15,62	0	0.00

Table 5. The level of readiness of future primary school teachers for the formation of special competences

Groups	Number of students	Levels		
		Low level	Medium level	High level
		%	%	%
CG	30	85,83	13,95	0.00
EG-1	27	87,58	10,18	0.00
EG-2	28	84,97	14,10	0.00
EG-3	32	82,03	16,40	0.00

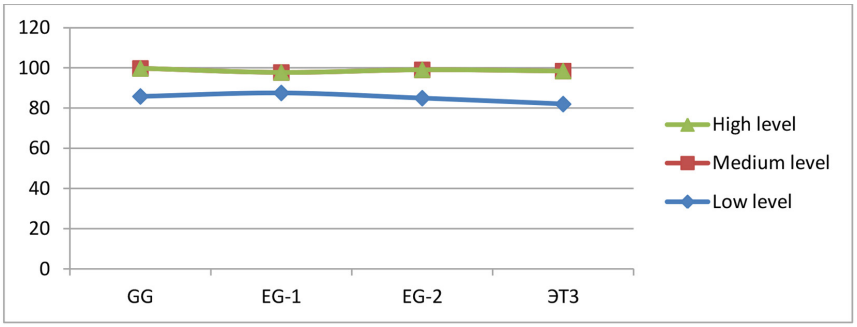

Fig. 1. Indicators of the level of future primary school teachers' readiness to form special competences

We have also studied the readiness of future primary school teachers for the formation of special competences (See Table 5).

The results of the analysis on the distribution of the levels of future teachers' readiness for the formation of special competencies, shown in Table 5, are seen that the level of readiness of future primary school teachers in the control and experimental groups is at a low level from 82,03 % to 87,58 %, from 10,18 % to 19,40 % at a medium level, and there is no high level of readiness.

As shown in Figure 1, the lowest level of readiness of future primary school teachers is 87,58 % in the first experimental group, 84,97 % in the second group, 82,033 % in the third group, and 85,83 % in the control group. The average level in the experimental group is the following: EG 1–10,18 %, EG 2–14,10 %, EG 16,40 %. In the control group it is 13,95 %. The high level was not discovered both in the experimental group and the control group.

Discussion and conclusion

In our research we strove to study the initial level of formation of the components of the special competences the bachelors of pedagogical education in the field of «Primary Education» demonstrate. We made an attempt to overcome the limitations of previ-

ous research conducted in this area by considering the formation of the components of future primary school teachers' special competences.

The results of the study let us know that first-year students with low academic performance and lack of knowledge and skills needed for future teaching activities have a low level of formation of the components of special competences of future primary school teachers, which confirms our hypothesis.

The study claims that the student' low level of special competences can not successfully contribute to the successful formation of professional competence of graduates of higher educational institutions. Consequently, the educational programs of higher education institutions have a poor focus on the formation of professional competences as integral entities. These involve knowledge, skills, and abilities, but they are deficient in psychological attitudes, personal qualities, as well as professional experience.

We believe that the low level of development of future teachers' special competences is characterized by:

– insufficient knowledge of the basics of primary education pedagogy;

– ignoring the age-related psychophysiological features of a primary schoolchild, the laws of development and the personality formation, knowledge of the basics of mathematics, natural science and other subjects, inability to operate with them;

– poor knowledge of methods and techniques of diagnostics of a primary schoolchild (difficulty in analyzing the received data);

– absence of pedagogical skills, intuitive nature of solving professional problems (not relying on the existing unsystematic knowledge often leads to making mistakes);

– inability to independently conduct empirical and theoretical research;

– lack of substantial motives and interests for teaching activities with a positive attitude to it, the aspiration for professional enhancement and development;

– the presence of deficient self-esteem and mental preparedness for conducting professional and pedagogical activities;

– insufficient knowledge of future primary school teachers.

The preceeding studies have supported the results of this study, too. This finding is consistent with the research by Darling-Hammond, Hyler, & Gardner (2017).

What's more, practice-oriented training courses are not justified in the sufficient degree or are not allocated. This may be due to the fact that the stucture of the professional competences of a bachelor, defined in the state standard for «Pedagogical education», is generalized. The designation of professional competences is assumed at the level of the main educational program of the university, but the analysis of the programs of various pedagogical universities has made us suggest that the special competences of the bachelor education in the context of modernization of the Kazakhstani education content have not been reflected yet. Meanwhile, the structure of such competences, as well as the technology of their formation, due to their over-subject nature, has its own specifics.

The question of teacher professional training is studied from different angles, which provides various approaches to its solution. For example, Little, Guskey, Kennedy have alleged that activity-based and personality-oriented approaches allow to consider students as subjects of education, and purposefully not only give knowledge, develop skills and abilities, but also ways of professional activity (Little, 1993; Guskey, 2002; Kennedy, 2005).

We suggest that the development of the special competence of the future primary school teacher at university is a interminable process of continuous inclusion of students into educational and professional activities basing on the systematic, personality-oriented and competence-based approaches. Therefore, different studies reflect different aspects of the research object and, therefore, become most effective when combined with other approaches (Blase & Blase, 2000; Slavin, 2008).

The results of our research state that when preparing a future teacher in the course of a university educational process, it is necessary to take into consideration the following factors that influence the development of a future primary school teacher's special competences:

– socio-pedagogical factors: the status of a primary school teacher in the contemporary society; the requirements to a primary school teacher put by the society; the opportunities for professional training;

– personal growth; the educational environment of the university; the forms and methods of organizing the educational process and pedagogical practice;

– psychological, pedagogical and psychophysiological prerequisites of pedagogical activity;

– motives for choosing a profession;

– bias, interests, value orientations of a student;

– the subject of knowledge and skills; the ability to set pedagogical tasks and organize pedagogical situations;

– skills of pedagogical self-analysis and self-diagnosis;

– changing the level of students' awareness of the need to master a special competence;

– creating a developing personality-oriented educational environment that promotes the formation of professional activity motives, experience acquisition in the continuous self-education;

– persistent formation of future primary school teacher's personal functions (motivational, activity, reflexive) (Integrating Engineering Education and Humanities for Global Intercultural Perspectives, 2020).

The contribution of the research to the study of the future primary school teacher's special competences is that the theoretical concepts of the core and structure of the bachelor's special competences («Primary education» profile) in the aggregate of all their components are clarified, a set of special competences is elaborated and presented as a result of future primary school teachers' education, clarifying and supplementing professional competences.

We suggest that the research should gain further prospects. It is advisable to find out the nature of the relationship between the conditions for the formation of various types of competences from the composition of the professional competence of primary school teachers and from these positions to advance the learning process. Moreover, it is possible to extend the suggested model to other levels of education (secondary and vocational education) in order to train future teachers for the implementation of activities in the context of realization of the requirements of the state standard (taking into account their specifics).

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Efficiency of the Professional Development of a Teacher in the System of Further Training: Analysis of Educational Teachers' Needs

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Abstract. The purpose of the study is to determine the optimal type of training in the course of teachers' professional development and to identify the expected results of this process. A questionnaire survey of secondary school teachers from 3 cities and 25 districts of the Republic of Sakha was conducted. Based on the obtained results and conclusions, the recommendation is made to develop courses with an analytical structure, focused on the organization of advisory support throughout the course, solving cases in the school context, review of strategies suitable for handling the actual learning task. Moreover, this structure is suitable for both online and offline learning courses. Also, a separate course on the development of professional ethics of a teacher in distance and offline learning formats is required. This can be seen as an urgent task of the modern teacher's activity, which leads to the success of the implementation of state policy in the educational field.

Keywords: skills development, advanced training courses, continuous professional development of the teacher, professional standard for teachers.

Research area: pedagogy.

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Эффективность профессионального развития педагога в процессе повышения квалификации: анализ образовательных потребностей учителей

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Аннотация. Цель исследования заключалась в определении оптимального вида обучения в ходе повышения квалификации для профессионального развития педагогов и выявлении ожидаемых ими результатов от данного процесса. Проведено анкетирование педагогических работников общеобразовательных учреждений из 3 городов и 25 районов Республики Саха. На основе полученных результатов и выводов рекомендована разработка курсов ПК с «аналитической» структурой, ориентированной на организацию консультационного сопровождения слушателей в течение всего курса, решение кейсов в школьном контексте, обзор стратегий, подходящих для решения актуальной учебной задачи. Данная структура подходит как для онлайн-обучения, так и для очной его формы. Помимо этого, требуется отдельный курс ПК по формированию и развитию профессиональной этики педагога в дистанционном и очном форматах обучения. Это можно рассматривать как актуальную задачу деятельности современного учителя, от которой зависит успешность реализации государственной политики в сфере образования.

Ключевые слова: повышение квалификации, курсы повышения квалификации, непрерывное профессиональное развитие педагога, профессиональный стандарт педагога.

Научная специальность: 13.00.08 – теория и методика профессионального образования.

Introduction

The teacher is a key figure in the educational process. Therefore, the process of teacher's training for the purpose of professional development should be as effective as possible, allowing educators to actualize their knowledge and skills. Professional development (PD) of teachers has a positive impact both on their work and on the students' performance. Even experienced teachers need PD to keep up with new requirements in the educational system and teach students effectively. And for young teachers PD is very important, too.

Theoretical framework and statement of the problem

We believe that in order to teach effectively a teacher must have developed verbal intelligence, extensive content knowledge, and pedagogical experience, which is described in his or her current portfolio. Verbal intelligence is a teacher's ability to convey instructional content to students through words and actions, which has a positive impact on their performance and development. The portfolio is a generalized documented indicator of the level of preparedness, activity and self-improvement of the teacher, which shows the effectiveness of his/her pedagogical activity. It is established that after the first five years of work the effectiveness of pedagogical activity reaches its maximum, and then on the tenth year of work it decreases significantly if the teacher does not update his/her knowledge (Baiborodova, 2008). Therefore, teachers need to periodically / constantly improve their qualifications for professional development. The Russian professional standard of a teach-

er includes several differentiated levels of professional development: beginner (the level is assigned by the results of successful passing the qualification exam), advanced teacher (activity with mastering various competencies), teacher-methodologist (practices the methods and technologies of training and education at a high level), teacher-researcher (a mentor who carries out approbation and implementation of innovative technologies) (Godunov, 2019).

According to the Federal Law «On Education in Russian Federation» (No. 273 dated December 29, 2012), the quality of education depends on the professional development of the teacher. Paragraph 1.5 of Article 48 states that educators should use forms and methods of teaching and education that ensure a high quality of education. Paragraph 5.2 of Article 47 prescribes that at least once every three years teachers have the right to additional professional education in the profile of their teaching activities. Article 48, paragraph 1.7 declares that systematic improvement of one's professional level is a responsibility of an educator (Merkur'ieva, 2021).

Methods

As part of the analytical study, there was conducted a questionnaire survey among 244 teachers of general educational institutions from 3 cities and 25 districts of the Sakha Republic, the results were processed using descriptive statistics methods. The questionnaire was distributed among the teachers in Google forms. 100 % of teachers who participated in the survey are specialists with at least two years of teaching experience. Most of them (98 %) have a basic pedagogical education, and the remaining 2 % have completed professional retraining courses granting them with the «Teacher» qualification. The questionnaire consisted of an open introductory question (asking respondents to indicate their place of work: name of the educational institution, city/village, and basic education), 21 multi choice questions, each of which included several options from which the respondent could choose one, and 8 open questions. The questionnaire touched on topics such as the form and duration of the PD course, the level of qualification of course instructors, the quality of training, teaching materials, the advantages and disadvantages of the course, whether the course met the expectations of students, use of information technology in the PD process, distribution of the studied material among colleagues, the practical importance of the studied material, the availability of articles published in scientific journals. Having processed the data, I calculated the percentages for each answer, the valid percentage, and the cumulative percentage.

Results

The respondents have different teaching experience (Table 1). Most (60 %) have teaching experience ranging from 2 to 10 years, 12 % have pedagogical experience of more than 20 years. Teachers with the first qualification category prevail, but almost one third of teachers have no category.

Table 1 shows that 100 % of the teachers took the PD courses in a face-to-face or distance learning format. Most of them (66 %) took 1 to 7 days of training, 23 % took 8 to 10 days, and the remaining 10 % took more than 11 days but less than a month. According to the results of the survey, all teachers of the courses were highly qualified specialists with different levels of education: from a bachelor's degree in pedagogical direction to a PhD in pedagogical sphere. The majority of the courses (61 %) are taught by lecturers with a diploma of specialist, 15 % – with a bachelor's degree, 22 % – with a master's degree, and 6 % – with Ph D.

The respondents also indicated in their response to open-ended question #1 that course instructors used different teaching methods: a combination of lectures and Power Point presentations, lectures and mini-group discussions, questions and answers, introductory discussions at the beginning of classes, a combination of lectures and watching videos, mini conferences at the end of the course to share experiences involving all trainees. However, 25 % of the teachers surveyed claim that the lectures were not accompanied by visual supports, they were only supported by a question-and-answer format.

The results of the survey also show that the training materials covered current issues of

Table 1. Pedagogical experience and qualification category of respondents, the duration of PD courses and the level of education of the course instructor

Answer options	Frequency (number of answers)	Percent	Valid percentage	Cumulative percentage
Pedagogical experience				
Less than 5 years	80	33	33	33
5–10 years	69	27	27	60
11–15 years	41	17	17	77
16–20 years	26	11	11	88
21–25 years	21	9	9	97
26 years and more	7	3	3	100
Qualification category				
First	112	46	46	46
Higher	52	21	21	67
No category	80	33	33	100
Completion of PD courses				
Yes	244	100	100	100
No	0	0	0	100
PD course duration				
0–4 days	81	33	33	33
5–7 days	80	33	33	66
8–10 days	55	23	23	89
11–14 days	13	5	5	94
15–30 days	13	5	5	99
More than 30 days	2	1	1	100
Education level of a course instructor				
Bachelor's degree	36	15	15	15
Master's degree	53	22	22	37
Specialty	149	61	61	97
PhD	6	3	3	100

changes in the federal standards, the features of the professional standard of a teacher, the structure of the modern lesson, competencies of the teacher, the latest learning technologies, analysis of their own lessons (open question #2). Topics related to the organization of extracurricular activities, self-education of a young teacher were also studied, but there was no information about publications in scientific journals.

Most respondents believe that they participated quite actively in all PD activities, such as questions to lecturers, filling out worksheets in pairs or in groups, participating in intragroup and intergroup discussions, modelling the practical part of classes (open question #3). However, few of them (23 %) managed to successfully implement the knowledge obtained during the PD into their daily practice.

In any case, according to the respondents, it is necessary to attend PD courses. According to Table 2, 99 % agreed with the productivity of the courses and only 1 % disagreed. In terms of achieving an individual goal, 62 % of respondents consider that the training in the courses met their needs. However, 38 % of

them assert that the training did not meet their expectations.

Based on the information in Table 2, we can conclude that almost all respondents (98 %) agreed that the content of the learning activities was of good quality. Only 2 % disagreed with this statement. 97 % of respondents admitted that the training was innovative, and only 3 % did not share this opinion. The majority (75 %) of respondents attended open classes in schools during the PD.

According to the teachers' opinions, all courses' activities had advantages and disadvantages. On the one hand, the training helped to improve their competence. Experienced and creative instructors provided them with useful materials, taught them how to develop innovative teaching models. Teachers were given ample opportunities to develop practical activities and to actively participate in course seminars (10 %). On the other hand, there were some shortcomings: imbalance between theory and practice (60 %), insufficient time for assignments, use of predominantly monologic speech in explaining material, limited teaching time and lack of time for talking and answering questions (open-ended question #4).

According to the respondents, when entering the PD courses they had the following expectations: they wanted to increase the level of professional knowledge, to learn about topical issues of education, to develop plans for the generalization of teaching experience, to improve competence in working with parents and conflict resolution, to develop critical thinking skills, to advance teaching with modern technology, to get educational materials on electronic media, to get help with developing working programmes, to disseminate the obtained knowledge (open-ended question #5).

Teachers prefer training that consists of a small portion of theory with a presentation and practical part in schools under expert guidance. They justify their preference for the following reasons: practice allows for better assimilation of material, it is more useful for organizing high-quality and modern lessons, it contributes significantly to professionalism and has a long-term positive impact on teaching skills (open-ended question #6).

Some teachers (4 %) characterized their expectations from the courses further: the ideal ratio between theory, practice, and a closing

Table 2. Productivity of courses, quality and innovation of their content, visiting open lessons

Answer options	Frequency (number of answers)	Percent	Valid percentage	Cumulative percentage
Course productivity				
No	2	1	1	1
Yes	242	99	99	100
Achieving an individual goal				
No	92	38	38	38
Yes	152	62	62	100
Quality content				
No	4	2	2	2
Yes	240	98	98	100
Innovative content				
No	8	3	3	3
Yes	236	97	97	100
Attendance of open classes				
No	60	25	25	25
Yes	184	75	75	100

seminar should be 25 %, 50 %, and 25 %, respectively; also, they would like to visit open lessons concerning children with disabilities, learn innovative teaching methods in practice, receive methodological assistance and training by lecturers from foreign schools (open-ended question #7).

According to Table 3, 98 % of those surveyed believe that the use of high-speed Internet is necessary in the learning process. Only 2 % acknowledge it does not matter. 77 % of the respondents said that their ICT competence had improved, while 23 % said it had not. According to 99 % of teachers, the use of ICT in the teaching process in PD courses is important.

The benefits of the teacher's ability to use ICT in the classroom include visual aids to ask students to review assignment recommendations, strengthen students' interest in learning, find a variety of learning materials, facilitate the organization of students' research activities, increase the effectiveness of the learning process as a whole, enrich learning tools with interactive forms, automatically grade students' work (using online workbooks) and visualize theory.

In terms of skills, 83 % of respondents state that they successfully used the knowledge they had acquired in previous courses in the last course they took, while 17 % did not use the skills acquired in previous classes. Most respondents (75 %) are ready to disseminate the knowledge gained during the PD courses among their fellow teachers through in-school seminars, exchange of training materials and experience with them in online communication (Table 3).

Table 4 shows that 81 % of respondents never conducted pedagogical research and only 19 % use the «action research» method. Its application is important for teachers due to a number of reasons: it allows them to better assess student achievement, develop their own research skills, solve problems in the classroom more effectively through empirical procedures, move up the career ladder, develop their professionalism, assess the success of their own teaching, improve the learning process, select optimal teaching tools, and organise self-reflection to identify weaknesses in the methodology used.

According to Table 4, 69 % of teachers need training in the «action research» meth-

Table 3. ICT competence, application and dissemination of previously acquired skills

Answer options	Frequency (number of answers)	Percent	Valid percentage	Cumulative percentage
Need to use a high-speed Internet connection				
No	3	2	2	2
Yes	241	98	98	100
Development of ICT competency				
No	55	23	23	23
Yes	189	77	77	100
The importance of using ICT in the learning process in the courses				
No	2	1	1	1
Yes	244	99	99	100
Applying previously acquired skills				
No	41	17	17	17
Yes	203	83	83	100
Dissemination of previously acquired skills				
No	60	25	25	25
Yes	184	75	75	100

Table 4. Application of the «action research» method, opinions on this method, scientific publications of teachers

Answer options	Frequency (number of answers)	Percent	Valid percentage	Cumulative percentage
Application of the action research method in pedagogical activities				
No	198	81	81	81
Yes	46	19	19	100
The need for «action research» training				
No	8	3	3	3
Yes	169	69	69	72
No answer was given	67	28	28	100
Experience in writing scientific articles				
No	198	81	81	81
Yes	46	19	19	100
Importance of scientific publications				
No	67	26	26	26
Yes	137	56	56	82
No answer was given	40	18	18	100
Availability of scientific publications				
No	188	77	77	77
Yes	56	23	23	100
Difficulties in research activity				
No	72	30	30	30
Yes	9	4	4	34
No answer was given	163	66	66	100

od, namely in terms of the formulation of a research problem (self-education plan for young teachers), research methodology, including instrumentation, data analysis, and report writing. Regarding the research aspect of professional development, the majority of respondents (81 %) had no experience writing research papers. Only 19 % of them had tried scientific writing. As Table 4 shows, 56 % of teachers said that writing scientific articles is necessary to enhance their professional development. However, 26 % considered it unnecessary and other teachers chose to leave this question unanswered altogether. The data in Table 4 indicate that there is an urgent need for teachers to increase their level of research activity. It should be noted that 77 % of them have never written scientific articles and only 23 % have tried their hand at this type of work. 72 % have experienced difficulty writing research papers, and only 4 % have managed to do so without difficulty.

The last question of the questionnaire (#8) was of the open-ended type and required naming of the course containing the most important content, taking into account the conditions of the modern school. 84 % of respondents indicated ethics in the professional activities of a teacher in both face-to-face (29 %) and distance learning (55 %).

Discussion

Based on the survey results, it is obvious that teachers express two types of opinions

with regard to PD courses: satisfactory and unsatisfactory. Taking into account that the majority of teachers have less than 10 years of experience in schools, we may assume that this fact may influence their teaching style, choice of teaching tools, didactic materials, etc. Teaching experience of 2–10 years can be called the «golden period» for pedagogical effectiveness. We believe that effective teachers are those who have brilliant oratory skills, excellent knowledge of the subject, research talents, and experience.

Respondents also noted that the materials presented to them in the PD courses were of high quality and innovative, and that the training methods differed from one another. But good training can be ineffective if the courses are conducted for a limited time (this was the reason for the dissatisfaction of a number of trainees). Dissatisfaction was also caused by the fact that, in the opinion of teachers, not all PD courses were effective in the sense that the material was not studied to the full, training was conducted during too short period of time.

However, instructors in courses work hard to have time to present all materials within a limited period of time. Consequently, they focus on one-way interaction (emphasis on the instructor) rather than two-way interaction (emphasis on the instructor and the students) to save time. The ratio of theory to practice can also be unbalanced. In addition, despite their experience, some course instructors are unable to get students to learn 100 % of the course material. Andragogy teachers have been known to find it very difficult to make significant progress in training if it takes only a few days (Mandel, 2019). As a rule, they have to do a lot of work on drawing up a high-quality syllabus, rehearsing classes beforehand.

Other important issues are related to the use of information technology in PD courses, the continuity of learning and scientific writing. Research by B. R. Mandel shows that trainees who used information technologies in their studies showed significant progress not only in the sphere of knowledge and creativity, but also in the development of critical thinking (Mangal, 2019). That is why continuity of professional development and continuous professional development for teachers are critical. As it follows from the results of the questionnaire, the knowledge and skills they acquire during the PD are effective only in action. It is easy to lose them after returning to routine training cases. One important measure to ensure continuity is the exchange of experience with colleagues and the publication of scholarly articles.

Conclusion

The following conclusions can be drawn from the analysis of the data presented. First, teachers learn the material better in practice. Second, the practical part of most PD courses is not large enough (they are realized at only national/regional level), so it is necessary to involve foreign teachers in order to exchange international experience. Third, many trainees believe that the limited duration of the PD is the reason for incomplete training in some courses which reduces its effectiveness.

We recommend developing PD courses with an analytical structure focused on organizing consultative support for students throughout the course, solving cases in the school context and reviewing strategies appropriate for problem solving at the school (classroom) level. This course structure will enable teachers to develop skills in planning, observing, evaluating and reflecting upon their work. The process of reflection training builds confidence in the trainees' ability to design a course of study and deal effectively with professional difficulties. This structure is suitable for both online and face-to-face training. In addition, a separate PD course on the creation and development of professional ethics of a teacher in distance and face-to-face learning formats is required. This can be seen as an urgent task of the modern teachers' society, which the success of the state policy in the educational sphere depends on.

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Inclusive Education in Practice: Teachers' Opinions and Needs

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Abstract. The paper presents a part of the research data from a broader piece of research focused on teaching effectiveness in inclusive forms. It analyses the opinions of the teaching staff at different types of schools on the existing barriers and teachers' needs related to inclusive education. The research involved N=1.216 teaching staff (98 % teachers) working in Slovak schools. A questionnaire developed by the authors was used and respondents filled it in anonymously in electronic form. The results clearly indicate persistent issues in the inclusive practice, which are in line with the findings of other nation-wide Studies, i. e., missing multidisciplinary teams at schools, too many students in a single form, lack of teaching and specialised staff, limited offer of educational programmes focused on further education.

Keywords: teacher, student with special educational needs, inclusive environment, barrier, need, teacher training.

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Research area: pedagogy.

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Инклюзивное образование на практике: мнения и потребности учителей

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Аннотация. В статье представлена часть данных более широкого исследования, посвященного эффективности преподавания в инклюзивных формах. Анализируется мнение преподавательского состава различных типов школ о существующих препятствиях и потребностях учителей, связанных с инклюзивным образованием. В исследовании участвовали N = 1,216 преподавателей (98 % учителей), работающих в словацких школах. Использовалась разработанная авторами анкета, которую респонденты анонимно заполнили в электронной форме. Результаты указывают на существование регулярных проблем в инклюзивной практике, которые согласуются с выводами других общенациональных исследований, например, отсутствие мультидисциплинарных групп в школах, большое количество учеников в одном классе, нехватка преподавателей и специализированного персонала, ограниченное предложение образовательных программ, ориентированных на дальнейшее образование.

Ключевые слова: учитель, ученик с особыми образовательными потребностями, инклюзивная среда, барьер, потребность, подготовка учителей.

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Introduction

The needs of the most vulnerable groups of population, which includes children and youth with a health disadvantage, are identical as confirmed by the *Správa o potrebách detí a mladých ľudí v meste Banská Bystrica (Report on the Needs of the Children and Youth in the Banská Bystrica City).* The report has focused on the children with special needs as well, specifically those with a health disadvantage (Brozmanová Gregorová et al., 2017). These needs include *«the need to be accepted by the collective and supported by the surroundings as well as society, the need for self-awareness, trust and patience, and the opportunity to spend free time with healthy peers…»* (Brozmanová Gregorová et al., 2017, p. 92). The needs of children and youth with a health disadvantage to spend time with their healthy peers indicate that inclusion affects everyone and is not limited to people with special needs. In formal education, the quality of the educational environment is not measured only by the material and equipment, but also by accepting all students without discrimination. At the same time, it is desirable to ensure the provision of necessary staff who can appropriately saturate different needs in children.

Inclusive environment from the viewpoint of the school management

The European Agency for Development in Special Needs Education (2014) has stated that diversity in the context of formal education is a natural phenomenon, i. e., the diversity of students and their needs is common. Different students' needs are saturated efficiently and on purpose if the school management is inclined to introduce the principles of inclusive education.

The governing body of the school is considered the main stakeholder in the transformation of schools towards inclusiveness (Riehl, et al. 2008; MacFarlane & Woolfson, 2013; Janoško & Neslušanová, 2014, p. 77). Besides the school management, there are other staff on whom the practical application of the inclusive principles into the school environment depends. A quality, inclusive educational environment can be created if the main stakeholders in education appropriately cooperate. If there is cooperation, better conditions for all students can be secured. The implementation of inclusive education should be perceived as a collective/team activity in which different participants are responsible for performing the tasks within their own scope of activity (EASIE, 2012, p. 22). The support needed by teachers to perform their tasks in the classrooms includes access to the structures facilitating communication and cooperation with a team of experts as well as opportunities for continuous professional development (European Agency for Development in Special Needs Education, 2012, p. 22). Another important role is played by the cooperation and coordination of experts, i. e., networking with the aim to provide interdisciplinary community service (ibid).

The teacher
and the inclusive school environment

«The trend of inclusive education has found most of our teachers unprepared in terms of personality development as well as knowledge (Leonhardt & Lechta et al., 2006). «University teacher training takes the traditional form, while the postgraduate and continuous teacher education is relatively weak and does not reflect the up-to-date requirements «(Janoško & Neslušanová, 2014, p. 50). The OECD TALIS international teacher testing (Teaching and Learning International Survey focused on the teachers and school management to collect information about their work conditions and the learning environment at schools) results from 2018 are available. The last measurement at 182 primary schools and 8-year grammar schools involving approx. 3,300 employees teaching at ISCED2 level (NÚCEM, 2018) took place between (30/4–11/5/2018). Further nation-wide research was performed in Slovakia by MESA (an independent nonprofit NGO promoting reforms) (https://todarozum.sk/#oprojekte), The *Learning Makes Sense* project has provided an overview of the Slovak education system including the teachers' readiness to work in an inclusive environment (https://todarozum.sk). It was found that the readiness of Slovak teachers has not improved across the reporting periods (2008, 2013, 2018) (Koršňáková & Kováčová, 2010, p. 57). NÚCEM, Press release on main findings, TALIS2018 Slovakia, p. 3; Basic information on the OECD TALIS2013 results, p. 6). The authors partially addressed this issue before (Belková et al. 2018, 2019). According to EASIE, teachers face difficulties in the inclusive environment if their actual competences are not optimal (European Agency for Development in Special Needs Education, 2014b).

The barriers and teachers' needs
in the inclusive environment

A barrier refers to an obstacle that needs to be overcome to achieve the goal (SR Ministry of Finance, p. 10). Barriers in teaching refer to facts and phenomena that prevent teachers from performing their work properly or the aspects that are perceived by the teachers themselves as such.

Educational barriers differ according to the target groups. For instance, G. D'hertefelt (2000, in Machalová, 2018) has identified the following barriers in the adult clients of social work as a target group: informational, situational, institutional, and psychological. Miles (2000, p. 1) has explained that the lack of resources is a barrier for inclusion across the cultural, geographic, and economic borders; the resources include human and material (financial) resources, access to information and knowledge, but mainly the people's attitude to their exploitation. Miles (2000) considers the last one of key importance for promoting inclusive education.

In Slovakia, barriers for inclusion have been identified at the selected primary schools (State School Inspection – SSI: Report on the Promotion of Inclusive Education for Primary School Pupils in the 2018/2019 School Year and Learning Makes Sense, 2018 performed

by MESA10). Upon comparison, identical and specific barriers have been found:

- In terms of developing an inclusive culture, some schools have failed to understand the idea of inclusive education in its complexity (they still confuse inclusion and integration of students with health disadvantages), other have not embraced the idea of inclusion at all (SSI, 2018/2019). Similar issues have been identified in different countries as well (Lishuai Jia & M. Santi, 2020).
- In terms of further education and teachers' professional development, the available educational programmes have been found problematic. The offer of quality, relevant educational programmes (including those focused on working with students with special educational needs, i. e., SEN students) is insufficient. Moreover, the costs related to further education are high and relevant programmes are often cancelled (SSI, 2018/2019; Miškolci, Learning Makes Sense project). The lack of specialised knowledge and insufficient teaching abilities have also been identified as barriers by Rajovic & Jovanovic (2013), Cologon (2013), and Lishuai Jia & M. Santi (2020). Lishuai Jia & M. Santi (2020) have also pointed out that the workload standards are unclear while the workload generated by forms with integrated SEN students is significantly increased in reality.
- The schools remain severely understaffed: the number of teaching and specialised staff needed is much smaller than their actual number (SSI, 2018/2019). Lishuai Jia & M. Santi (2020) have also pointed out that special education services and research are also lacking. In the SR, schools lack multidisciplinary teams, which seem to be essential for providing inclusive environments. It is important that all team members are autonomous, but respect each other, learn to cooperate and help each other, and develop their own procedures and strategies, i. e., a good working climate. It can be characterised as follows: 1) constructive criticism without unnecessary emotions, 2) absence of competitiveness, 3) lots of mutual assistance (Vančíková & Sabo et.al., 2018, p. 93).
- Teachers describe the current state as generating «too much other work» (Miškolci, Learning Makes Sense project).

Methods

The overall goal of the project was to identify the efficiency of teaching in inclusive forms. The objectives included collecting teachers' opinions on the barriers and their own needs related to inclusive education in practice. In the broader research project, the empirical data were collected using a questionnaire developed by the authors, which incorporated a modified version of the «Teacher Efficacy for Inclusive Practices» (TEIP) Scale (Sharma, Loreman & Forlin, 2012) standardised instrument. The items in the questionnaire were modified for the purpose of this research, specifically, open questions were added for the respondents to provide their own opinion. There were 25 items in total. This paper presents the results achieved by processing the selected demographic items of the questionnaire, which required the respondents to provide their own opinion. The following research questions were formulated:

RQ1: What are the barriers for inclusive education referred to by the teaching staff?

RQ2: What could help the teaching staff improve their working conditions in the inclusive environment?

RQ3: What do the teaching staff propose changing in the university teacher training?

Based on these research questions, the following items requiring the respondents to formulate their own opinions were created.

Types of barriers for inclusive education according to the teaching staff – this item measured how the respondents perceived this aspect. This item was formulated based on the fact that school systems aim to proceed from integration towards inclusion. However, true inclusion assumes changes in perception and organisation of the whole school system and educational environment, i. e., focusing on diverse educational needs and abilities to address all students. This kind of shift requires a major reform of educational policies (Körnerová, et al., online, Introduction**),** theoretical research of inclusion, and gradual development of an inclusive education system (Špotáková, Kundrátová, Štefková, Vojtová & Zikmund Perašínová, 2018). If the aforementioned requirements are not met, teaching and specialised

staff come across barriers when they strive to implement inclusive education in practice.

The next item including an open answer was ***What helps the teaching staff implement inclusive education in practice the most?*** This item was formulated based on the fact that inclusive education is perceived as education accessible to all, it provides flexible solutions, which can be adapted for every individual regardless of their preferred learning or communication style, or other specific needs (Čerešňová & Rollova, 2015 in Čerešňová et al., 2018, pp. 13–14). Facilitating an inclusive education process is not easy, proper set-up and supporting mechanisms are necessary for teachers and specialised staff alike.

According to EASIE report entitled *Key Principles of Promoting Quality in Inclusive Education* (2011, p. 15), teaching students at universities are supposed to develop knowledge, skills, and understanding necessary for their own self-confidence as well as the ability to efficiently address different needs of their students. The *Teacher Education for Inclusion Across Europe – Challenges and Opportunities* report (EASIE, 2011, p. 18) has pointed out that the structure of university teacher education needs to be improved in terms of inclusion. The way future teachers are prepared for their profession needs a change (EASIE, 2014, p. 16). Based on these reports, the third item was formulated: ***What changes are necessary in university teacher education to improve the competences related to integrated education and in inclusion.*** In this case, experienced teachers were asked to provide their ideas on how university teacher training should be improved to prepare the graduates for integrated education and inclusion. Since some of the respondents have direct experience with teaching SEN students, the goal of this item was to collect their ideas and recommendations on how to improve the teacher training.

Characteristics of the research sample

The research file consisted of N=1,216 teaching staff employed at primary and high schools in the SR. In total, N=1,379 answers were collected. Available selection was applied to select the respondents. The composition of respondents involved in the survey in terms of their workplace can be seen in Table 1.

As can be seen, the largest part of the research file included primary school teachers and high school teachers respectively (62 % and 23 %). 79 % of the respondents worked at state schools. Respondents from all regions of Slovakia were involved, most of them from Banská Bystrica (16 %), Prešov (19 %), and Košice (17 %) regions. The majority of respon-

Table 1. Composition of the research sample in terms of the workplace (teaching staff)

	N	%
Primary school – 1st stage	386	31.74
Primary school – 2nd stage	388	31.91
Vocational school	281	23.11
Special primary or high school	66	5.43
Grammar school	65	5.35
8-year grammar school	3	0.25
Conservatory	8	0.66
Primary school assistant	3	0.25
Educator (school club, etc.)	2	0.16
Special form of teacher at common school	2	0.16
Special pedagogue at a primary school	12	0.99
Total (respondents)	**1216**	**100.0**

dents had 17–20 (15 %), 24–26 (11 %), 30–32 (11 %), 33–36 (10 %) of practice.

The descriptive items included questions about the experience with cooperation between teachers and teaching assistants. In total, the question was answered by N=569 respondents: 40.07 % (n=228) responded yes and 58.35 % (n=332) responded no.

Results

This part of the paper presents the results of the survey, specifically, the open questions aimed at identifying the perceived barriers and teachers' needs relate to inclusive education in practice (see Table 2).

Open questions were categorised and processed using the methods of analysis, synthesis, and generalisation.

Due to the large number and diversity of responses, the barriers for inclusive education were categorised into groups. The largest one was barriers generated by the school itself (28.14 %). The responses were categorised into groups as follows:

barriers generated by the school: understaffing, insufficient material and technical equipment (lack of funding, space, classrooms), failure to embrace the inclusive school concept, incompetent teacher, too many students in the form overloading the teacher;

by the family: lack of family education, parents refuse to cooperate, parents are too demanding or have unrealistic expectations, parents lack interest in their children's education, low attendance, parents refuse to consult experts to tackle their child's problems, geographic and social isolation, fear that the child may be labelled, prejudice, parents of healthy children lack understanding;

by students: low attendance, lack of interest in education, low motivation, negative attitude to school, other students are intolerant (aggressive or insensitive), SSN students are reluctant to join the collective, lack of discipline and compliance with the treatment, exploitation of the SSN status, ignoring the recommendations specified in the individual study plan,

by society/state: lack of funding for assistants, conditions for inclusion are not provided, curricula and syllabi focus on performance, administrative burden, poor legislation, too many students in a form, education system is not a priority, demands for teachers are too high.

Subsequently, the teaching staff was asked to provide their ideas on how to improve inclusive education (Table 3).

As can be seen, the responses in Table 2 are related to those in Table 3. The former question focused on barriers while the latter focused on the need (to remove the barrier).

Teachers involved in this research were also asked about their ideas on how to improve university teacher training to prepare them for working with integrated students and inclusive education. The responses reflect the respondents' own experience with university education (>70 % of respondents had more than 17 years of teaching practice) as well as their teaching practice. As can be seen, the responses revolve around the same issues. They were

Table 2. Types of barriers for inclusive education according to the teaching staff

	N	%
Generated by school	388	28.14
Generated by family	156	11.31
Generated by students	24	1.74
Generated by state	121	8.77
Generated by society	24	1.74
Total responses	**713**	**51.70**
Missing responses	666	48.30
Total	**1379**	**100.0**

The number of responses exceeds the number of respondents, because multiple responses could be provided.

Table 3. What helps the teaching staff implement inclusive education in practice the most?

Responses	%		n	%
Teaching and specialised staff	23.57	**specialised staff** (special teachers, curative teachers, psychologists)	185	13.42
		teaching assistants (qualified)	140	10.15
Education	19.15	practical examples and demonstrations	154	11.17
		educational activities (workshops, training)	110	7.98
Number of students	11.60	lower number of students in the form	160	11.60
Information sources	11.09	**theoretical material** – methodological guidelines, manuals, worksheets for specific subjects, tasks for students with specific SEN, test collections, databases of learning tasks	153	11.09
I do not know	10.30	**I do not know** (I have never considered it, hard to say)	142	10.30
Total responses	100.0		1379	100.0

The unlisted responses were less than 4 % of all responses (the number is too low to be considered relevant). The total number of responses exceeds the number of respondents (multiple responses were possible).

Table 4. What changes in university teacher education are necessary to improve the competences related to integrated education and in inclusion

	N	%
Improve theoretical and practical preparation	543	39.38
Improve practical preparation	357	25.89
Improve theoretical preparation	130	9.43
Other	121	8.77
I do not know	65	4.71
Total responses	1216	88.18
Missing responses	163	11.82
Total	1379	100.00

The total number of responses exceeds the number of respondents (multiple responses were possible).

categorised into the following groups: practical and theoretical preparation require modification (39 %), practical preparation requires modification (25 %), theoretical preparation requires modification (9 %), see Table 4.

Discussion

Based on Table 2, it can be stated that although only half of the respondents answered the question about the barriers for inclusive education, the scope and variability of their responses corresponded with the barriers referred to in theory and research. Most frequently, barriers generated by the schools themselves were referred to (28 %, see Table 2). The *failure to accept the inclusive school concept* as a barrier referred to by the respondents corresponds with the SSI findings (2018/2019) as well as the broader concept of the inclusion index (Booth & Ainscow, 2002). Ainscow (2005) has explained that many barriers faced by the teachers result from the established mindset. The mindset and ways of thinking are influenced by the environment. Safe, accepting, and cooperating schools that provide inspiring community environments consider the development of inclusive culture important. Their school culture involves promoting common inclusive values and relationships based on cooperation Booth & Ainscow (2002). The respective governing

body is the main stakeholder in the process of transforming the school into an inclusive one 2008; MacFarlane & Woolfson, 2013; Janoško & Neslušanová, 2014, p. 77).

According to Cologon, K. (2013, p. 29) as well as Sharma & Armstrong et al, (2019), barriers for inclusive education include *negative attitudes and stigma related to «otherness» and health disadvantage*. Lishuai Jia & Marina Santi (2020) have also pointed out that other students' parents may have negative attitudes as well. Similar responses can be found in this research: the respondents explain that parents fear their SEN child would be «labelled» and other children's parents lack understanding. The teachers involved in this research (62 % of them work at primary schools) believe that the legal representative is responsible for the child's school attendance, therefore attendance issues, lack of discipline (in parent/child), and ignoring recommendations (treatment, individual plan) were included in the group of barriers generated by the student/their family. However, these kinds of barriers (lack of stimulation in the family and interest in education) are not considered relevant in terms of equal treatment or education opportunities provided by the teachers. It seems that teachers consider family an important factor affecting the student's attitude to inclusion and in turn, its success. In terms of inclusion research, European studies focused on family as well (the role of parents in educational inclusion, see EASIE, 2003). Barriers for inclusion generated by students (mainly behavioural) are quite challenging for the teachers (EASIE, 2003, p. 14). Slovak teachers repeatedly referred to certain student characteristics (which could be generalised as behavioural issues), which make inclusive education more difficult. *System barriers including insufficient funding and support from the governing bodies* (Cologon, 2013, p. 29) have also been referred to by the respondents. EASIE (2003) has explained that an appropriate funding system is of key importance. 8 % of teachers in this research pointed out certain barriers out of their control (poor legislation, lack of funding, curricula and syllabi focused on performance, administrative burden, too many students in the form) The findings of this research are in line with those of the Learning Makes Sense research project (Miškolci) in which 22.4 % of teachers specified «too much other work» as the biggest barrier. OECD TALIS2013 and 2018 have revealed that teachers spend more than half of their working time on non-teaching activities such as administrative work (Miškolci). Another barrier was the form size (large number of students). Some EU countries consider the form size an important factor in inclusion (EASIE, 2003, p. 14).

The needs of teachers working in inclusive environments are closely related to these barriers. For instance, the barrier described as understaffing (Table 2, see barriers generated by the school) turned into the need for specialised staff and cooperation with experts. (13 % specified psychologists, special teachers, curative teachers, or a whole team; 10 % specified a teaching assistant). 23 % of respondents described the need for a teaching or specialised staff member available for cooperation. The situation is similar in other countries as well (Lishuai Jia & Santi, 2020; Sharma & Armstrong et al, 2019). Besides the form size, the teachers' need to cooperate with specialised staff or other experts can result from their lack of knowledge on inclusive education and opportunities for their own professional development. As it was explained in the theoretical background, this barrier is common across different countries, see e. g., Cologon (2013), Lishuai Jia & Marina Santi (2020), Sharma & Armstrong et al. (2019).

The second largest group of responses (19.15 % – need for education) can be interpreted as positive in terms of the respondents' attitude to life-long learning. The nature (contents) of education referred to by the respondents varies. 11 % of teachers are interested in further practical education, want to gain more practical experience; practical training, advice, and examples; they would like to see other teachers demonstrating how to deal with different situations, specific ways to work with SEN students. They would like to attend practical training organised by an educational institution and visit schools where inclusive education has been successfully implemented, they are even interested in internships at such schools, etc.

7.98 % of teachers were interested in accessible further education provided by an organisation, regular specialised training or re-training providing meaningful and quality further education reflecting their current needs. Again, these findings correspond with the OECD TALIS2018 results for the SR (e. g., dire need for further education focused on teaching SEN students – 26.5 %, behaviour and classroom leadership – 19.1 %) (NÚCEM, TALIS2018, p. 3). Another group of teachers refers to their need for information and knowledge sources (see Table 3 and Miles, 2000) in the form of methodology, guidelines, manuals, information databases (11 %). Teachers would like to use them individually and since they cannot get physical copies, specialised information for SEN teachers should be made available mainly through ICT. The efficient use of ICT in working with SEN students has been addressed in EASIE (2003). As can be seen, the barrier represented by too many students in the form (Table 2) turned into the need for reducing the number of students in the form (11 %, see Table 3). Although it requires a complex system and legislative change, it would reduce the teachers' workload. The number of integrated students in a common primary school form was previously specified by Decree of the Ministry of Education of the SR No. 320/2008 Coll. on primary schools (Section 13, Paragraph 2) – a maximum of 3 students with a health disadvantage could be integrated into a single form. However, it was amended by Decree of the Ministry of Education of the SR No. 224/2011, which modified the integration of students in common forms (Section 13, Paragraph 2 of Decree No. 320/2008 Coll. on primary schools) as follows: *«for each student with a health disadvantage integrated into the form, the maximum number of other students in the form is hereby reduced by two pursuant to Section 29, Paragraph* 5. The amendment is related to the changes introduced by Act No. 188/2015 Coll. which amended Act No. 245/2008 Coll. on education and upbringing (School Act) on the amendments and changes to certain Acts. Another goal was to reduce the administrative burden at primary schools: *«The provision reducing the number of students in the form for the purpose of inclusion of students with health disadvantage is hereby removed.»* The provision specifying the number by which the total number of students in the form is reduced if students with health disadvantage are included has been removed. The School Act in force specifies the minimum number of pupils in the form. If the provision currently in force is retained, newly created forms will not reach the minimum number of students and it will be difficult for the schools to cover the incurred costs. The schools will still receive more money for SEN students and students with extraordinary intellectual talents.

40 % of teachers agree that university teacher education needs to be modified in terms of both theory and practice (see Table 4). In particular, the teachers proposed the following changes: *adjust the number of lessons in favour of practical preparation from the very beginning of the university study, provide professional field practice at different schools (including the special ones) and focus on SEN students so that teaching students can try out the methods and strategies focused on working with SEN students (as teachers and teaching assistants alike). Theoretical preparation should reflect the actual practice and needs so that teaching students acquire more knowledge about special pedagogy and inclusion (as a separate course), psychology, psychodidactics, and training. They should learn about these aspects from model situations, experts from the practice, lesson demonstrations, and at schools where inclusion has been successful. They should also study applied subject didactics addressing SEN students, visit a variety of facilities, and get hands-on experience with the documentation of the integrated students.*

The variety of responses in the «Other» section was so large that it is impossible to perform a statistical analysis. They ranged from *teacher training should not be modified at all, integration should not be performed at all costs, I do not agree with inclusion* to *the whole system needs a change,* or *a complex reform of funding is necessary to achieve inclusion.* However, some responses were selected as they are relevant. Other teachers' ideas on how to improve university teacher training to prepare teachers for integration/inclusion included the

following: *improve the teachers' quality to reflect the practice – increasing number of SEN students; develop motivation, interest, and attitude; develop students personalities in terms of respect and tolerance, honest communication, socialisation, and participation – graduates should also be able to develop these aspects in their own students; learn to accept the student as they are; modify the educational programme to address the students' needs, their possibilities, and potential; establish a separate field of study to address this area (integration, inclusion, special pedagogy); have an expert in SEN methodology who can work with students with different abilities.* Teachers also repeatedly claimed that the family environment and parents' attitude strongly affect the course of integration and called for a change to *address the child's background to introduce positive changes*. Based on these findings, it is recommended to involve school experts to address the social relationships within the students' families. Many of these requests (mainly efficient cooperation with the family) could be addressed in cooperation with specialised staff – social teachers, special teachers, and school psychologists.

Conclusion

One of the preconditions for successful inclusive education is undoubtedly quality professional training of future teachers and a variety of further education in this area. Insufficient university training or continuous teacher education as well negative attitudes of the teachers to inclusive education generate barriers, which prevent successful implementation of inclusive education in practice. University teacher training is the first step in their life-long learning. The graduate's knowledge is not final, further education is desirable. Inclusive education is accompanied by daily changes and constant development; therefore, the teacher must have the abilities necessary to cope with it. In the course of their career, they need to respond to the changing needs (European Agency for Development in Special Needs Education, 2012). The European Agency for Development in Special Needs Education (2012) has created an «inclusive teacher profile» specifying four key values related to individual teacher competences. The key values are in line with the 21st model of a learning society, which aims to replace the knowledge-based society. The former requires knowledge, skills, and attitudes – the KSA model (Alkhalaf, 2013). The values adhered to by teachers are of key importance in accepting students' diversity and helping to build a modern, open, and flexible process of education and upbringing to guarantee high quality and efficient education.

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Perception of Distance Learning by Some Categories of Adults in Ukraine

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Abstract. The Ukrainian distance education market is less than 15 years old, so it is clear that it is just being formed and has not yet encompassed educational institutions in large quantities: schools, institutions of professional and higher education, postgraduate institutions. But today, during the COVID-19 pandemic, for the modern education system, the issue of transforming the forms and methods of teaching, in particular, its rapid and massive transition to distance learning, is relevant. In order to understand what consequences the system of higher and postgraduate education can expect, studies are being carried out in different countries to study the perception of distance learning, its effectiveness and the prospects for mass application. The article examines the perception of distance learning in the system of advanced training of public servants and teachers, as well as students of Ukrainian higher educational institutions. The results of the study showed that the vast majority of public officials, teachers and students quickly adapted to the new form of education and actively use domestic web platforms for distance courses and various online distance learning systems. At the same time, only a small part of the respondents believe that the level of knowledge they receive through distance learning is lower than in the «face-to-face» format, and a significant part of adults are always ready to study remotely, although the majority of respondents consider it effective and useful for myself a mixed form of study.

Keywords: online learning, forms of education, training, face-to-face, e-learning.

Research area: pedagogy.

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Восприятие дистанционного обучения некоторыми категориями взрослых в Украине

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Аннотация. Рынку украинского дистанционного образования менее 15 лет, поэтому очевидно, что он только формируется и массово еще не охватил учебные заведения: школы, учебные заведения профессионального и высшего образования, учреждения последипломной подготовки. Но сегодня, во время пандемии COVID-19, для современной системы образования актуален вопрос трансформации форм и методов обучения, в частности ее стремительного и массового перехода к дистанционному обучению. Чтобы понимать, какие последствия могут ожидать систему высшего и последипломного образования, в разных странах проводятся исследования по изучению восприятия дистанционного обучения, его эффективности и перспектив массового применения. В статье исследовано восприятие дистанционной формы обучения в системе повышения квалификации публичных служащих и учителей, а также студентов украинских высших учебных заведений. Результаты проведенного исследования показали, что абсолютное большинство публичных служащих, учителей и студентов быстро адаптировались к новой форме обучения и активно пользуются отечественными веб-платформами дистанционных курсов и различными онлайновыми системами дистанционного обучения. При этом лишь незначительная часть респондентов считает, что уровень знаний, которые они получают при дистанционном обучении, ниже, чем в формате «face-to-face», а значительная часть взрослых готова всегда учиться в дистанционном режиме, хотя большинство респондентов считает эффективной и полезной для себя смешанную форму обучения.

Ключевые слова: онлайн-обучение, формы обучения, повышение квалификации, аудиторное обучение, электронное обучение.

Научная специальность: 13.00.00 – педагогические науки

Введение

Как и во многих странах, в Украине дистанционное обучение нормативно закреплено, например, «Положением о дистанционном обучении» и новой редакцией Закона Украины «О высшем образовании» (принят в 2017 году), а дистанционные технологии обучения используются в большинстве отечественных высших учебных заведений. Но достаточно длительное время дистанционное обучение рассматривалось как незначительная по объему составляющая образовательного процесса, а предпочтение отдавалось традиционным аудиторным занятиям («face-to-face»). Наверное, потому, что в образовании есть две взаимосвязанные важнейшие составляющие – знания и воспитание. Именно эти составляющие объединяются через общение, а как говорил Антуан де Сент-Экзюпери: «Единственная известная мне роскошь – это роскошь человеческого общения».

К сожалению, в условиях коронавирусной пандемии COVID-19, которая охватила весь мир с начала 2020 года, межличностное общение в сфере образования стало дефицитом, потому что перед учебными заведениями для взрослых критической темой стала адаптация учебного процесса к дистанционной форме. Логическим продолжением дистанционного обучения стало онлайн-обучение (e-learning), когда получение знаний и навыков осуществляется с по-

мощью компьютера или другого устройства, подключенного к интернету. При этом коммуникация может быть либо асинхронной (когда преподавателю и слушателям не нужно одновременно быть в онлайновом режиме), либо синхронной (коммуникация и взаимодействие происходят в режиме реального времени).

После вынужденного массового перехода к дистанционному обучению в мире появилось много критических замечаний и философских суждений о такой форме образования и ее последствиях для обучаемых. Например, профессор итальянской литературы из университета Калабрии Нуччо Ордине в видеообращении, размещенном в мае 2020 года на сайте испанского издания El Pais, высказал мнение о том, что дистанционное обучение – это смерть образования, потому что «через компьютерный экран знания не могут быть ни переданы, ни восприняты по-настоящему».

Чтобы понимать, какие последствия могут ожидать систему высшего и последипломного образования, в разных странах начали проводить исследования по восприятию дистанционной формы обучения, ее эффективности и перспективы массового использования. Хотя в литературе можно встретить различные названия онлайн-образования – «дистанционное обучение», «электронное обучение», «онлайн-обучение», «компьютерное обучение», «сетевое обучение», «виртуальное обучение», «киберобучение», но в большинстве случаев онлайн-образование для взрослых разделяется по типам пользователей:

– на университетское онлайн-образование, пользователями которого являются студенты, зачисленные в высшие учебные заведения (вузы);

– на массово открытые онлайн-курсы (Massive Open Online Course – MOOC) для взрослой аудитории по различным тематическим направлениям (Clark, 2016; Khusyainov, 2015; Schroeder, 2012).

К университетскому онлайн-образованию относится и последипломное онлайн-образование в системе повышения квалификации различных категорий (государственных служащих, учителей, медицинских работников, руководителей предприятий и учреждений и др.). Именно это и является предметом многих исследований, касающихся онлайн-обучения в системе высшего и последипломного образования (Berezhna & Prokopenko, 2020; Brammer & Clark, 2020; Grinevich et al., 2020; Hall Owen, 2020; Zelinskyi, 2020). Через несколько месяцев после начала карантина в Украине Государственной службой качества образования Украины был проведен масштабный анонимный опрос (более 28000 респондентов) научно-педагогических работников и студентов вузов всех типов и форм собственности о дистанционном обучении и его последствиях. В этом исследовании сделан вывод о том, что, даже «имея определенный опыт, который приобрели высшие учебные заведения в связи с использованием дистанционной формы обучения в условиях общенационального карантина, о подтверждении практической пользы для системы высшего образования говорить рано», что свидетельствует об актуальности указанной проблемы и важности ее всестороннего и глубокого изучения.

В свое время проблематика и различные аспекты дистанционного обучения в высшем и последипломном образовании рассматривались многими зарубежными исследователями, среди которых А. Кей (Kaye & Rumble, 2018), Г. Рамбл (Rumble & Harry, 2018), А. Сан (Sun & Chen, 2016), Р. Патрик (Rice & Patrick, 2020). Также вопросы дистанционного образования находятся в поле зрения и украинских, и российских ученых (Shunevych, 2006; Zabolotskyi, 2016; Sysoieva & Osadcha, 2019; Chirikov et al., 2020; Pekker, 2019; Klimenskikh et al., 2017).

Чтобы выяснить общие вопросы мотивации взрослых (студентов и слушателей) к онлайн-обучению, можно обратиться к результатам некоторых исследований. Например, в одном из российских исследований ответы респондентов, имеющих опыт дистанционного обучения, на вопрос о цели обучения в дистанционном формате распределились следующим образом: саморазвитие (51,8 %); расширение профессио-

нальных компетенций (24,7 %); получение документа о повышении квалификации (8,64 %); учебный план (6,2 %), наличие свободного времени (1,2 %) (Klimenskikh et al., 2017).

Российские исследователи Высшей школы экономики совместно с коллегами из США проанализировали эффективность дистанционного обучения по сравнению с традиционными занятиями и пришли к выводу, что такой метод преподавания не уступает по качеству традиционному обучению, но при этом позволяет научить на 15–18 % больше студентов (Chirikov et al., 2020). Также установлено, что при почти равных образовательных результатах затраты на обучение одного студента в смешанном формате оказались меньше на 15–19 %, а в дистанционной форме – на 79–81 % в зависимости от курса обучения.

В области оценивания существуют разные мнения относительно измерения эффективности онлайновых курсов, но наиболее распространенным является подсчет количества слушателей, окончивших курс и получивших сертификат. По статистике в среднем только 10–15 % слушателей массовых онлайн-курсов просматривают видеоматериалы, слушают онлайн-лекции, выполняют все задания курса и получают сертификат об окончании.

Некоторые исследования свидетельствуют о том, что дистанционное обучение менее эффективно по сравнению с традиционными «face-to-face» формами преподавания. В частности, об этом говорится в последнем отчете сотрудников Центра образовательной политики в Колледже образования и развития человека Университета Дж. Мейсона (США). В нем отмечается, что большинство слушателей онлайновых курсов не завершают начатое обучение, причем с годами этот показатель только снижается. Если в 2014–2015 годах из всех слушателей онлайн-курсов учебные занятия до конца проходили всего 6 %, то в 2016–2017 годах этот показатель был на уровне 4 %, а в 2017–2018 годах – только 3,13 % (Protopsaltis & Baum, 2019). При этом значительная часть тех, кто оплатил онлайн-курсы, даже не приступает к ним. Авторы исследования составили рекомендации Министерству образования США о том, что сокращение доли традиционного (аудиторного) обучения в пользу дистанционной формы будет нарушением интересов потребителей и ухудшит качество образования в стране в целом.

Достаточно интересны данные исследования (Pekker, 2019), основанные на онлайн-опросе 2665 студентов 17 онлайн-курсов МГУ им. М. В. Ломоносова на платформе «Открытое образование». Это исследование показало, что причины «отсева» слушателей зависят от их первоначальных намерений, а изначальный интерес обучаемых не совпадает с ожидаемым уровнем предлагаемых знаний.

Методология исследования

Для изучения мнения о восприятии онлайн-обучения взрослыми автором использовались онлайновые анонимные опросники в виде Google-форм. Среди респондентов опросов, которые проводились осенью 2020 года, были:

− публичные служащие органов власти (875 респондентов – государственные служащие и должностные лица местного самоуправления; N=875);

− учителя школ (901 респондент, из которых 56 % имели стаж работы в сфере образования более 20 лет, 27 % – 10–20 лет; 11 % – 5–10 лет; 6 % – до 5 лет; N=901);

− студенты вузов (1560 респондентов, из которых 50 % – это студенты 1–2-го года обучения, 47 % – 3–4-го года обучения, 3 % – 5–6-го года обучения; N=1560).

Результаты

Проведенный опрос позволил выяснить общее восприятие дистанционного формата обучения различными категориями взрослых в Украине. В частности, онлайн-обучение воспринимают как «формализм» почти 25 % респондентов среди публичных служащих (чиновников), более 29 % учителей и 37 % студентов. То, что на время карантина повышение квалификации и обучение вообще должны быть

прекращены, считают 13 % респондентов из числа публичных служащих, 22 % учителей и 45 % студентов.

С начала карантина до конца 2020 года только 12,1 % респондентов среди публичных служащих и 17,1 % учителей не прошли ни одного обучения в системе повышения квалификации в дистанционном формате. Среди студентов таких нет. При этом в системе повышения квалификации (чиновники и учителя) около трети респондентов прошли хотя бы одно обучение (курс) в дистанционном формате, а каждый шестой – 4 и более обучений. Очевидно, что при продлении карантина в системе повышения квалификации 100 % слушателей пройдут дистанционные курсы и онлайновое обучение.

Распределение ответов на вопрос «Какое время Вы еще готовы учиться в дистанционном режиме?» представлено в табл. 1. Почти половина учителей и студентов и 3/4 чиновников всегда готовы обучаться в онлайновом формате.

Ответы на вопрос «Насколько Вам было сложно переориентироваться на онлайновый режим обучения?» (табл. 2) свидетельствуют о том, что для основной массы публичных служащих и студентов переход к онлайновым занятиям не вызвал определенных проблем, а вот для трети учителей этот переход был несколько сложным.

Как показала практика, в дистанционном формате обучения в Украине используется два типа занятий: синхронный (онлайновое обучение в реальном времени, когда преподаватель и слушатели (студенты) одновременно находятся в образовательной среде) и асинхронный (дистанционный формат обучения, когда слушатели (студенты) могут использовать записанные на вебплатформах учебные курсы в любое время). В табл. 3 приведены данные опроса о восприятии различных типов дистанционного обучения.

Данные исследования относительно того, где удобнее проходить дистанционное обучение, свидетельствуют о следующем. Публичные служащие отдают предпочтение обучению на своем рабочем месте (ПК, ноутбук) – 42,1 %; дома (ПК, ноутбук) – 24 %; в любом месте (смартфон, планшет) – 33,9 %. Соответственно, для учителей это: на рабочем месте (ПК, ноутбук) – 17,7 %;

Таблица 1. Готовность продолжать обучение в дистанционном режиме
Table 1. Willingness to continue distance learning

Варианты ответов	Публичные служащие,%	Учителя,%	Студенты,%
Всегда	73,3	48,9	45,3
1–2 месяца	11,4	25,5	14,5
3–4 месяца	3,6	6,3	21,0
6 месяцев	4,6	6,3	11,3
Прекратить немедленно	7,2	13	9,7

Таблица 2. Сложность перехода на онлайн-обучение
Table 2. The difficulty of moving to online learning

Варианты ответов	Публичные служащие,%	Учителя,%	Студенты,%
Сложно	11,4	35,9	21,0
Просто	61,3	37,4	66,1
У меня были соответствующие навыки	27,3	26,7	12,9

дома (ПК, ноутбук) – 65,6 %; в любом месте (смартфон, планшет) – 16,7 %, а для студентов – дома (ПК, ноутбук) – 56,5 %; в любом месте (смартфон, планшет) – 43,5 %.

Результаты опроса о преимуществах онлайн-обучения показывают, что учителя и студенты наибольшее значение придают «воспитанию самоорганизации» (37,2 % и 32,3 % соответственно). В то же время чиновники наиболее значимым при дистанционном обучении считают «отсутствие командировок» (24,6 %) и «присутствие на рабочем месте» (25,2 %). Как раз последнее и обусловливает основной недостаток в онлайновом формате обучения для публичных служащих – «отвлечение на выполнение текущей работы» (43,2 %). Но больше всего не устраивает представителей всех 3 категорий респондентов техническое обеспечение онлайнового обучения. Более 40 % публичных служащих, 65 % учителей и почти 55 % студентов не устраивает «техническое обеспечение рабочего места» и «качество каналов связи (интернета)».

Среди веб-сервисов для синхронного обучения публичные служащие чаще всего используют: Zoom (64 %), Skype (13,1 %), Google Meet (8,4 %); учителя – Zoom (79,8 %), Skype (19,7 %), Google Meet (6,1 %); студенты – Zoom (74,2 %), Skype (19,4 %), Google Meet (6,5 %).

Среди веб-платформ дистанционных курсов для асинхронного обучения чаще всего публичными служащими используются такие ресурсы, как Prometheus (55,8 %), EdEra (14,1 %), ВУМ (11,2 %); учителями – EdEra (63,5 %), Prometheus (37,1 %), Coursera (2,4 %), ВУМ (2 %); студентами – Prometheus (6,5 %), ВУМ (8,1 %), МООС (8,1 %), Универсариум (4,8 %), а 71 % – не пользуется вообще.

Уровень знаний, полученных при онлайн-обучении, более половины различных категорий взрослых признает таким, как и при традиционной форме (в аудитории с преподавателем) (табл. 4). При этом 25,1 % публичных служащих, 27,7 % учителей и 19,4 % студентов считают, что этот уровень даже выше.

Для повышения эффективности дистанционной формы занятий каждая категория респондентов определила приоритетные меры (суммарное значение больше 100 %, так как можно было выбирать несколько ответов):

Таблица 3. Наиболее приемлемые типы дистанционного обучения
Table 3. The most acceptable types of distance learning

Варианты ответов	Публичные служащие,%	Учителя,%	Студенты,%
Синхронный	12,6	19,3	8,1
Асинхронный	40,4	32,8	61,3
Оба приемлемы	43,6	43,5	29,0
Оба неприемлемы	3,4	4,4	1,6

Таблица 4. Уровень знаний, полученных во время онлайн-обучения, в сравнении с аудиторными занятиями
Table 4. The level of knowledge gained during online learning, compared to classroom activities

Варианты ответов	Публичные служащие,%	Учителя,%	Студенты,%
Такой же самый	61,5	52,8	51,6
Выше	25,1	27,7	19,4
Ниже	13,4	19,5	29,0

– публичные служащие: контроль присутствия слушателей (видеоконтроль) – 13,5 %; выполнение заданий (заполнение форм, предоставление ответов на контрольные вопросы) – 37,5 %; периодические дискуссии – 35,8 %; обязательное компьютерное тестирование – 38,9 %;

– учителя: контроль присутствия слушателей (видеоконтроль) – 16,8 %; выполнение заданий (заполнение форм, предоставление ответов на контрольные вопросы) – 30,1 %; периодические дискуссии – 43,1 %; обязательное компьютерное тестирование – 24,7 %;

– студенты вузов: контроль присутствия слушателей (видеоконтроль) – 16,1 %; выполнение заданий (заполнение форм, предоставление ответов на контрольные вопросы) – 33,9 %; периодические дискуссии – 29 %; обязательное компьютерное тестирование – 40,3 %.

Наиболее эффективными мерами контроля знаний при синхронном онлайновом обучении являются выполнение заданий, периодические дискуссии по проблемным вопросам и обязательное компьютерное тестирование знаний после завершения курса. Например, как показывает практика применения онлайн-обучения, во время повышения квалификации публичных служащих в синхронном режиме текущие задания (например, заполнение Google-форм, оперативные расчеты) выполняют от 50 до 70 % слушателей. Это свидетельствует о том, что только такая часть присутствует за экранами своих компьютеров, хотя компьютерное тестирование, которое проводится по завершении всего курса (учебной программы), проходят все зарегистрированные слушатели.

В табл. 5 приведены данные опроса респондентов о более эффективном и полезном для них обучении. В частности, наибольшая доля всех категорий взрослых таким обучением считает смешанную форму: «традиционное (аудиторное) + дистанционное обучение». При этом традиционное (аудиторное) обучение пользуется спросом только у 14 % публичных служащих и у четверти учителей и студентов.

Заключение

Карантинные мероприятия вынуждают заведения высшего и последипломного образования в Украине искать инновационные решения, поэтому за короткий промежуток времени им удалось ввести в практику дистанционное обучение с использованием различных онлайн-сервисов и веб-платформ. Хотя налицо и некоторые недостатки при использовании онлайн-занятий, среди которых технические вопросы и психологические проблемы, но за последний год это является значимым трендом в сфере образовательных услуг.

Пандемия обусловила необходимость внедрения быстрой трансформации педагогической деятельности и методики оценки знаний взрослых. Студенты и слушатели отмечают развитие самоорганизации, возможность получить образование в удобное время и в удобном месте и равный доступ к образованию, независимо от места проживания. При этом активно используется гибкость в выборе наиболее удобных условий обучения, обработка теоретического ма-

Таблица 5. Наиболее эффективное и полезное обучение для взрослых
Table 5. The most effective and useful training for adults

Варианты ответов	Публичные служащие,%	Учителя,%	Студенты,%
Традиционное (аудиторное)	14,5	25,5	25,9
Дистанционное в реальном времени	14,3	10,8	14,8
Записанные курсы на образовательных веб-ресурсах	29,7	17,8	25,5
Смешанное	41,5	45,7	33,9

териала на различных онлайн-платформах и индивидуализация учебного процесса. Информационно-коммуникационные технологии помогают повышать уровень познавательной активности взрослых и достигать определенных результатов в теоретических знаниях, практических навыках и формах итогового контроля.

Результаты проведенного исследования показали, что абсолютное большинство публичных служащих, учителей и студентов вузов быстро адаптировались к новой форме обучения и активно используют отечественные веб-платформы дистанционных курсов и различные системы дистанционного обучения. Только незначительная часть респондентов считает, что уровень знаний, которые они получают при дистанционном обучении, ниже, чем в формате «face-to-face», а значительная часть взрослых готова всегда учиться в дистанционном режиме, хотя большинство респондентов считают эффективной и полезной для себя все-таки смешанную форму обучения.

Основываясь на полученных данных, можно утверждать, что эффективное онлайн-обучение зависит от содержания курса, взаимодействия между преподавателем и слушателями (студентами), создания чувства сообщества онлайн-обучения и быстрого развития технологий.

Чтобы приспособиться к длительной пандемии, вузам и заведениям последипломного образования потребуются гибкие и эффективные модели обучения, которые позволят адаптироваться к онлайновой образовательной среде. Пандемия COVID-19 ускорила и активизировала долговременные тенденции, а также создала естественный эксперимент, который позволит проверить и оценить определенные инновации и средства обучения.

Почти нет никаких сомнений в том, что онлайн-образованию суждено расти и дальше. В таком случае, скорее всего, следует провести дополнительные исследования для изучения эффективности и улучшения онлайн-обучения. Будущие исследования должны быть сосредоточены на углубленном анализе практики онлайн-обучения, поэтапной реализации наиболее эффективных методов разработки онлайн-курсов. Безусловно, что для получения уточненных результатов воздействия COVID-19 на образовательную деятельность необходимы исследования, которые окончательно определят восприятие взрослыми нового онлайн-формата обучения. Но в дальнейшем также должны быть проведены исследования по эффективности практического использования слушателями и студентами знаний и навыков, полученных во время онлайн-обучения, на рабочих местах, результативности и производительности в их деятельности.

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Humanitarization of University Training by Means of Mediation: Problem Statement

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Abstract. The article examines the problem of humanitarization of educational activities at the university by means of using mediation for conflict resolution, and the creation of a psychologically comfortable educational environment, ensuring social and emotional security of the individual. The purpose of the study is to identify and substantiate humanitarian potential of mediation as a psychological and pedagogical phenomenon that initiates cooperation of the actors of the educational process to prevent and resolve conflicts in training and professional activity. Such cooperation and interiorization of culture of mediation contribute to the students' personal and professional development. The authors analyze and identify the essential characteristic features of interrelationship of mediation and humanitarization as an integrative phenomenon contributing to the development of university cultural and educational environment. The research outcomes lay the ground for developing a model and describing organizational and pedagogical conditions for humanitarization of the university activity by means of mediation. This article presents a survey analysis carried out among students and teachers of Siberian Federal University. The purpose of the survey is to study the state and identify the prospects of humanitarization, implement the institution of mediation at the university, assess students' and teachers' interest in humanitarization and mediation, and the opportunities of their integration.

Keywords: humanitarization in higher education, humanization, conflict-related nature, mediation, culture of mediation, cultural approach, multiculturalism, tolerance, empathy, intercultural communication, psychological safety.

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Гуманитаризация учебно-воспитательной деятельности в вузе средствами медиации: к постановке проблемы

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Аннотация. Представлена проблема гуманитаризации учебно-воспитательной деятельности в университете средствами медиации для урегулирования конфликтов и формирования психологически комфортной образовательной среды, обеспечения социальной и эмоциональной безопасности личности. Цель работы – выявление и обоснование гуманитарного потенциала медиации как психолого-педагогического феномена, инициирующего сотрудничество субъектов образовательного процесса по предупреждению и разрешению конфликтов в обучении и профессиональной деятельности, способствующего личностно-профессиональному развитию студентов за счет интериоризации медиативной культуры. Выделены и проанализированы сущностные характеристики медиации как интегративного элемента культурно-образовательной среды. По материалам исследования разработаны модель и организационно-педагогические условия гуманитаризации деятельности университета средствами медиации. Представлены результаты опроса студентов и преподавателей Сибирского федерального университета о возможностях и перспективах развития гуманитаристики и института медиации в вузе, показана оценка интереса студентов и преподавателей к аспектам гуманитаризации и медиации и возможности их интеграции.

Ключевые слова: гуманитаризация в вузе, гуманизация, конфликтогенность, медиация, медиативная культура, культурологический подход, поликультурность, толерантность, эмпатия, межкультурная коммуникация, психологическая безопасность.

Практический опрос, представленный в статье, выполнен при поддержке Благотворительного фонда Владимира Потанина в номинации «Новая магистерская программа». Практико-ориентированная магистерская программа «Медиация в образовании» в рамках стратегического партнерства университетов и ассоциаций профессиональных медиаторов Сибири и Казахстана. Заявка № ГК200000445.

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Introduction

In the context of rapid digitalization in various spheres of life, growth of social volatility, diversity, and conflict potential threats of ignoring humanitarian culture, loss of spiritual and moral component of education, blurring moral principles of professional activity are becoming more urgent and aggravated. In recent years insufficient attention has been given to filling the deficit in spiritual and moral development by improving methodology of teaching, education and development. It contradicts the declared humanistic approach of modern educational science. Culturological approach is fundamental in education, together with the humanistic paradigm which is the foundation of theory and practice of education in the 21st century; it ensures humanistic nature of educational activity and interiorization of values among students. It is fundamentally important for personal development, which correlates with the professional one.

Increasing dehumanization as one of the main negative characteristic features of social life leads to a decrease in quality of education. The latter, due to the eclectic nature of the picture of the world typical for schoolchildren and students, is influenced by technocratism; collective consciousness reflects unstructured fragmented modern culture. This tendency is better illustrated by a change in the structure of National educational standards for higher education. In the latest edition general cultural competencies, intercultural interaction being part of them, are replaced by one generalized group of universal competencies (UC-5). However, it should be admitted that other universal and general professional competencies contain cultural component as well.

Technocratic thinking contradicts philosophical moral basis which forbids using a person as a means of solving someone else's problems, and leads to the growth of social infantilism. Social infantilism in general is understood as immaturity of personality and insufficient development of a person's emotional and volitional sphere (Demidenko, 2018). As a result, fewer and fewer students have such qualities as self-organization, responsibility for the results of educational activity, and critical thinking.

The growing infantilism reinforces the worldview crisis characteristic of Russian society, and the associated global problem of the existential vacuum. It manifests itself in the loss of meaning and, as a consequence, intensifies aggressiveness caused by fear of uncertainty[1]. Identity crisis, in its turn, manifests itself in intrapersonal conflicts and, therefore, becomes a mechanism for initiating open conflict interactions in the society and within educational environment, on the one hand, and makes a person vulnerable to bullying and other forms of psychological violence, on the other hand. In this context education may serve as a means of resolution of basic contradictions causing conflict interactions and intrapersonal conflicts. These contradictions are connected with:

- aspiration of the individual to identify himself as part of a group or majority and at the same time the desire to be unique and autonomous;
- search for harmony within and around oneself in spite of the opposite desire for making an effort and overcoming monotonous routine;
- social nature of production, which contradicts the individual in appropriation of the goods produced, including knowledge (Khasan et al., 2019).

In addition to the decline in the moral level, decline in personal and social responsibility, the identity crisis is expanding. The consequences of dehumanization are deterioration in psychological health, in the ability to think independently and creatively, as well as an increasing Internet addiction among young people (Strokov, 2021). All mentioned above increases conflict potential of the society, which, in its turn, requires conflict prevention and conflict resolution culture, manifested in the elements of conflict competence and readiness to mediation. A. S. Chupris defines the latter as a universal competence of an individual, including:

- experience in conducting mediation meetings;

[1] Gost' Evgenii Iamburg. Pozner. Vypusk ot 17.05.2021 [Guest Evgeny Iamburg. Posner. Issue dated 17.05.2021] (2021). Available at: https://www.1tv.ru/shows/pozner/vypuski/gost-evgeniy-yamburg-pozner-vypusk-ot-17-05-2021.

- a complex of cognitive and predictive abilities for processing information about mediation process, for recognizing and preventing negative emotional reactions of negotiating parties;
- ability to use mediation expediently;
- emotional and value-based attitude to the democratic style of communication and engagement in the conciliation procedure (Chupris, 2018).

Theoretical framework

The answer to the challenges of dehumanization and the growth of conflict potential within the society is humanitarization of education, which integrates the philosophy of humanism. Conceptual foundations of humanitarization in education are described in the works of Ia. A. Komensky, V. A. Sukhomlinsky, A. Maslow, K. Rogers, J. J. Rousseau and others. In modern science the problem of humanitarization is reflected from various positions:

- philosophical underpinnings of humanitarization (D. V. Pisachkin, E. A. Reznichenko, E. A. Avdeeva, M. V. Shmanova, A. B. Kasaeva);
- humanitarization in the historical and pedagogical context (T. I. Platonova, O. N. Chernova, Liu Xiaoyan, L. R. Kostyleva, E. L. Sharapova);
- interdisciplinary aspect of humanization (E. A. Ganaeva, L. V. Moskalenko, O. T. Korosteleva, A. Iu. Belogurov, Iu. N. Karpova);
- identifying opportunities for using humanitarization in developing natural science education (E. A. Tebenkova, N. A. Khomuttsova, T. V. Barsukova, S. A. Komissarova, T. V. Kokutenko, I. F. Markinov, A. V. Kolokolov), in developing general education system (L. P. Sheina, O. N. Zhuravleva, R. D. Dylgyrova, E. V. Predeina, V. A. Mirakova, T. A. Ivanova, O. V. Domozhakova);
- identifying opportunities of using humanitarization for developing teaching non-humanitarian (Iu. M. Yezhova, N. A. Ulchenko, G. A. Zhdanova, G. V. Lavrentiev, I. Iu. Demyanenko, A. N. Krechetnikov, O. Nemirovich, A. M. Mamchur, N. L. Uvarova) and humanitarian sciences (A. V. Gorchakova, A. Kh. Naziev, E. G. Maruseva, Z. M. Kondrashova, D. M. Maltsev, N. A. Nazarova), for improving the systems of secondary vocational education and additional vocational education (L. N. Dudareva, O. A. Matskailova, T. G. Kholopova, E. Yu. Rubinstein).

From the anthropological point of view, humanitarization of education as a means of its humanization serves as a vector for understanding the meaning of existence, general cultural principles, and value of human personality. Humanitarization acts as a system, forming an integral personality by means of developing a humanitarian worldview, reflection, self-reflection, and familiarization with the world values. Humanitarization involves searching innovative approaches and means of improving education, and providing conditions initiating personal meanings (Dylgyrova, 2017). Humanitarian training is one of the leading factors developing innovative potential and employability of young professionals – yesterday's graduates (Loginova, 2015).

According to N. M. Chedzhemova, humanitarization implies not filling the curricula with humanitarian courses, but forming the students' need for interiorization of the world culture, which ensures the integrity of personal development, taking into account such components as knowledge, abilities and behavioral skills, aesthetics, morale and ethics (Chedzhemova, 2004).

The analysis of research on humanitarization of education indicates that this issue is often considered in the context of developing technologies for teaching non-humanitarian disciplines. Most of such domestic research was carried out in the early 2000s, during computerization development period, which is incomparable in the scale and cultural consequences with the current era of digitalization. The phenomenon of humanitarization is gaining special significance today in the context of continuous education and widespread use of digital technologies. Development of theoretical and methodological foundations of digital lifelong education makes it possible to equalize the ratio and interdependence of humanitarian and technical knowledge. It is in

the context of teaching natural and engineering sciences that the deficit of humanitarian training is most noticeable. However, humanitarization concerns not only technical and natural science training programs, but also teaching the Humanities. Humanitarization implies variability of humanitarian training, tolerance of the actors of the educational process to each other, formation of the university humanitarian environment (Sereda, 2004). Systemic humanitarization of student training develops such qualities as intelligence, good manners, and creativity (Oreshnikov, 2015). The resultant professionals should also be stress-resistant, and able to work productively avoiding conflicts within the team. These qualities determine lifelong competitiveness on the labor market.

As noted earlier, conflicts are inevitable in everyday life and happen in the university educational environment as well. The results of this year's bullying survey conducted by the All-Russian Public Opinion Research Center revealed that half of Russian people faced bullying for the first time at an adult age (53 %), and 13 % of the total number of the respondents, as it turned out, often faced bullying during the period of study at a higher or secondary vocational educational institution[2]. The causes of conflicts at the university are varied, they are associated not only with academic performance, but also with different social and cultural status and worldview, with the lack of tact from someone's side. Conflict situations may arise due to the lack of tolerance to another culture, or traditions and customs of other ethnic groups. Conflicts often have destructive consequences for individuals and organizations. During the escalation of conflict situations, the parties cannot identify the cause of the conflict, hear the opponent's point of view and understand his feelings and true interests. Mediation in this sense is one of the modern ways of resolving the conflict, allowing the parties to establish a communicative relationship with each other. At the legislative level, it is defined as «an alternative way of resolving conflicts with the participation of a neutral, impartial actor (mediator) based on the voluntary consent of the parties to achieve a mutually acceptable solution»[3]. The universal character of mediative approach lies in the fact that the skills of building interactions obtained within mastering the principles of mediation and their application as a method of preventing or resolving conflicts will be useful both in professional activity and in everyday life: at home, at school, in the bus, in the street, in communication[4].

Since humanitarization as a pedagogical phenomenon is directly related to tolerance, it can be viewed as a prospect for harmonizing intercultural relations in the modern university environment. This is an urgent task. According to the Ministry of Science and Higher Education of Russia in 2019 about 300,000 foreign students studied at domestic universities, and, according to forecasts, their number will grow to 425,000 by 2024[5]. In addition, the latest studies on tolerance carried out in 2020 by Mikhailov & Partners in 82 regions of Russia demonstrated the following results. Every sixth person has experience of discrimination (17 %). However, 2/3 of Russians, that is, more than half of the respondents, have never addressed anybody with complaints about such issues. Only 10 % of the respondents turned to lawyers or human rights bodies. Moreover, more than half (60 %) of those who have ever filed an official complaint about the oppression

[2] Bulling, on zhe travlia: masshtab problemy i puti resheniia [Bullying, aka badgering: the scale of the problem and solutions] (2021). Available at: https://wciom.ru/analytical-reviews/analiticheskii-obzor/bulling-on-zhe-travlja-masshtab-problemy-i-puti-reshenija.

[3] Federal'nyi zakon "Ob al'ternativnoi protsedure uregulirovaniia sporov s uchastiem posrednika (protsedure mediatsii)" ot 27.07.2010 N 193-FZ (posledniaia redaktsiia) [Federal Law "On alternative dispute settlement procedure with the participation of an intermediary (mediation procedure)" dated 27.07.2010 N 193-FZ (latest version)] (2010). Available at: http://www.consultant.ru/document/cons_doc_LAW_103038/.

[4] Osnovy mediativno-vosstanovitel'nykh tekhnologii dlia uchastnikov obrazovatel'nykh otnoshenii: Metodicheskie materialy [Fundamentals of mediation and recovery technologies for participants of educational relations: Methodological materials] (2019). Moscow, 68 p.

[5] Chislo inostrannykh studentov v rossiiskikh vuzakh za 10 let uvelichilos' pochti vdvoe [The number of foreign students in Russian universities has almost doubled in 10 years] (2020). Available at: https://nauka.tass.ru/nauka/7562175.

of their rights and freedoms have not been able to solve the problem of discrimination[6].

We are sure that one of the productive means of harmonizing a multicultural educational environment is a mediative approach that integrates knowledge and technologies from different humanitarian spheres. Knowledge of culture, traditions of other peoples and specific behavior in a conflict helps multicultural mediators to build negotiation processes and help conflicting parties in resolving the conflict. Increase in the level of tolerance is possible due to relevant psychological and pedagogical forms or means aimed at team building, developing individual communication skills, using humor as a resource for coping behavior (S. A. Khazava), creating a friendly and playful atmosphere, and providing eventful educational activities: trainings, business games, educational activities, etc. However, at universities these events often have one-time character, and therefore formation of the conflict-free communication culture is not carried out systematically. One of the key conditions for organizing educational process at the university is creation and maintenance of a conflict-free educational environment, which implies developing personal qualities of the actors of the educational process, the qualities necessary for positive interaction: empathy, benevolence, authenticity, purposefulness, initiative, openness, decisiveness, reflexivity (Smolyaninova, Korshunova, 2019; Smolyaninova, Posokhova, Izotova, 2020). It is possible to develop these qualities while mastering basis of mediation.

Humanitarian essence of mediation can be traced in the art, e. g. in the lines by B. Sh. Okudzhava: «… holy science – to hear each other …». It means readiness and ability of each of the conflict parties to open communication and joint decision-making, to understanding a different point of view, even if it does not correspond to a personal vision of the conflict situation. Without building productive communication it is impossible to find a mutually acceptable solution to the conflict.

According to the classical Harvard methodology of using mediation the most important result of resolving a conflict situation is preservation and development of relationships, while restorative mediation aims at reparation for the damage caused by the abuser. According to a number of authors (Byvshenko et al., 2021), this is the pedagogical essence of mediation as a form of intervention. The latter clearly illustrates one of the basic spiritual ideas – the idea of justice, which may be inadequately rendered or cannot be solved by means of legal instruments.

Thus, humanistic nature of mediation directly correlates with the ideals of humanism and serves as a tool for their implementation. The phenomenon of mediation is systemic, interdisciplinary and applied, since it is connected with ethnopsychology, is explored in various areas of study in addition to psychology, pedagogy, sociology and law, it is becoming popular in philology, medicine and business. The use of mediation in various fields, including education, has been rapidly increasing in recent years. Mediation is actively used in educational institutions, mainly in schools and in the system of secondary vocational education. Monitoring of mediation services activities in Russian regions, conducted by the Federal Institute of Mediation in 2020 over the past four years (starting from year 2016–2017), indicates that the number of mediation services in educational institutions has grown by 34 % (15,382). Siberian Federal District closes top three in terms of the number of mediation and reconciliation services, the Krasnoyarsk Krai being the leader among Siberian regions. It is interesting that the overwhelming majority of mediation services in the Krasnoyarsk Krai (787) were created at educational organizations[7].

Statement of the problem

From the point of humanitarization, it is fundamental that the teacher, in addition to teaching, performs the function of a cultural

[6] Proekt "My schitaem": "Tolerantnost': Rossiia za ili protiv?" [The project "We believe": "Tolerance: Russia for or against?"] (2020). Available at: https://m-p-a.ru/proekt-myi-schitaem-tolerantnost-rossiya-za-ili-protiv.html.

[7] Analiticheskii doklad "Monitoring deiatel'nosti sluzhb mediatsii v sub"ektakh Rossiiskoi Federatsii" [Analytical report "Monitoring the activities of mediation services in the constituent entities of the Russian Federation"] (2021). Available at: https://fcprc.ru/wp-content/uploads/2021/03/Monitoring-2020-goda.pdf.

intermediary. However, the time of real communication between a teacher and a student is significantly reduced due to the tendency to decrease classroom workload at the universities, development of elearning, and almost ubiquitous transition to distance formats of interaction. That is why there is a tangible distance in communication and the deficit in the cultural interioriazation both between a teacher and a student, and between students, which, in the context of global instability and long-term social isolation, increases social tension.

A meditative approach may become a core factor in terms of developing conflict management skills within the university environment, developing conflict competence components of the participants of the educational process, and creating a safe psychological atmosphere. The humanitarian potential of educational mediation for teachers and students is manifested in the formation and development of a self-care culture for maintaining self-control and dignity in extraordinary conditions and emotionally stressful situations; in developing humanistic orientation of the individual by means of acquiring social and cultural experience of participation/conducting a mediation procedure, which is not yet traditional for the Russian mentality. In other words, from a didactic point of view, mediation focuses on cultural conformity and is innovative content of education itself.

However, at present, not all Russian universities systematically work at developing readiness for mediation, it is a fact that mediation is not a widely spread practice. For the university environment, the most familiar and less costly way of resolving a conflict is using administrative resources, not negotiations between the disputing parties, which contradicts the humanistic position of the mediative approach, since administrative measures take usually the form of an order. Moreover, as noted by E. N. Iarkova, development of mediation as an institution requires its scaling in accordance with the cultural transformation paradigm (Iarkova, 2018).

Methods

Humanization and humanitarization of higher education are possible to provide with interconnection with science, culture and production. At the same time, humanitarian disciplines are often taught without taking into account their interdisciplinary character, supporting the formation of a person's worldview and cultural generalization of knowledge (Dobruskin, 2005). In this regard, it is fair to conclude that humanistic pedagogy in integration with the mediative approach is important. It will allow developing empathy and communicative multicultural competence for further constructive interaction within the conflict on the basis of knowledge, understanding and acceptance of another culture.

Philosophy of mediation and its potential for developing humanistic values make it possible to consider it as a culture-forming basis for the personal and professional development of the actors of the educational process. We consider it as a humanitarian potential for improving cultural and educational environment of the university. Expanding the phenomenon of humanitarization in conjunction with mediation is possible due to the scientific and methodological support by means of developing culture of mediation as a part of spiritual culture. The integrative phenomenon is the basis for the formation and development of mediative competence and readiness for mediation, and the important factor of multicultural communicative competence and conflict competence. We understand culture of mediation as a complex of knowledge, beliefs and personal attitudes based on awareness, understanding and acceptance of the principles and methods of mediation, introducing a person to a humanistic nature of the mediation procedure and resolution of conflicts, contributing to a humanistic consciousness of an individual manifested in the ability to build constructive communication with conflict participants within the mediation procedure.

Discussion

As part of the study of educational opportunities at the border of humanitarization and mediation, we have worked out a pedagogical model of humanitarization of educational university activity by means of mediation. The model consists of the four blocks: conceptual,

target-based, organizational and methodological, and learning outcome (Fig. 1). The purpose of implementing the model is to establish and develop the culture of mediation in the educational environment of the university in the context of humanitarization of teaching and

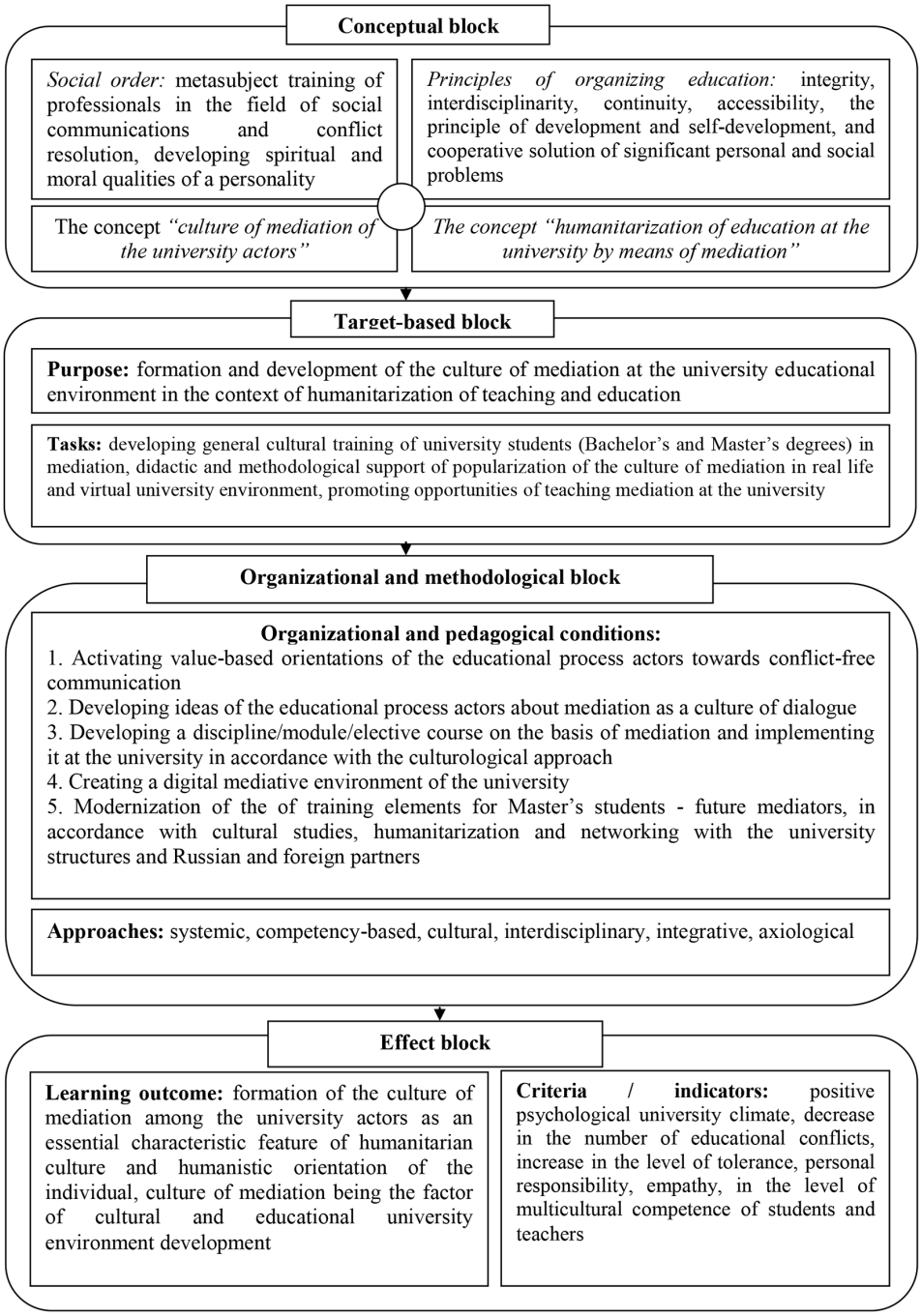

Fig. 1. Model of humanitarization of university teaching and educational activity by means of mediation

education. This goal may be reached if Bachelor's and Master's students get general cultural training in mediation; didactic and methodological support for developing the culture of mediation in the real life and in the virtual university environment at the university is worked out; and opportunities of teaching mediation at the university are promoted.

The conceptual block of the model is represented, among other things, by the concept of «humanitarization of education at a university by means of mediation», which we define as a system of teaching and education plus psychological and pedagogical actions, organizational and pedagogical conditions for education, aimed at interiorization of the essence and principles of mediation as a humanitarian culture of dialogue by the actors of education; and its subsequent representation in the context of professional activity, which together ensure formation of spiritual, moral, ethical and value consciousness of students and teachers, and develop cultural and educational environment of the university.

The central idea of the model is based on formation of a mediative environment as part of cultural and educational university environment, and the educating factor of an educational institution, realized by means of psychological and pedagogical training of the actors of educational relations. This training is carried out within the network interaction of the mediation scientific school with university departments and third-party organizations. The internal, backbone conditions for implementing the central idea are: expansion of the activities of the specialized subdivision (the Center for Mediation in Education), and modernization of training of multicultural mediators at SibFU within the framework of the Master's program. It is assumed that the mediation center personnel, professors training Mater's students and Master's students themselves – future mediators – are carriers of the culture of mediation. Therefore, involving them in teaching and education at the university will contribute, on the one hand, to their creative and professional self-realization, and on the other hand, to the cumulative effect in developing a culture of dialogue in the educational university environment on the basis of mediation principles. The organizational and pedagogical conditions developed are of interrelating and complementary character. One of the key organizational and pedagogical conditions for humanitarization in the proposed concept is the development, adaptation and dissemination of the foundations of mediation as a discipline or an elective course. It may be realized within the educational modules of all educational programs in the humanitarian, natural scientific and technical areas of training at the university.

We expect expanding teaching mediation and implementing mediation, using digital mediative environment as well as a tool that integrates the components of the cultural educational university environment, and the resources of social networks and specialized open educational resources. With the project support from Charity Foundation by V. Potanin[8] teachers and Master's students of the Siberian Federal University in 2020–2021 developed massive open online courses (MOOCs) on mediation in education on the platform of the regional center of competences in the field of online learning. These massive open online courses are a structured complex of complementary electronic educational resources in the form of interactive video lectures, tests, and visual compendiums.

Modernization of training mediators as one of the conditions for implementing the model of humanitarization implies the expansion of general cultural training of students (Master's degree in Psychology and Education) by means of practical training in cultural mediation and art mediation within the course of training, with the subsequent transfer of the acquired cultural experience in museum communication to real mediation procedures in education. Humanitarian approach also implies supporting training program for mediators by means of disciplines or culture-forming modules of interdisciplinary character, such as «Mediation in Interdisciplinary Discourse», «Speech Culture of a Mediator», «Professional Image-

[8] The study carried out with the support from the Charity Foundation of Vladimir Potanin. Project «Practice-oriented Master's programme «Mediation in Education» in the strategic partnership of universities and professional mediators' associations of Siberia and Kazakhstan». Application No. ГК200000445.

ology in the Field of Mediation», «Acting as a Means of Professionalization for Mediators». Thus, teaching psychotechnics of acting in the mediative context may contribute to the emotional intellect development of the negotiator, and improve his communication and emotional self-regulation skills. The experience of human civilization in terms of morale, emotions, socialization and culture is concentrated in art (Moskalenko, 2001). Studying characteristic features of an actor's creative work and using elements of theatrical pedagogy in the educational process will contribute to the effective interiorization of such values as hard work, aesthetics, self-development, collectivism by the Master's students – future mediators. Formation and development of critical thinking by means of artistic culture is significant; it is also important to develop skills related to understanding the context of events or chronotope, specific features of the inner world and the logic of a character's actions, depending on various life circumstances.

In addition, within the framework of mastering IT disciplines or within practical training, Master's students – future mediators – may contribute to the development of a digital mediative environment by means of developing digital didactic and information materials on mediation (infographics, podcasts and videos, advertising and career guidance digital banners, topical posts in social networks, training courses, automated chat bots, gamification tools, automated tests and questionnaires, and electronic databases).

Networking partnership in training Master's students – future mediators –implies cooperation with Higher Media School and U-Radio (student radio) on developing and distributing content devoted to educational mediation, as well as interaction with the Center for Student Culture on preparing educational events devoted to mediation in education, festivals of peoples and cultures of the world. Networking with external organizations, including foreign partners, is planned, including cooperation within the digital mediative environment, which is expected to contribute to the development of intercultural interaction competencies, academic mobility of teachers and students, implementing special projects in partnership with students and teachers of universities from other regions and countries, and with schoolchildren (including peer mediators).

To study the state and prospects of humanitarization development and implementing the institution of mediation at the university, assessing cognitive interest of students and teachers in humanitarization and mediation, the prospects of their integration, a survey was carried oud in the form of a Google questionnaire. The questionnaire consisted of 15 questions. 66 Teachers and 99 students of the Siberian Federal University took part in the survey (total number 165). The sample included a variety of statuses and positions of the respondents within the university. Among the respondents there were teachers and students of different areas of training: social and humanitarian (64.6 %), technical/engineering (21.5 %) and natural (13.8 %) sciences.

Analysis of the survey allows to assume that the university, at least at the level of associations, has formed the idea of characteristic features of humanitarization and related concepts. Among the characteristic features highlighted by the respondents there were: «humanity» (56.9 %), «humanitarian disciplines» (55.4 %), «culture» (40 %), «values» (35.4 %), «personality» and «multiculturalism «(27.7 %). The results of the questionnaire also indirectly confirm the respondents' understanding of the essence of humanitarization, mainly as a means of developing human qualities by means of general cultural training of students (26.2 %). One of the most popular and significant for the respondents was the definition of humanitarization as «a tool for finding new meanings in teaching natural sciences and technical disciplines, and realization their interrelation with humanitarian subjects» (26.2 %). Slightly fewer number of the respondents consider it significant for themselves to understand humanitarization as «a resource of humanization and meta-subject training of a professional, and developing his professional culture» (24.6 %).

The majority of students and teachers (70.8 %) consider humanitarian disciplines to be significant in professionalization and personal development. More than half of the re-

spondents (53.8 %) believe that humanitarian disciplines contribute to a more holistic mastering of professional knowledge, and motivate students to master humanitarian knowledge in their professional field (the questionnaire suggested a five-point scale to assess the level of self-motivation). 30.8 % of the respondents (teachers and students) show slightly less motivation to humanitarian training in their professional field (4 out of 5 points on a scale).

We may conclude that understanding of the phenomenon of mediation in the university environment, in general, has been formed. Almost every second person is familiar with this social, legal, psychological and pedagogical phenomenon (49.2 %). Approximately every third (30.8 %) is inclined to think that they have the idea of the essence of mediation. Most often, the respondents associate with mediation such concepts as «facilitation» (64.6 %), «dialogue» (63.1 %), «conflict» (53.8 %) and «compromise» (50.8 %).

Most of the respondents speak positively about the idea of studying the basis of mediation at the university (Fig. 2). However, some of the respondents believe that mediation training is necessary only in the field of social and humanitarian knowledge (7.7 %). It is interesting that this opinion is mainly supported by teachers of social sciences and humanities. Every second of the total number of the respondents considers it important to have additional training in mediation: introduction of disciplines or training modules (50.8 %). However, the most popular option was teaching professional speech culture (61.5 %).

40 % of the respondents consider mediation a relevant means for humanitarization of the university activities, almost every third (30.8 %) is definitely sure that it is possible. About half of the total number of the respondents are inclined to agree that humanitarization of educational activities by means of mediation may contribute to the development of intercultural communication at the university (46.2 %), while 43.1 % are definitely sure in it.

Conclusion / Results

One of the mechanisms for ensuring psychological safety of the actors of the educational process, creating and maintaining a favorable emotional atmosphere in the educational environment is introduction and developing the institution of mediation within the education system. Mediation is viewed as an urgent educational practice for the employed in the social and humanitarian fields. In future such practice will be more widely spread, involving non-humanitarian professionals as well. For higher education, mediation as a procedure for resolving conflicts with the help of an intermediary is an innovative social and humanitarian technology.

The result of this study is scientific grounds for integrated use of the humanitarian potential of mediation at the university.

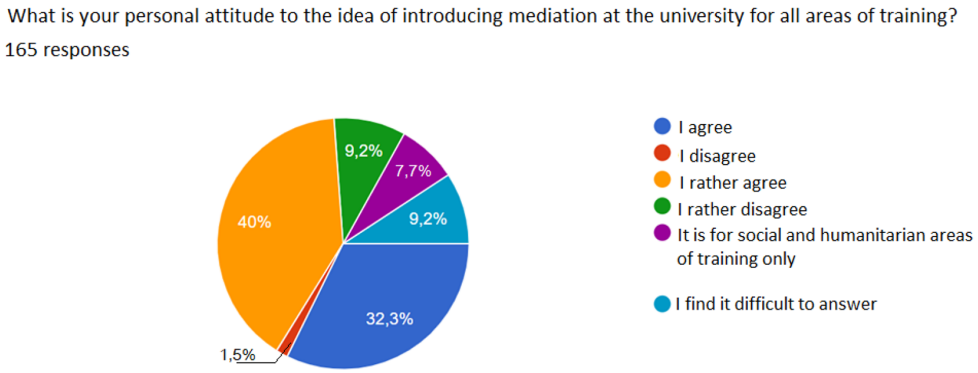

Fig. 2 Teachers' and students' answers to the question «What is your personal attitude to the idea of introducing mediation at the university for all areas of training?»

The research demonstrates that systemic work aimed at developing culture of mediation at the university community may become the factor influencing the development of cultural and educational environment of the university in the context of multiculturalism expansion in education and the growth of the conflict potential of the educational environment.

This study reveals the mechanisms of culture of mediation development within the university environment as an essential characteristic feature of the modern humanitarian culture of intercultural interaction. The scientific idea of the research is disclosed in the following theoretical outcomes:

- pedagogical meaning of mediation as a form of facilitation has been specified;
- humanitarian essence and humanitarian potential of educational mediation is disclosed;
- scientific definitions of culture of mediation and humanitarization of educational activity at the university by means of mediation are defined;
- the model and organizational and pedagogical conditions for humanitarization by means of mediation have been worked out.

The proposal for improving the teaching and educational activity of the university by means of systemic approach to implementing and development of the institution of mediation have been carried out. We also suggest modernization of training of Master's students – future mediators –on the basis of humanitarization, culturological approach and the opportunities of network interaction. The proposal follows a systemic approach to the formation and development of educational mediation on the example of SibFU. It is expected that the mentioned above will significantly reduce the number of arguments and conflict situations in the educational environment of the university by increasing the level of tolerance and empathy, personal maturity and general cultural training of the actors of the educational process.

A pedagogically expedient system of measures supporting the formation and development of general cultural components in the content of education (on the basis of dissemination and implementation of a mediative approach) correlates with the needs of the labor market for specialists skilled in social interaction, and may contribute to the development of personal and professional qualities of students as the basis for the formation of their professional culture. Systemic humanitarization of educational activity by means of mediation will ensure developmental function of the conflict, integration of professional and universal competencies in teaching, and developing intercultural interaction competencies.

The results of the questionnaire survey among the university students and teachers confirm the validity and consistency of the idea of humanitarization of teaching and educational activities at the university by means of mediation, as evidenced by the respondents' answers analysis. However, a deeper and more comprehensive consideration of this phenomenon, additional large-scale research involving various actors of the educational process at the university is required. In this connection, the results obtained in the framework of this study are not claimed to be complete disclosure of humanitarization of teaching and education by means of mediation, but serve as a basis for further scientific research. Theoretical findings presented in the article may be used and scaled up by organizations providing mediation training services.

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CLIL Integration Issues and Distance Learning Technologies

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Abstract. This article proposes an expert vision of the problems of applying CLIL training in the context of distance education in schools and universities of the Republic of Kazakhstan. The relevance of the study is due to the lack of scientific research devoted to the subject analysis of the integration of CLIL learning and distance learning technologies and related problems.
Diagnostics of the existing problems was carried out through an online survey of school teachers and university professors who have experience in using CLIL technology in distance learning.
For example, the results of the survey have made it possible to identify an expert opinion on the compatibility of the two teaching technologies, to formulate the main problems and differentiate them in terms of school and university practice. Moreover, the analysis has established relationship problems identified with the history of the modernization of secondary and higher education, and pandemic circumstances of 2020. This also explains different level of CLIL preparedness of school teachers and university professors for the independent development of electronic content, the search for a finished educational product, and the use of educational platforms. In this context, the need for CLIL modern teachers' training programs and effective mechanisms for their academic support is indicated.
Based on the survey results, it was concluded that CLIL distance learning is viable in school and university practice. The integration of the two technologies creates an effective tool to promote the empowerment of CLIL, the development of a virtual learning environment, andemergence of a distance format of students'academic mobility.
These results can be significant as a basis for making tactical decisions on the development of the resource and methodological base of CLIL distance learning in the system of secondary and higher education.

Keywords: CLIL technology, distance technology, sociological survey, school, university, competencies, resources.

Research area: pedagogy.

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Проблемы интеграции CLIL и дистанционных технологий обучения

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Аннотация. В данной статье предложено экспертное видение применения CLIL-обучения в условиях дистанционного образования в школах и вузах Республики Казахстан.
Актуальность исследования обусловлена отсутствием научных изысканий, посвященных предметному анализу интеграции CLIL-обучения и дистанционных технологий и связанных с ней проблем.
Диагностика существующих проблем осуществлялась путем онлайн-опроса учителей школ и преподавателей вузов, которые имеют опыт применения технологии CLIL в дистанционном формате.
Результаты позволили узнать экспертное мнение о совместимости двух технологий обучения, сформулировать основные проблемы и дифференцировать их в аспекте школьной и вузовской практик. В ходе анализа была установлена связь выявленных проблем с историей модернизации среднего и высшего образования, пандемийными обстоятельствами 2020 года. Этим же объясняется разный уровень подготовленности CLIL-педагогов школы и вуза к самостоятельной разработке электронного контента, поиску готового учебного продукта, использованию образовательных платформ. В контексте этого обозначена потребность в современных программах повышения квалификации CLIL-педагогов и эффективных механизмах их академической поддержки.
На основании опроса был также сделан вывод о жизнеспособности дистанционного CLIL-обучения в школьной и вузовской практике. Интеграция двух технологий порождает эффективный инструмент, способствующий расширению возможностей CLIL, развитию виртуальной образовательной среды, появлению дистанционного формата академической мобильности обучающихся.
Данные исследования могут быть использованы как основание для принятия тактических решений о развитии ресурсной и методической базы дистанционного CLIL-обучения в системе среднего и высшего образования.

Ключевые слова: технология CLIL, дистанционная технология, социологический опрос, школа, вуз, компетенции, ресурсы.

Научная специальность: 13.00.00 – педагогические науки.

Introduction

The practice of CLIL training in Kazakhstan has been developed in the context of the next stage of domestic educational modernization. Today this technology is successfully applied in universities and schools of Kazakhstan. According to the National Report on the State and Development of the Education System of the Republic of Kazakhstan (based on the results of 2019), teaching of natural sciences subjects is carried out in 3252 schools, in which 7728 CLIL teachers work and 213 319 schoolchildren study. The strategic plans for the development of most universities in the Republic include measures for the introduction of English-language modules of core disciplines, the development of the internationalization of educational programs and the university environment. Due to academic freedom provided to universities by CLIL, training is gaining momentum and shaping priorities in personnel and educational policy.For example, conditions and incentive mechanisms are being created to improve the language training of teachers, educational and scientific literature in English is purchased, and trilingual training programs are being launched.A new stage in CLIL education development was provoked by the state task of training teachers for teaching suchschool subjects as Physics, Biology, Chemistry, Informatics in English. In this context, universities began to build up their academic potential, attracting the existing resources of the global arsenal of CLIL training.

The results and prospects of CLIL education become the subject of scientific discussion and theoretical comprehension. Research interest is usually associated with the assessment of domestic experience in the context of the international achievements of CLIL education. Thus, over the past decades, the scientific community has developed the theoretical and methodological foundations of foreign language education, studied the issues of psycho- and sociolinguistic aspects and the functional significance of bilingualism, the interaction of perceptual, cognitive and affective processes of bilingualism, intralingual and interlingual transfers (Karlinskiy, 2011; Zalevskaya,2013); the principles of integrated teaching of the subject and language, aspects of foreign language competence in bilingual education are determined (Bentley, 2010; Coyle D., 2010). The main background of the existing research is related to the study of CLIL technology in a traditional teaching format, which provides for contact communication between the teacher and the student.

At the same time, the educational situation in Kazakhstan is characterized by alternative learning conditions, according to the current law, which allows the use of distance technologies. For 12 years, domestic universities have been trying to master thesetechnologiesand to introduce the advanced experience of foreign countries. Gradually, distance learning acquired an independent status and replaced the usual format of distance education. Since 2019, distance technologies have been integrated into full-time education programs that provide for distance learning. This decision required from faculty to practice new approaches to developing methodological resources based on IT skills and a new, partially mastered digital culture. The academic community is faced with the need for a theoretical understanding of the issueof distance education, the study of world experience, and its extrapolation into the national education system. In this regard, the first attempts to generalize this experience appeared in the form of scientific research, reports, and articles(Baezova,2020). Government tasks related to the development of a digital society and virtual environment in education have become a serious impetus to the development of distance technologies. As in thecase ofCLIL, universities started investingin the development of digital ecosystems, methodological resources, and teachers'training in ITtechnologies.

Theoretical framework

As it developed, the Kazakh education system adequately responded to the new challenges of our time. In an effort to master new trends, the Ministry of Education and Science of our country set new tasks for the educational community, including them in strategic documents in the field of education, science and society. As a result, in different years, state programsEducation Development in Kazakhstan

contained the task of implementingdistance learning technologies, development of multilingual education, teacher training for English language teaching in schools, and strengthening IT skills and digital culture of future specialists. To date, the educational community of Kazakhstan is guided in its innovation policy by two basic documents: the state program for the development of education and science of the Republic of Kazakhstan until 2025, and the State Program «Digital Kazakhstan».

Statement of the problem

The experience of distance education and CLIL learning gained by Kazakhstani universities has acquired a new meaning in the context of the growing pandemic of 2019 and 2020. The domestic education system has received a new challenge to preserve the learning process of school and university students in distance. In this regard, it became necessary to combine the two teaching technologies, which found themselves in a new natural environment of development. The situation has developed when distance technology has become the basic tool for the implementation of CLIL training in its content-formal manifestation. Currently, CLIL teachers have to reformat not only academic content, but correct the methodological approaches in teaching as well. On the one hand, there appeared opportunities to apply their experience in a new reality, on the other hand, to solve pending problems, including the methodological provision of CLIL training programs. At the same time, it is important to note that the current manifestation of these problems in higher and secondary education systems differs markedly.

The combination of the two technologies in the educational process creates new aspects of learning for modern pedagogical science. Our historiographic review illustrated the absence of special works devoted to the study of the experience of combining distance technologies and CLIL, and made it possible to single outonly one CLIL Internet resource – Open Online Learning (Ulster University website). It is a three-year joint project between the University of Ulster and CLIL Open Online Learning, funded by the European Union.

The purpose of this article is to assess the perception of CLIL teachers towards the process of integrating two learning technologies, to identify potential problems in the implementation of distance CLIL learning in university and school practice.

Methods

As an initial aspect of the stated problem studying, researchers highlight the obtaining of an expert assessment of the application of CLIL technology in school and university practice in the context of distance learning. In fact, this is a subjective diagnosis of the problem and an expert assessment of the resource conditions for the application of CLIL technology in universities, the features of CLIL training, its effectiveness and development opportunities in the context of distance education (Zhetpisbayeva, 2020:131).

To obtain an expert assessment of the application of CLIL technology in school and university practice in the context of distance learning, a qualitative methodological approach with a sociological survey of school and university professors who practice CLIL technology in Kazakhstan was applied. The main part of the respondents included school teachers of chemistry, computer science, biology, English, natural sciences, mathematics, information and communication technologies, electrical machines, etc., who participate in the natural sciences teaching staff training, and who have developed educational non-language courses in English, including the compulsory discipline Information and Communication Technologies.

Interaction with the respondents was carried out through a Google survey. The questionnaire «Application of CLIL Technology in Distance Education» developed by the researchers included a block of open and closed questions related to a certain aspect of the stated topic and requiring the respondents to clarify their own position, choose a close judgment, rank these parameters, assess statements, and their own answer.

When compiling the questionnairequestions, researchers relied on scientific publications of domestic and foreign researchers in the

field of CLIL learning and distance education technologies. The preference was given to works devoted to the implementation of these technologies in the modernized education systems of the post-Soviet space. Theoretical works of B. A. Zhetpisbayeva, E. A. Kostina, V. I. Levin, G. M. Mutanov, A. K. Kusainov, I. Nagaeva, V. P. Tikhomirov; scientific research by E. E. Zharova, S. N. Popova, G. K. Savchenko about teaching methods; works of T. Zyuzina, V. P. Safronova, U. E. Tikhomirova on the creation of educational resources and virtual learning environment in schools are among them. Along with this, the experience of the sociology of education on the development of tools for such surveys was taken into account (Zhetpisbayeva, 2021).

The study of the research results of the above authors made it possible to determine the nature of the introduction of teaching technologies, the conditions for the formation of the educational environment, the use of special methods and the development of educational content. At the same time, no scientific works devoted to the subject analysis of the integration of CLIL learning and distance technologieswere found. This, on the one hand, limits the prerequisite content of the questionnaire but, on the other hand, it determines the relevance of the survey being conducted.

When processing the survey results, statistical and descriptive methods were used. The closed-ended questions of the questionnaire received statistical significance and were formed according to the majority principle. The open-ended questions were classified based on the content of the assessments made.

Due to the prevailing sociological practice the survey creation was of a phased nature. The first stage is a written appeal to the regional education departments and universities of Karaganda and Pavlodar regions with a request to assist with the survey; the second is sending a link to the Google profile http: //anketa.ineu.edu.kz/; the third stage is processing of the survey results; the fourth one is analysis of the statistical results and trends in the context of the stated goal and the survey topic.As a result, 235 respondents, representing 12 lyceums and 4 universities of Pavlodar, Karaganda, and Nur-Sultan, took part in the sociological survey.

Discussion

The survey has illustrated that most respondents recognize the strategic importance of CLIL for the development of national education. Perhaps this is due to the peculiarity of the respondents who are interested in promoting this idea and evaluate it quite professionally. At the same time, there is a difference in the emphasis: 70 % of school teachers, in contrast to university professors consider this technology to be elitist. Therefore, it should be applied in specialized classes aimed at the science and technology departments of universities.

Judging by the answers received, 82 % of the respondents believe that CLIL technology in Kazakhstan has good prospects for its consumer both in school and university environments. As a possible development perspective, the respondents admitted the combination of CLIL with distance technologies.

Sharing the idea of the priority of subject knowledge, the respondents ranked the special tasks of the CLIL teacher in different ways. Most teachers consider it important to teach English terminology, which will allow to read scientific literature in the future. University professors note the importance of teaching a professional language, which contributes students to be able to achieve academic goals. As a result, there is continuity in the views of CLIL school teachers and university professors about the prerequisite of subject knowledge, conceptual apparatus, special vocabulary and post-requisite mastering of scientific literature in English.

The opinions of the respondents about the tasks of the CLIL teacher, due to the transition to a distance learning format, in a generalized form can be systematized in three main areas. These are tasks such as creating an electronic methodological product, searching for electronic educational content, and studying the proposals of the virtual academic environment, including educational platforms.

The transition to distance technologies required from CLIL teachers to strengthen their own IT skills and master the virtual academic

environment, which today offers a variety of educational content. Unlike university professors, school teachers have experienced serious difficulties in developing e-learning products. According to them, in modern school practice there are no technical support mechanisms for teachers who want to develop electronic study guides, problem books, dictionaries, etc. University professors had to master the resources of educational platforms, develop online courses themselves and record video lectures.

According to school teachers, the main electronic content they use and offer to students is of someone else's development (over 70 %). In the practice of university professors, this figure is much lower; it does not exceed 50 %. This is due to the difference between the academic policies of schools and universities in the Republic of Kazakhstan. Distance learning in universities has a fairly long experience, which is based on the teachers'skills to develop an author's electronic product.

This also explains the low provision of natural science disciplines at schools with accessible electronic and digital sources, which are adaptable to the curriculum.According to teachers, the accessibility of available sources in the subject is not more than 20 %. In university practice, this indicator is much higher; it reaches more than 60 %. Nevertheless, this is due to the fact that universities have a subscription to world electronic libraries, the development of MOOC, the practice of developing electronic lectures, textbooks, etc. There are no available paid content, virtual laboratories, etc. for the majority of teachers.

Furthermore, the replies of CLIL school teachers and university professors coincided that the format of remote communication itself caused complexity, even when using ZOOM, it was necessary to concentrate on material and strengthen the active role of the teacher. Most respondents today solve the problem of preserving natural communication in virtual mode while maintaining the active students'role during the lesson. Many of them had to introduce a system of webinars and tasks designed in the form of voice messages for listening. Another challenge is related to the preservation of speaking practice in the learning process. It is important to maintain the traditional balance of written and oral forms of strengthening or testing of knowledge. In the distance format, the dominance of written forms of communication and information exchange was observed. In the context of distance learning, the predisposition of natural science disciplines to written types of work has increased. At the same time, due to this, studentshad to work more independently with English-language sources.

CLIL distance learning is quite possible under condition of the presence of educational platforms and resource sites with educational content, as well as technical support for electronic product development: the teacher prepares content and software specialistdraws it.

These difficulties determine the opinion that today CLIL training in the traditional format is more effective, while the distance format is the most promising in the emerging digital society.

When defining the basic CLIL competencies of a teacher, all respondents indicated methodological skills that allow students to form subject knowledge and communication skills in the language, as well as IT competencies that allow using or creating electronic resources and navigatingthe educational Internet space. Based on the responses, the need for IT competencies intensified in the pandemic, when it was necessary to develop a ZOOM or Moodle system.

The comparative analysis of the IT competencies self-assessment indicators illustrated that university professors, in contrast to school teachers, feel more confident when using virtual communication systems and demonstrate a developed methodological arsenal developed specifically for distance learning. Electronic textbooks, digitized books, virtual laboratories are among them. Judging by the answers, university professors have better search skills and have a fairly complete understanding of resource sources. The reasons for this are largely associated with the developed practice of using intra-university systems for automating testing processes, registering grades, working in personal accounts, setting assignments, etc. School practice in this sense lags significantly behind university practice, which has more ac-

ademic freedom and human resources for the development and implementation of automated control systems.

The survey showed that more than 80 % of school teachers and 42 % of university professors experienced difficulties in reformatting teaching material. According to them, it was required to significantly expand the basic content intended for independent study, to detail methodological recommendations for assignments, andto introduce new forms of their implementation up to video recordings. An active role in this process belongs to students who have a good command of interactive means of communication. In this context, many university professors (63 %) plan to master online learning methods and create specialvideo content, including those, recorded in video studios at their universities. School teachers claim that they do not have access to a resource base that allows them to do this in a professional environment, therefore they mainly use improvised means: mobile phones, home video cameras, recording devices of the ZOOM system. Their answers indicate that CLIL teachers have sufficient knowledge to create adequate content, but do not always have access to the resource base and methodological assistance necessary for technical support of the distance learning process. For example, a CLIL teacher can develop a lesson text, but is not able to design an educational video based on it.

In this regard, the problem of professional development arises. Many school teachers were unable to answer the question of where they could get additional competencies in educational resources development and receive training in online learning. Answering this question, university professors (71 %), indicated educational platforms (University, Open.Ru, Coursera, etc.) and noted that the solution to this problem is institutional in nature, i. e. universities independently develop such programs or resort to organized consulting.

School teachers believe that universities should more actively help them in developing a resource base and transferring experience in mastering special techniques that work in the context of distance education. Most of the respondents indicated the need foradditional support for CLIL distance learning:

- 86 % of school teachers and 62 % of university professors need methodological development in this area;
- 91 % of school teachers and 96 % of university professorsneed special educational platforms that provide technical conditions for interacting with students at the stages of studying a topic, completing assignments, testing knowledge, proctoring, and exchanging information;
- 96 % of school teachers and 71 % of university professors need educational content, including video and audio materials, presentations, professionally oriented dictionaries, etc.;
- 90 % of school teachers and 70 % of university professors need training courses in methodology and content development for teaching in a distance format.

As can be demonstrated from the answers, the need of school teachers for organizational and methodological support is significantly higher than that of university professors(Fig. 1).

The overwhelming majority of the respondents do not doubt in the effectiveness of CLIL teaching in the traditional format: 88 % of school teachers and 83 % of university professors rated it at the maximum score on the proposed rating scale. However, when assessing the effectiveness of CLIL distance learning, opinions were somewhat divided. Greater skepticism is demonstrated by school teachers, 42 % of whom believe that distance learning reduces the quality of training. Judging from the responses, this opinion is due to the age characteristics of school students who, incontrast to university students, need closer contact and the teacher's attention to learn a subject in a foreign language (English). The assessments of university professors can be called cautious, but optimistic. The majority rate the effectiveness of distance learning CLIL as satisfactory (Fig. 2). Perhaps the pandemic circumstances, in which the integration of the two learning technologies took place, contributed to the increased skepticism.

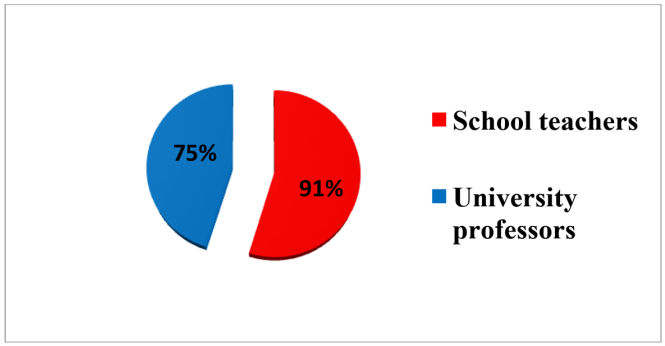

Fig. 1. The need of distance CLIL teachers for academic support

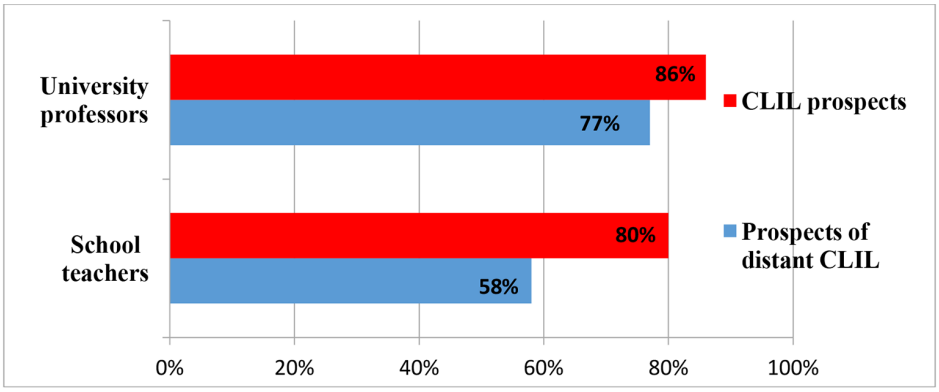

Fig. 2. Assessment of the integrated formatprospects

This idea of effectiveness correlates with the teachers' responses about the level of students' interest in distance CLIL learning. Every second teacher believes that students do not welcome this approach in teaching. Perhaps, it was about middle school students. At the sametime, the majority of school teachers(78 %) and university professors (90 %) admitted that students do not deny the integrated format oftechnology. According to the teachers, the main difficulties in distance learning of a subject in English for school children is independent work, and for students is a large amount of educational material. Moreover, according to the respondents, these difficulties are overcome as students move to the graduation stage.

Conclusion

The conducted analysis of the survey in the context of the stated goals and the survey topics could form a reasonable idea about the features of the CLIL technology application in distance education in educational institutions of Kazakhstan as well.

The similar opinion of the majority of respondents confirms the prospects of integrating the two teaching technologies in the system of school and university education. As a result, this can form a viable tool to empower CLIL learning and develop camping virtual learning environment, including through the development of e-learning resources. The need for such a tool is confirmed by the expert assessment of the respondents, who say that the main problem in the implementation of CLIL training in the distance format is weak resource support.

There is a subjective need of school teachers and university professors for technical and methodological resources, as well as for the acquisition, development and improvement of the basic competencies of

teachers to develop the necessary resources, for example, the level of language training, IT competencies, skills for adapting methodological developments to a virtual learning environment, etc. Hence, there is a need to revise the professional development programs for subject teachers, including the development of educational content for distance CLIL learning.

The integration of technologies can be effectively used to develop the educational trend of» Internationalization at home», which is associated with the introduction of academic mobility programs in a distance format.

The results obtained make it possible to determine tactical measures for the institutional development of the resource base for CLIL distance learning and potential mechanisms for mutually beneficial experience exchange between CLIL school teachers and university professors in the Republic.

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Practice-oriented Approach to Development of Leadership Competencies of Honors Students: the Project «The Territory of Intellectual and Liberal Inventions»

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Abstract. This article presents the results of the study dedicated to the development of leadership competencies of the students with high academic achievements based on the practice-oriented approach. The authors of the paper reveal the features of the development of leadership competencies of Honors College students based on a practice-oriented approach, present the theoretical justification and description of the project «The Territory of Intellectual and Liberal Inventions», develop the specific character of gamification of the process of development leadership competencies among students of the Honors College. The main methods of this study were a review of theoretical works devoted to leadership and leadership competencies, circumstances of the educational environment of the Honors College, and theory and practice of gamification; a survey of Siberian Federal University Honors students; substantiation, description and creating of the project «The Territory of Intellectual and Liberal Inventions»; a design of a gamification model of student leadership competencies' development process; a pilot experiment of this model, an analysis of the experiment results. The results of the conducted research reveal that the development of leadership competencies among gifted students based on a practice-oriented approach is actually and widely discussed by the educational community. The use of gamification allows intensifying the passing of the studied process. The materials of this article may be essential and beneficial for the researchers of development of leadership competencies, as well as for comparative studies in the field of teaching gifted students.

Keywords: leadership, leadership competencies, practice-oriented approach, gamification, gamification in education, gamification model of process, higher education, Honors education, Honors College.

Research area: pedagogy.

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Практико-ориентированный подход к развитию лидерских компетенций у студентов с высокими академическими достижениями: проект «Территория интеллектуальных и гуманитарных разработок»

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Аннотация. В статье представлены результаты исследования, посвященного развитию лидерских компетенций у студентов с высокими академическими достижениями на основе практико-ориентированного подхода. Авторы раскрывают здесь особенности развития лидерских компетенций студентов Honors College, представляют теоретическое обоснование и описание проекта «Территория Интеллектуальных и Гуманитарных Разработок», раскрывают специфику геймификации процесса развития лидерских компетенций у студентов НС. Основными методами изучения стали: обзор теоретических источников; опрос; обоснование проекта, разработка геймифицированной модели процесса развитие лидерских компетенций у студентов SibFU Honors College; пилотный эксперимент, анализ результатов эксперимента. Результаты свидетельствуют о том, что развитие лидерских компетенций у одаренных студентов актуально и широко обсуждается образовательным сообществом. Использование геймификации позволяет интенсифицировать протекание данного процесса. Материалы статьи могут быть полезны специалистам в сфере развития лидерских компетенций, а также использоваться для проведения сравнительных исследований обучения одаренных студентов.

Ключевые слова: лидерство, лидерские компетенции, практико-ориентированный подход, геймификация, геймификация в образовании, геймифицированная модель, высшее образование, Honors образование, Honors College.

Научная специальность: 13.00.00 – педагогические науки.

1. Introduction

An integral part of modern higher professional education is the development of leadership competencies, which are relevant due to a request from the professional community (employers) and from the future specialists (students). Leadership seems to stand out as a key word in the professional field.

The modern world needs a large number of specialists with developed leadership competencies who would generate and develop innovative ideas, create teams and communities

that implement the ideas, organize and lead projects to translate these ideas into business, educational, cultural and social policy practice. The development of students' leadership competencies should be based on a practice-oriented approach, so that students can receive and use practical competencies already during training.

The education of honors students is focused on the development of leadership competencies. This is confirmed by a quote posted on the website of Purdue University Honors College, West Lafayette, «Leadership development is one of the pillars of an Honors College education.»

Development of leadership competencies in honors education is realized in the format of a special educational program or its particular components and in the format of educational events.

Leadership educational program are realized in The University of Tennessee Honors College (Knoxville), Lesley University Honors College (Cambridge), Washington State University Honors College, Purdue University Honors College (West Lafayette), Valencia College (Seneff Honors College), etc.

There are two formats in educational programs. The first is a distributed educational program: the example of such a format is First- and Second-Year Honors Leadership Programs of the Washington State University Honors College (WSU HC). These programs implement the development of leadership by making connections with engaging academic and industry leaders. It is also said that the students of the WSU HC are engaged in a variety of leadership opportunities throughout the university and beyond.

A concentrated educational program is the second example of an educational program, example of the concentrated format is a special program for new students in Honors College of Minnesota State University, Mankato. In the article 'Effects of Peer Mentorship on Student Leadership' Giovanna Walters, Kanak (2016) calls this program a summer orientation program in which first-year students and mentors (upper-class students) are involved. New students take an introductory course 'that facilitates personal reflection and exploration in the three competency areas of leadership, research, and global citizenship'. According to M. E. Leichliter (2013), mentors serve as leaders by assisting with extracurricular activities, course teaching, tutoring, and other pursuits.

Honors College students participate in various educational events aimed at developing their leadership competencies. These educational events are organized by the National Collegiate Honors Council (NCHC), by Honors Colleges and outside organizations.

The events have different types: conferences, seminars, lectures, challenges etc. Here are some examples where members of the NCHC participated: The State Leadership Conference, The new Leadership TM Conference, The Leadership Seminar for Honors Leaders. The events organized by Honors Colleges: the CWU NEW Leadership TM Conference (hosted by the William O. Douglas Honors College and the Centre for Leadership and Community Engagement), Honors Congress Leadership Conference, The Honors College Activities Board (HCAB).

According to the website of the Valdosta State University, «Honors students are expected to engage in leadership activities and adhere to leadership principles». It is said that leadership involves collaborative experiences and is focused on implementing change, providing a solution, or making an improvement. This organization understands leadership as willingness to improve one's motivation, talents, vision, morale.

In our opinion, the most promising direction in the study of ways and means of development of leadership competencies in Honors Education is the organization of educational events.

2. Theoretical framework

2.1. Leadership and leadership competencies

To understand the features of the development of leadership competencies, it is necessary at the beginning to consider the essence of leadership, types of leadership competencies.

The definition of the term leadership has been discussed and debated for many decades but still there is no consensus.

According to P. Northouse (2012), leadership is defined as «a process whereby an individual influences a group of individuals to achieve a common goal». The author pays attention to the components that could be identified as central to the leadership phenomenon: leadership is a process, leadership involves influence, leadership occurs in groups, and leadership involves common goals.

Theorists of management (E. Bogardus, K. Levin, M. Bradford, D. Goleman, L. Mumford, G. Limpman-Blumen) consider leadership in conjunction with the personality characteristics of a leader, strategies and styles of human behaviour in specific personal and professional situations, in the process of management of organizations and groups (teams).

In the educational context, the leadership indicator is the formation of leadership competencies. Leadership competencies were studied by the following authors: M. McCall, G. Hollenbeck, J. Brownwell, C. Sweeney, R. Müller, R. Turner, R. Ahmed. The majority of the researchers consider leadership competencies to be skills, abilities, proficiencies that a person generally acquires to practice being a leader, and to be an individual who is responsible for moving goals forward (Sweeney, 2017).

Leadership competencies can be divided into three main groups. Intellectual competencies suggest critical analysis and judgment, vision and imagination, strategic perspective. Managerial competencies suggest resource management, engaging communication, empowering, developing. And, finally, emotional competencies suggest self-awareness, emotional resilience, intuitiveness, interpersonal sensitivity, influence, motivation, conscientiousness (Muller, Turner, 2010).

A practice-oriented approach to development of leadership competencies of students implies the inclusion of project-based learning elements in educational programs, the involvement of students in project activities in the field of future professional activity and interdisciplinary research. The development of leadership competencies is most needed for students who have high academic achievements, that is, they have become successful in their own field, and who wish to become leaders.

2.2. Honors Education

Honors education as a part of higher education was created for students with high academic results who are aware of the value of education, have a clear understanding of their own educational goals, strive to build individual educational trajectories. Honors College is able to provide students with these instruments that are necessary to realize their potential.

L. Clark, J. Zubizarreta (2008) pay attention to the characteristics of honors (gifted, high-ability) students: they are motivated, have a self-concept, highly involved in extracurricular activities in college, involved in social sphere, prefer some independence in learning, experience perfectionism, feel relatively good about their academic abilities.

Peter C. Sederberg (2008) writes about Honors students' characteristics and gives the following statements, «ambitious students who commit themselves to the project of becoming educated members of a democratic society», «they are pursuing an education for life, citizenship, and career.»

The researcher examines the reasons for creating Honors Colleges, writes about colleges' values and educational directions, and characteristics of Contemporary Honors College. According to his survey the portrait of honors college is rather heterogeneous but colleges share the same principles and values. They collectively offer a wide variety of opportunities (courses, corporate culture), seem uniquely positioned to foster interdisciplinary degrees, every honors college has current standards for admission, mandatory requirement is a senior thesis or project.

Peter C. Sederberg (2008) claims that the main aim of Honors Colleges is «to build collaborative communities among colleagues, foster scholarly discussions, share resources, and repositories for faculty enrichment». It is important to organize the workshop and provide the campus with «cohorts of superb students» and to make all its resources opened to them.

The author considers leadership to be an integral characteristic of teachers and staff of Honors College, he is sure that teachers who behave like leaders are able to educate students with developed leadership competences.

L. Clark (2008), J. Zubizarreta (2008) assert that Honors Education is connected with new «methods teaching strategies and theories about learning that form undercurrents in the larger conversations of best practice in higher education», also they claim that Honors program has «high-lighted and encouraged», as fundamental to their missions, innovative, creative approaches to teaching and learning.

Honors Education is an experimental educational platform, that is opened to new methods of teaching and learning. At the same time, each HC itself chooses the educational activities that are realized in it.

Siberian Federal University Honors College (SibFU Honors College) is based on the gaming technology. The majority of the educational path ways different types of games as the course tasks, also this Honors College provides game launch, game release.

3. Statement of the problem

The key problem of our research is the search for means of development leadership competencies among students of Honors College based on a practice-oriented approach in an open educational environment. To solve it, the following general objectives were defined:

1) To know the features of the process of development of Honors College students' leadership competencies (based on the example of SibFU Honors College);

2) To justify, describe and create an initiative project aimed at the development of student leadership competencies;

3) To design a gamification model of a development process of students' leadership competencies;

4) To apply the developed model in the activities of SibFU Honors College.

4. Methods

During the research, the following methods were used: a review of theoretical sources in the field of leadership and leadership competencies, features of Honors Colleges educational environment, a theory and practice of gamification; a survey of Siberian Federal University Honors students; substantiation, description and creating of the project «The Territory of Intellectual and Liberal Inventions»; a design of a gamification model of the students' leadership competencies' development process; a pilot experiment of this model, an analysis of the experiment results.

5. Discussion

5.1. Features of the development of Honors Students' leadership competencies

The development of students' leadership competencies is one of the most significant goals of Honors Colleges. Considering the features of this process, four key aspects are identified.

The content aspect is associated with the choice of leadership competencies that should be developed among Honors students, and with the selection of educational content to be used.

The choice of leadership competencies should be based not only on theoretical assumptions, the requirements of educational and professional standards, but also on the opinions of the students themselves. It becomes expedient to preliminary study of the students' opinions on the most demanded leadership competencies in the modern world, diagnosing the level of formation of their respective competencies.

Traditionally, when developing leadership competencies, biographical materials of well-known leaders, real professional cases, training exercises and games are used. However, most of them are based on the peculiarities of the development of society and the state in a specific historical era, which does not always correspond to the current trends in the development of science and practice. Therefore, the educational content used should describe up-to-date situations and reflect current technical, social, educational, political issues.

The procedural aspect implies the gradual passage of three phases by students: informing the basic principles and skills that support a particular leadership competence; appropriation of principles and skills to learners, as well as the formation of a positive attitude towards the chosen competence; presentation of target behaviour in the field of relevant competence.

The instrumental aspect reveals a set of used active and interactive educational methods and technologies. At the same time, one of the most promising areas is gamification, suggesting the possibility of including gaming mechanisms and instruments in educational practice.

The environmental aspect determines the specificity of the behaviour of teachers and students in the process of development leadership competencies, as well as their interaction. Development of leadership competencies should occur not only at the initiative of the teaching staff, but also at the initiative of the students themselves, when they are included in the process of development appropriate educational programs and events.

A special attention should be paid to creating within the Honors College a community of people who are interested in developing their own leadership competencies. In the course of its development, such a community may take the form of a separate project, council, union, etc.

5.2. Project «The Territory of Intellectual and Liberal Inventions» in SibFU Honors College

In SibFU Honors College as well as in other Honors Colleges, a great attention is paid to the development of student leadership competencies based on a practice-oriented approach. The student initiative project «The Territory of Intellectual and Liberal Inventions» is aimed at developing leadership competences among students of Siberian Federal University.

The abbreviated name in Russian sounds as «TIGER» (TIGR – in original, Russian), and indicates the image of the tiger as a true leader. There is an African proverb that inspires, «An army of sheep led by a lion can defeat an army of lions led by a sheep». Don Christian even gives the term «Tiger leadership» and writes about tiger concentration and a leading position.

This project is actual to the Honors Community. The President of European Honors Council Marca V. C. Wolfensberger (2012) gives three main pillars of the Honors signature: academic competence, creating community, a balance between structure and freedom. The author even invokes her colleges for collaboration and networking because the researcher believes that the Honors community can provide a great experience both for Honors teachers and Honors students.

Thanks to the project «TIGER», the Honors community is improved. SibFU is aimed at supporting students' projects and supports our initiative student project, which also solves the problem of collaboration, consolidation and strengthening of the community.

The goal of the project is to organize the initiative student educational space «TIGER» on the basis of SibFU Honors College, aimed at developing leadership competencies and forming a personal agency of SibFU Honors College students through the use of a game approach.

The main objectives of the project:

1. To analyse the theoretical prerequisites for the development of leadership competencies and the formation of a personal agency of students with high academic results;
2. To develop a gamification model of a process of development of leadership competencies and the formation of a personal agency of SibFU Honors College students;
3. To organize and conduct gaming sessions with students of SibFU Honors College;
4. To reflect the results of gaming sessions;
5. To present the key results of the «TIGER» project to the educational and scientific community;
6. To study the basics of designing gamification systems.

To confirm the relevance of the request from students of SibFU Honors College, a survey of 30 students from the first admission was done.

Among the sought-after leadership competencies, the most frequent respondents noted: stress resistance (16 respondents, 53,30 %); listen to and heed (15 respondents, 50,00 %); the ability to organize others (15 respondents, 50,00 %); a willingness to be responsible for the team and the result even in case of failure (15 respondents, 50,00 %); learning ability, learning and the desire to develop (14 respondents, 46,70 %).

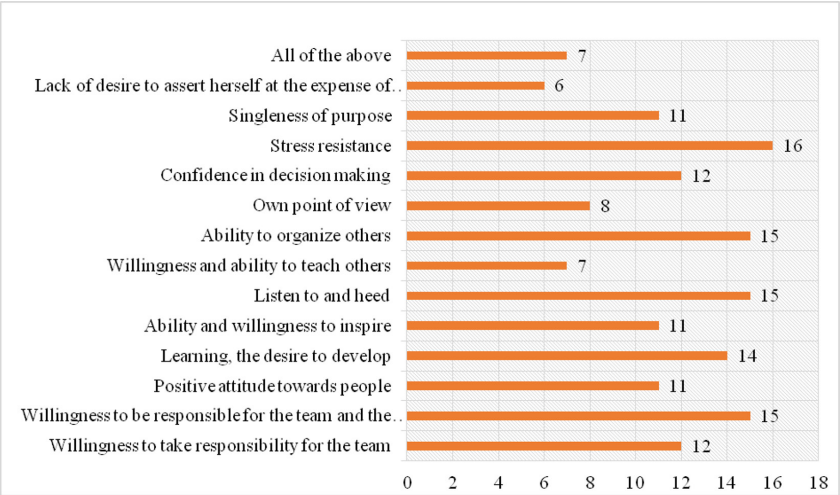

Fig. 1 The most sought-after leadership competencies

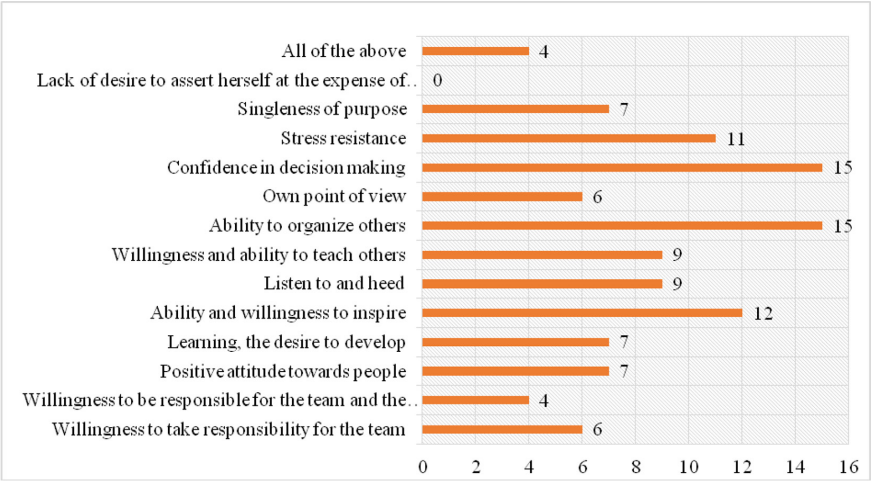

Fig. 2. Leadership competencies that students would like to develop

At the same time, respondents, answering the question: «Which of the above leadership competencies would you like to develop?» gave preference to not all previously chosen «sought-after leadership competencies». The most relevant are the competencies are confidence in decision making (15 respondents, 50,00 %) and the ability to organize others (15 respondents, 50,00 %).

Confidence in decision making and the ability to organize others were identified as priority for development among students in SibFU Honors College.

5.3. A gamification model of a development process of Honors student leadership competencies

The presence of a request from Honors students necessitated the search and selection of the most effective ways of developing leadership competencies in terms of open educational environment that would meet the principles of humanity, interactivity, and intensification of students' efforts in modern education.

The use of gamification allows making the process of education more interesting for stu-

dents, focused on their mastery of values, command norms, actions in accelerated time. This is especially relevant in the context of an initiative educational environment that presupposes the specific influence of students on the course of the educational process.

During the development of the «TIGER» project, the basis of the ideas of K. Verbach, D. Hunter, I. Nefediev, M. Bronnikova, and others were used to design a gamification model of a development process of Honors student leadership competencies**.**

Gamification is considered by K. Werbach, B. Hunter (2012) as using elements of a game and game mechanics in a non-game context, what allows achieving off-game goals through the use of a systematic approach to the choice of a storyline, game mechanics, and main attributes of the game.

However, according to I. Nefediev, M. Bronnikova (2021), gamification may be the introduction of additional game rules in any activity for engaging, retaining, and educating users in non-game contexts. In this case, three requisitions must be respected:

1. The game should be interesting and enthral players;

2. There should be direct, inextricable connection with reality;

3. Voluntary participation of players (when a player can independently decide to follow the rules of the game or not)

Designing of a gamification model of Honors student leadership competencies' development process is based on K. Verbach's gamification design system 6-D (2021), which involved the completion of 6 basic stages «six steps D».

1. Define – define the goals of your business.

The main goal is to develop the most relevant leadership competencies of SibFU Honors College students in the context of initiative educational space through their participation in the preparation, conduction, and reflection on an interactive gaming sessions.

2. Delineate – describe the desired behaviour.

The basic characteristics of the target behaviour of the players:

1. Awareness of leadership as one of the key values of modern man, which is demonstrated during the discussion of educational content, an analysis of the results of gaming sessions.

2. Formed student's value attitude to leadership, manifesting in the pronounced positive emotional tinges of the terms «leader», «leadership», and «leadership competencies»;

3. Demonstration of the formation of relevant leadership competencies and their elements in the course of participation in the gaming session of the «TIGER» project, the SibFU Honors College educational process, professional and social activities, personal life.

3. Describe – describe the players.

The target audience is SibFU Honors College students who have high academic achievements. The approximate age range of players is from 17 to 23 years old.

These students combine extracurricular lessons at SibFU Honors College with their basic higher education programs, additional professional qualifications, research and social activities.

The most pressing needs for these players are self-realization (making a contribution to the common cause, including developing their own projects), communication (productive interaction with other people or groups of people), creativity (creating / generating and implementing innovative ideas and solutions).

They are initiative, focused on continuous personal and professional self-improvement, they create and realize individual educational trajectories.

4. Devise – develop activity loops.

There are four stages of integration players in game process:

Stage 1. Involvement: acquaintance with rules, teambuilding. Participants try to understand what the rules are and how to act in this educational environment.

Stage 2. Mastering: the rules and the game world is clear, the players understand how to act within a certain role, they begin to consciously use the role commandment when solving game problems.

Stage 3. Assimilation: participants acquired in the role so much that they begin to

enrich it, at the level of improvisation they create their own line of conduction.

Stage 4. Self-Realization: players perceive the system as life, they do not realize that they are playing, everything is natural. Participants try to improve.

5.Don't forget – do not forget about entertainment.

The involvement of players and their motivation during participation in gamification occurs due to the choice of a specific game plot that is not directly related to the problems under consideration, but reflects the key indicators of the problem. In the conditions of the gamification model (created by us) of a development process of Honors student leadership competencies, the basic plot was a journey, which is a metaphor of the development path of all mankind and of an individual.

In addition, motivating players to continue developing their own leadership competencies can be activated by playing techniques that allow you to track your own progress of this process, cause excitement and inspiration. The example is the situation of accepting player's challenges for overcoming difficulties.

Creating an open, trusting socio-psychological atmosphere helps to increase the interest of participants in achieving their goals.

6. Deploy – use suitable tools.

The description of the tools of gamification is possible through the definition of the used game dynamics, mechanics and components. In accordance with the objectives, dynamics as progress, relationships, emotions were selected.

The main mechanics used were cooperation and the state that determines victory.

During game sessions the following components were used: achievements, badges, levels, social interaction, teams.

In the next paragraph a pilot experiment of the project is described.

5.4. A pilot experiment to implement a gamification model of a development process of Honors student leadership competencies

The testing of a developed gamification model of Honors student leadership competencies' development process was held in SibFU Honors College in a gaming session format.

The main aim of the game session was the development of Honors students' confidence in decision making and an ability to organize. These competencies were considered as the most demanded according to the survey results.

The strategic session of the development of the project «TIGER» was chosen as educational content, during which participants tried to determine the main characteristics of the strategic project management (vision, mission and goals, target audience, activity plans, team, risks, etc.)

The game story of space travel was selected for this session. A legend was presented to the participants, suggesting that they travel on the spaceship «TIGER-1» and interact with many intergalactic races in order to exchange the achievements of society and technology.

During the game session, the players were to learn useful qualities and competencies of each other, to assign roles within the spaceship team (roles were allocated according to the classification of E. Yourdon), to find out and present the most optimal solution of the proposed tasks and situations, to analyse the results of the game session.

The analysis of the outcome of the game session indicates the possibility to develop Honors students' leadership skills with the help of gamification. That is confirmed by the change in the behaviour of the players recorded during the observation, which is connected with the occupation of the leader's subjective position, the desire to influence the decision made by the team, and the active participation in the improvement of teamwork.

6. Conclusion and recommendations

Honors education is focused on the development of leadership competencies based on a practice-oriented approach in open educational space through the realization of educational programs and the organization of educational events. However, basically, the initiator for such activities is the administration and teaching staff of Honors Colleges.

Providing students with the opportunity to participate in the creation and realization of educational events aimed at developing leadership competencies helps to increase their interest in the results of these events.

In Siberian Federal University the project «The Territory of Intellectual and Liberal Inventions» was created. It is oriented on the development of initiative student educational space, promoting development of leadership competencies and the formation of personal agency of honors students through the use of a game approach. The main advantage of the project is the use of a gamification model of a development process of honors student leadership competencies.

Hence, we believe that the experience presented may be of interest to teachers and students of Honors Colleges all around the world. Indeed, this experience could be used to educate gifted students and young professionals in the conditions of the long life learning system.

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Executive Functions and Conscious Self-Regulation as Predictors of Native Language Learning Success in Russian Middle School Children

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Abstract. Mastering the mother tongue at school is essential for both academic and life success. It depends on many factors, including self-regulation, i. e. the ability to control one's thoughts and behaviour. In this study, we assess the influence of conscious self-regulation, executive functions (inhibition, switching, working memory updating, and error monitoring and control) and intelligence on Russian language competences and Russian language annual grade in a group of Russian middle school children. Through structural equations modelling, we found that both categories of regulatory predictors, i. e. conscious self-regulation and executive functions, are related to academic performance in the native language. Both predictors make an indirect contribution to the annual grade in the Russian language. In the case of self-regulation, fluid intelligence acts as a mediating variable. Executive functions influence the annual grade through language competences, which also significantly contribute to the general performance. Executive functions also have an impact on self-regulation, confirming their status as the neurocognitive basis of self-regulation. Of the self-regulatory functions, Goal Planning, Modelling, Results Evaluation, and regulatory personality traits of Flexibility and Initiative have the greatest impact on the native language academic performance. We revealed the effect of «excessive flexibility», that is, an increase in number of errors at high values of the executive function Switching attention. Links to recent findings as well as directions for future research are discussed. The results can be used to improve academic performance in native language and emphasize the importance of developing conscious self-regulation at school.

Keywords: conscious self-regulation, executive functions, intelligence, language competences, native language.

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Исполнительные функции и осознанная саморегуляция как предикторы успешности обучения русскому языку в средней школе

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Аннотация. Овладение родным языком в школе имеет определяющее значение как для академической, так и для жизненной успешности. Этот процесс зависит от многих факторов, включая саморегуляцию как способность сознательно ставить цели и управлять их достижением. В исследовании мы оцениваем влияние осознанной саморегуляции, исполнительных функций (торможение, переключение, обновление рабочей памяти, мониторинг и контроль ошибок) и интеллекта на языковые компетенции и годовую оценку по русскому языку в группе учеников российской средней школы. С помощью моделирования структурными уравнениями мы обнаружили, что обе категории регуляторных предикторов, т. е. осознанная саморегуляция и исполнительные функции, связаны с успеваемостью по родному языку. Оба предиктора вносят опосредствующий вклад в годовую оценку по русскому языку. В случае саморегуляции опосредующей переменной выступает флюидный интеллект. Исполнительные функции влияют на годовую оценку через языковые компетенции, от которых она, в свою очередь, значимо и непосредственно зависит. Исполнительные функции также оказывают влияние на саморегуляцию, подтверждая статус ее нейрокогнитивных оснований. Из компонентов осознанной саморегуляции наибольшее влияние на академическую успеваемость по родному языку оказывают Планирование целей, Моделирование значимых для достижения целей условий, Оценка результатов и регуляторные личностные качества Гибкости и Инициативы. Выявлен эффект «чрезмерной гибкости», то есть увеличения числа ошибок при высоких значениях исполнительной функции Переключения внимания. Результаты обсуждены в контексте полученных ранее данных, а также обозначены направления дальнейших исследований. Полученные результаты могут быть использованы для повышения успеваемости по родному языку; они также подчеркивают значимость развития осознанной саморегуляции у школьников.

Ключевые слова: осознанная саморегуляция, исполнительные функции, интеллект, языковые компетенции, русский язык.

Научная специальность: 13.00.00 – педагогические науки.

Introduction

Mastering the first, native language is of the utmost importance in children's education. It is essential for both the advancement in studies and success in later life. Success in first language learning and school studies generally depends on many factors. These include motivation, health, family surrounding, intelligence, and, importantly, self-regulation. Self-regulation (SR, Baumeister et al., 2002) is the ability to alter and control one's thoughts and behaviour and is considered a trait that is extremely important for one's life success. Self-regulation (SR) is related to learning success (Nota, Soresi & Zimmerman, 2004; Morosanova, Fomina, Kovas & Bogdanova, 2016; Zimmerman & Schunk, 2001).

In our studies (Morosanova, Fomina & Bondarenko, 2015), we differentiate between regulatory-personal and cognitive levels of SR. The regulatory-personal level consists of personality traits that assist the achievement of self- or externally-set goals. The cognitive level consists of processes like planning, situation modelling, action programming, and result evaluation. We suggest that while SR is a high-order construct, it is implemented through executive functions (EFs) on a lower level. EFs are a set of meta-cognitive functions (Diamond, 2013; Miyake, Friedman, Emerson, Witzki, Howerter & Wager, 2000) which organize goal-directed behaviour in complex situations. The present study aims to analyze the relationship between SR, EFs, and first language competences in a sample of Russian middle school children.

Language competences. Competence is «what a person knows and can do under ideal circumstances» (Messik, 1984, p. 2270. In an educational setting, competences refer to the teaching outcomes related to the proper fulfilment of the later life roles (Gervais, 2016; Glaesser, 2019). The concept of language competences (LCs) has long been a focal issue in language teaching. The LC concept is associated with understanding a language as a system and with the acquisition of language norms (Bozhovich, 2016; Kecskes, Sanders & Pomerantz, 2018). Children build their native language competence by proceeding from specific, distributional, item-based representation to more and more abstract linguistic categories (Lieven, 2008). In this process of linguistic abstraction, formal native language teaching at school plays a crucial role.

The assessment of LCs is a complex problem. Average school marks and exam scores give only very general information about a student's LCs as they depend on other factors beyond language command. To assess LCs, it is necessary to develop a language test to assess how a student uses his/her language knowledge to solve representative tasks in the native (or foreign) language. Such tasks may include locating errors in written texts or producing grammatically well-wormed sentences. Importantly, such representative language tasks must cover a wide range of LCs, from spelling to collocations, depending on the level of language command appropriate for the age in question. Thus, LCs assessment suggests active and productive first language use and not simply a reproduction of linguistic «rules». Assessing LCs based on these principles is very common in Russia (Bozhovich, 2016).

Executive functions. EFs are typically associated with prefrontal lobe functions and are evolutionary a late achievement (Alvarez & Emory, 2006; Diamond, 2013). They are metacognitive because they do not produce a specific outcome but operate on «specialized» cognitive processes that produce various outcomes, external or mental. Miyake et al. (2000) identified three «basic» EFs: switching, inhibition, and working memory updating. The switching function is related to cognitive flexibility allowing for switching between different tasks. Inhibition is a system of functions allowing for

a voluntary decrease in the activation of representations and responses. Inhibition plays an essential role in the organization of purposeful behaviour and self-control. Working memory updating is used for the storage and processing of operative information. Working memory updating may play an important role in the storage of action plans and situational mental models. Additionally, we measured error monitoring and correction. The error monitoring and correction EF is associated with the quality of cognitive activity and is indispensable for closed-loop self-regulation (Dutilh, Vandekerckhove, Forstmann, Keuleers, Brysbaert & Wagenmakers. 2012).

SR. In our studies, conscious self-regulation is characterized as a cognitive-personal construct. On the one hand, it represents a system of cognitive mechanisms for information processing, including planning, modelling, programming, and results evaluation. On the other hand, the distinctive feature of these processes (their individual profile) at the personality level is representation through a number of instrumental personal-regulatory properties: flexibility, independence, reliability, etc. This structure emphasizes the meta-nature of conscious self-regulation as a psychological means of mobilizing and integrating cognitive and personality resources to resolve various tasks of human activity.

Relationships between EF, SR, and LC. Effective SR and EFs are related to each other in different activities, including academic learning (Hofmann, Schmeichel & Baddeley, 2012; Welsh & Peterson, 2014). In particular, SR is important for successful foreign language learning (Tsuda & Nakata, 2012; Gorgoz & Tican, 2020). There is also a link between effective SR and successful native language learning at school (Bondarenko, Fomina & Morosanova, 2020). Researchers have also often suggested a link between EFs and language (Marslen-Wilson & Tyler, 2007; Veraksa, Bukhalenkova & Koviazina, 2018). Studies on cognitive language learning factors suggested that EFs are related to native and foreign language learning at school (e. g., Gooch, Thompson, Nash, Snowling & Hulme, 2016). However, a recent Russian study on the contribution of EF to native language learning in school (Verbitskaia, Malykh, Zynchenko & Tikhomirova, 2015) failed to find a link between an EF (working memory) and language exam grades in a sample of Russian schoolchildren. This null result can be related to the specific EF measures used. In any case, how EFs and SR are linked in producing different LCs (lexical, syntactic, etc.) have not been investigated enough. In the current study, we explicitly assess the links between EFs, SR, and LCs in the native language in a sample of Russian seventh and ninth graders.

Method

Participants. The study was performed on a group of state secondary school students from Moscow and the Moscow Region aged 13–15 (N=286): seventh graders (N=147, mean age 13±0,5 years) and ninth graders (N=139, mean age 15 ± 0.5 years). Gender was distributed almost evenly within the sample group (50.3 % female).

Self-regulation Measure. To assess conscious self-regulation development, the «Self-Regulation Profile of Learning Activity Questionnaire – SRPLAQ» was used (Morosanova & Bondarenko, 2015). It consists of 67 statements describing typical situations of achieving educational goals which generate 10 scales: planning (e. g. «I often try to set a certain amount of time needed to complete a learning task»); modelling (e. g. «Unexpected changes in the timetable throw me off my stride»); programming (e. g. «When preparing for a test (exam), I usually think over the order of studying the material»); results evaluation (e. g. «Even when I'm tired, I tend to study until I'm satisfied with the result»); flexibility (e. g. «If I need to get prepared for a class, I can work even in an uncomfortable and unfamiliar situation»), initiative (e. g. «I use every opportunity to make reports in class»); reliability (e. g. «I do not postpone studying even if I'm tired or sick»), responsibility (e. g. «I do not give up preparing for classes even if I have to choose between studying and spending time with my friends»), social desirability (e. g. «I always admit my mistakes») and the general level of self-regulation. SRPLAQ was previously validated

in a sample group of 14–18-year-old students (N=702). The validation study showed that coefficients of internal consistency of items for each scale ranged from 0.58 to 0.76, indicating an overall reasonable homogeneity of the items in each scale. The subscales were significantly correlated with each other (r = 0.22–0.66, p<0.001). The responses to each statement are given on a 4 point scale (Yes – Probably Yes – Probably No – No). The responses are then reduced to only «Yes» and «No» by counting «probably yes/probably no» as «yes/no», respectively. The «yes» responses are then added up (items are reversed if necessary) so that the high scores (maximum 9 for each scale) denote high self-regulation.

EF measures. We used three standard tasks for the assessment of basic EFs (Miyake et al., 2000). To assess inhibition, we used the Eriksen Flanker task. The stimuli are five horizontally arranged black arrows presented against a white background in two conditions: a congruent condition (>>>>>, <<<<<) and an incongruent condition (>><>>, <<><<). The respondent's task is to attend to the arrow in the middle and to indicate its direction by pressing the corresponding key («z» for left and «/» for right). A training session comprised of 36 trials is included. The main series contains four blocks of 36 unique trials in each. The maximum response time is 1,500 ms. The response to stimulus interval is fixed at 1,000 ms. Four response parameters are registered: average reaction time, percentage of correct answers, the difference in reaction time and accuracy between the congruent and noncongruent trials (the interference effect).

To assess switching, we used the Letter-Number task with predictable task changes. The task shows a white screen divided into four quadrants. A pair of symbols, a digit and a letter, is presented clockwise in each quadrant, starting from the upper left. The respondent's task is to determine whether the digit is even or odd if the characters are located in one of the upper quadrants and whether the letter is a consonant or a vowel if the symbols appear in one of the lower quadrants. The answer is given by pressing a key («z» for odd digits and vowel letters and «/» for even digits and consonant letters). The training series consists of 24 letter-digit pairs. The main series consists of 128 trials. The stimuli remain on the screen until the response is given. The response to stimulus interval is 500 ms. Six response parameters are registered: average reaction time and accuracy, repetition trials' reaction times and accuracy, switching trials' reaction times and accuracy, and two switch costs indicating switching efficiency (the differences in reaction time and accuracy between switching and repetition trials).

To evaluate working memory updating, we used the N-Back task. The digits from 1 to 8 are presented in a pseudo-random order. The respondent's task is to answer quickly and correctly whether the currently presented digit coincides with the digit presented two positions before (2-back). The training series contains 32 trials, and the two main series each contain 48 trials. Each figure appears six times in each series (four times in the training series), once as a target. Stimulus presentation time is 500 ms. The inter-stimulus interval is 2,000 ms. The answer is given by pressing a key («/» for yes or «z» for no). Average reaction time, accuracy, reaction times and counts for different response types (hits, correct rejections, false alarms, and misses) are recorded.

To assess error correction, we computed the post-error slowing (PES) effect. PES (Dutilh et al., 2012) is the effect of trials after an incorrect trial exhibiting longer reaction times. The PES effect is associated with the activity of the conscious error monitoring and correction system within the anterior cingulate cortex (Botvinick, Braver, Barch, Carter & Cohen, 2001). We computed PES by subtracting the average reaction time from the average reaction time in the post-error trials in each EF task.

LC measures. We used two tasks for LC diagnostics (Bozhovich, 2016). The first task consists of 20 sentences printed on a sheet of paper. The sentences include eight types of errors: spelling (misspelt words), punctuation (a sign at the end of a sentence), morphological (incorrect word forms), lexical (incorrect collocations), syntactical (improper connection between words), semantic-syntactical (use of a structure that does not correspond to the

content of sentence), semantic (the content of the sentence does not correspond to the non-linguistic reality), and stylistic errors (wrong choice of words, sentence structure, word order, word combinations, etc.). Each sentence contains one error. Each type of error is contained in two sentences. There is no more than one error in a sentence, so there are 16 sentences with errors and four distracter sentences without errors. The respondent's task is to find errors in the sentences and mark them on the sheet.

The second task requires active transformation of language elements. It also consists of 20 sentences; 16 sentences contain the eight types of errors from the first task. Similarly to Task 1, four sentences do not contain any errors. The respondent's task is to copy the sentence to the answer sheet if there are no errors; if there is an error, the respondent is expected to rewrite the sentence, correcting it. No time limits were imposed in Tasks 1 and 2. The collected data are compared with an answer key, and error omissions are evaluated according to the «cost» of an error: spelling and punctuation errors add three points to the LC score; morphological, syntactical, syntactic-semantic, semantic, lexical, and stylistic errors add two points; and «false alarms» (wrongly recognized errors) add one point. According to the type of error, errors made in the rewritten sentences are indicated as an additional measure. Overall LC scores (computed separately for Task 1 and 2) range from 0 to 60. A separate score is computed for each competence (given by error type). A higher LC score is indicative of less competent language use.

Procedure. The students performed tasks for the assessment of LC, SR, and intelligence in the classroom. Computerized tasks for EF assessment were performed at a computer lab on another day. The study was conducted in accordance with the Helsinki Declaration. Ethical agreement and consent for access to school were provided by the XXX and approved by the local ethic committee (protocol no. 2018/2–18, research project «Conscious self-regulation in the system of cognitive and non-cognitive mechanisms of success in learning Russian at school»).

Data Analytic Plan or Analytic Strategy

All analyses were performed using SPSS version 26. Exploratory factor analysis was used to reduce the number of analyzed variables. We factorized all EF indicators using the method of principal components with VARIMAX rotation. Similar analyses were performed separately for LC measures for each of the two LC tasks. AMOS19 (Analysis of Moment Structures) software was used to test the structural equation modelling model of interrelation between EFs, SR, and LCs in native language use.

Results

Data reduction. Due to a large number of EF indicators, a data reduction procedure was applied. First, standardized data on EF were submitted to a factor analysis with VARIMAX-rotation. Then, factors were extracted based on Kaiser's rule (eigenvalue over one). In total, ten factors for 74 % of the variance were extracted (Table 1). The factors reflected the basic EFs (inhibition, switching, updating, and error correction) quite well. However, for most basic EFs, an RT and an accuracy factor were extracted.

Factor 1 is dominated by the accuracy inhibition indicators with some influence of working memory updating. This is not surprising as working memory function and inhibitory control are closely related. Therefore, we call this the *Inhibition* factor. It is related to the ability to suppress unwanted representations and stimuli, that is, to the control of internal and external attention. Factor 2 is composed of switching accuracy indicators and is therefore called *Switching Accuracy*. It is related to cognitive flexibility, i. e. the ability to change between tasks and representations quickly. In the same vein, Factor 3 is called *Updating Accuracy*. It is related to the ability to hold and processes cognitive representations in working memory. Factor 4 is also clearly composed of working memory updating indicators (but they are related to the processing speed of representations in working memory). We call this factor *Updating Efficiency*. Factor 5 is composed of switching RT indicators and is therefore called *Switching Efficiency*. Factors 6, 9, and 10 all

Table 1. Factor Analysis for EF Measures

	Factors									
Indicators	1	2	3	4	5	6	7	8	9	10
I/ACC(congruent)	.918									
I/ACC	.823						.455			
I/RT	.810									
U/ACC(misses)	.741									
U/RT(hits)	.503									
S/ACC(repeat)		.959								
S/ACC		.957								
S/ACC(switch)		.941								
U/ACC			.850							
U/ACC(FAs)			.845							
U/ACC(CRs)			-.816							
U/ACC(hits)			-.517							
U/RT				.926						
U/RT(CRs)				.891						
U/RT(misses)				.719						
U/RT(FAs)				.609						
S/RT					.989					
S/RT(switch)					.937					
S/RT(repeat)					.891					
I/CA						.920				
I/PES						.852				
I/ACC(incongruent)							.812			
I/Interference							-.755			
S/Cost(RT)								.746		
I/CA								-.723		
S/PES									-.729	
I/PES									.531	
S/Cost(ACC)									.497	
U/PES										-.602
I/RT(incongruent)										.401

Notes. U = Updating. S = Switching. I = Inhibition. RT = Reaction time. ACC = Accuracy. PES = Post-error slowing. CR = Correct rejections. Cost(Errors) = Error-related switch cost.

include various indicators of conflict and error monitoring and resolution (conflict adaptation and post-error slowing measures). Based on its composition, Factor 6 is called *Conflict Adaptation* and Factors 9 and 10 are called *Error Resolution 1* and *2*, respectively. They are all related to the ability to monitor for conflicts and errors and to recover from them. All these factors presumably assess functions ascribed to the anterior cingulate cortex. Factor 7 is clearly an *Interference Control* factor comprised of accuracy indicators of how god interference is controlled in the flanker task. This factor is related to the effectiveness of attention control.

Table 2. Factor Analysis for LC Measures

Indicators	Factors			
	Language Command (1)	*Word Structure (2)*	*Sentence Structure (3)*	*Sense* factor *(4)*
Style	.726			
Semantics	.668			
Lexical	.640			
Morphology		.940		
Spelling 1		.368		
Spelling			.625	
Punctuation 1			.482	
Syntax			.457	
Sense				.674
Punctuation				.334

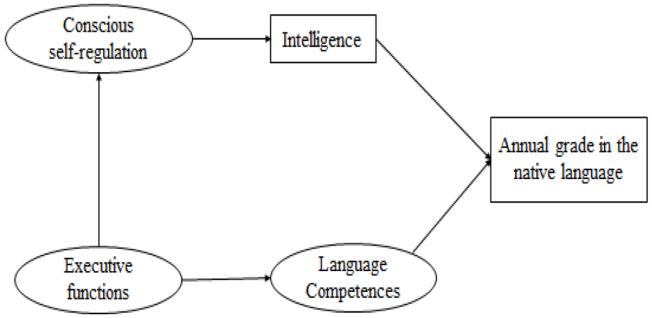

Fig. 1. The conceptual model of the relationship between EFs, SR, and LC

Factor 8 is complex in its interpretation as it comprises a switching efficiency indicator and a conflict monitoring indicator. As switching involves a lot of conflicts, we call it the *Cognitive Flexibility* factor.

We also applied a data reduction procedure to language competences (LC) data. LC data from both LC tests were submitted to an alpha factor analysis with Equimax rotation and Kaiser's normalization. As a result, a factor solution (eigenvalues over 1) with four factors was obtained (see Table 2 for factor loadings, only indicators over 0.3 are presented), explaining 67 % of the variance.

Factor 1 is dominated by semantic-lexical aspects of language use and is therefore called *Language Command*. Factor 2 comprises spelling and morphology competences that relate to the word level of the grammatical structure. It is therefore called *Word Structure*. Factor 3 is comprised of spelling, punctuation, but also syntax indicators, so we call it *Sentence Structure*. Last, Factor 4 is dominated by the semantics and pragmatics of the sentences («meaning/sense»), so we call it the *Sense* factor.

Structural equation modelling. The conceptual model of the relationship between EFs, SR, and LCs is presented in Figure 1.

Various structural models were fitted using the AMOS software. The best-fitting model is presented in Figure 2. The fit indices for this model were good to excellent: $\chi^2/df = 1.19$; $p = 0.04$; GFI=0.92; CFI= 0.95; RMSEA =0.029; Pclose=0.99.

Discussion

SR, EF, and Native Language Learning Success. The resulting structural model re-

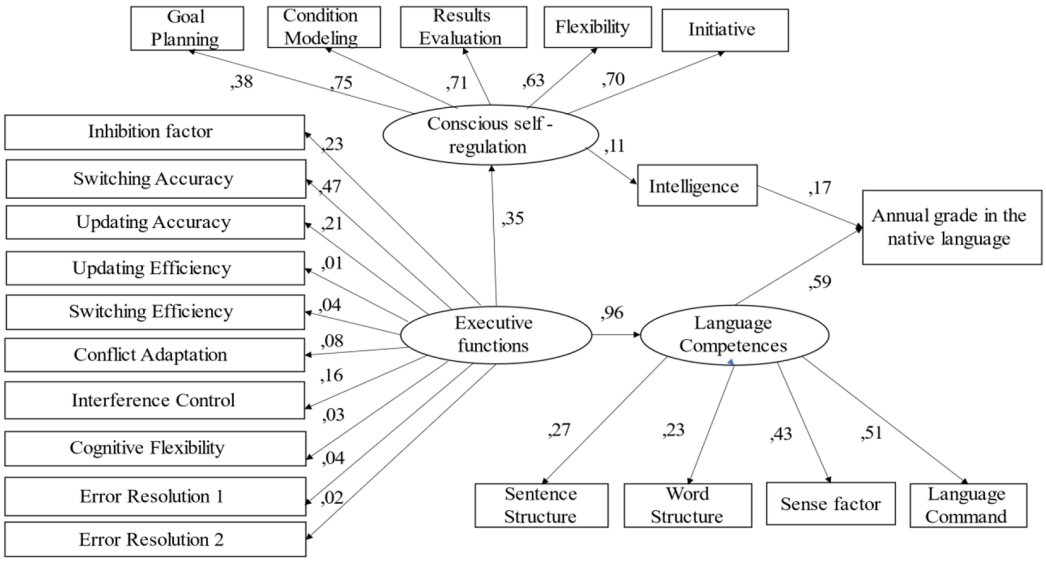

Fig. 2. Structural model of the relationship between EFs, SR, and LCs

vealed the specific contribution of regulatory predictors – conscious SR and EF to academic performance in the native language. Both indicators make an indirect contribution to the annual grade in the Russian language. In the first case, fluid intelligence (β = .17) acts as a mediating variable. EF influence the annual grade (β = .96) through the Language Competences, whose contribution, in turn, is quite significant (β = .59). The model assesses EFs' contribution to the conscious SR (β = .35), confirming results of the previous studies on the relationship between SR and EF (e. g., Welsh & Peterson, 2014 Kaplan, Lichtinger & Gorodetsky, 2009; Skibbe, Montroy, Bowles & Morrison, 2019). Researchers agree that the metacognitive levels of SR and EF are closely related developmentally (Roebers & Feurer, 2016). It is worth noting that our result was obtained from a sample of middle school students. Such studies are very rare for the native language subject.

Conscious self-regulation in this model is represented by the regulatory processes of Goal Planning, Condition Modelling, and Results Evaluation, as well as the regulatory personality traits of Flexibility and Initiative. Including these indicators into the model allowed for confirming results of the previous studies (Bondarenko, Fomina & Morosanova, 2020) and reveals the mechanism of the regulatory predictors' influence on the annual grade in the native language. Successful learners plan their own goals, take advantage of conditions relevant for achieving the goals, are sensitive to feedback from their teachers, flexibly cope with obstacles and participate in additional learning activities. These results obtained are in good agreement with the few foreign data on the influence of the Self-Regulated Learning on native language proficiency (Zimmerman, Schunk, 2001; Kaplan, Lichtinger & Gorodetsky, 2009; Rutherford, Buschkuehl, Jaeggi & Farkas et al., 2018). Longitudinal studies also revealed that children who developed the ability to self-regulate early demonstrated higher literacy and language skills, better reading comprehension, were more successful in phonetics, and had a broader vocabulary (Skibbe & Foster, 2019).

A theoretical basis for the work of Limpo, Alves, and Fidalgo in analyzing high-level writing skills was the model proposed by Hayes and Flower in 1980 (Limpo et al., 2014; Hayes, Flower, 1998). They assumed that there are three different processes governing writing: planning, translation and proofreading, which is close to our theoretical model of conscious self-regulation. Moreover, there are intrigu-

ing results obtained by Limpo and colleagues, which indicate a change in the size of the contribution of planning and evaluation processes in grades 4–9 (Limpo et al., 2014). Allen, Snow, and McNamara reported on the positive contribution of Flexibility to academic performance: better writing is associated with higher flexibility, which, in turn, is a function of individual differences associated with writing skills such as vocabulary and general knowledge (Allen et al., 2015).

EF and LC. Research on the relationship between EFs and various LCs has shown that phonological awareness is associated with retaining speech sounds in the working memory (Lonigan, 2009). At the same time, it has been demonstrated that academic skills requiring more complex coordination (e. g., writing comprehension) are more associated with conscious regulation (Bondarenko, Fomina & Morosanova, 2020). LCs in our model are represented by all four indicators, the most significant of which is Language Proficiency. Since it is made up of the high-level semantic indicators of the written language proficiency associated with stylistically and lexically correct sentence organization, we believe that Language Proficiency characterizes the so-called Sense of Language (language proficiency and ability to apply it depending on the situation, largely intuitively without relying on the formal rules knowledge (Bozhovich, 2016). It is important to note that EFs, contrary to LCs, do not directly contribute to the annual grade in the Russian Language in the middle and high school periods. Recently, Rutherford and colleagues came to similar conclusions (Rutherford et al., 2018). However, establishing EFs mediator contribution through LCs has theoretical and practical implications.

SR, Intelligence and Native Language Learning Success. Another contribution to determining performance in the native language is made by intelligence. It was found that, unlike mathematics, where intelligence plays a leading role in ensuring high grades, academic performance in the Russian language depends on intelligence to a much lesser extent. Bondarenko, Potanina, Morosanova (2020) have revealed that with an average and high level of the regulatory process of Conditions Modelling, an increase in the intelligence level leads to a decrease in writing mistakes. However, high intelligence with a low level of Modelling does not guarantee a decrease in errors. It may be the reason why we can observe similar effects in gifted students (Morosanova, Fomina & Bondarenko, 2015).

Limitations and Future Directions

Our findings concerning the regulatory feature of flexibility differ from those found by Allen, Snow, and McNamara: better writing is associated with higher flexibility, which, in its turn, is a function of individual differences associated with writing skills such as vocabulary and erudition (Allen et al., 2015). The results obtained in our study demonstrated that when it comes to regulatory flexibility, such an indicator of the cognitive level of conscious self-regulation as switching is of particular importance. The more efficiently a student switches from one task to another, the more syntax errors he makes. The study revealed the phenomenon of «excessive flexibility» leading to errors and reducing them – a deliberate slowdown in the pace of doing a task (requires further research).

Conclusions

The results of structural modelling gave us grounds for confirming the hypothesis on the regulatory predictors of academic performance in native language learning. Research results indicate a significant contribution of the conscious SR to academic achievement in the mother tongue. The study revealed that the basic neurocognitive level of self-regulation, represented by EFs, acts in two ways. On the one hand, EFs are primarily responsible for acquiring LCs in certain areas of native language learning. On the other hand, EFs are interconnected with the conscious SR of learning activity through which they indirectly influence academic performance as well. The results obtained can be used to create psychological interventions and teaching technologies aimed both at developing students' LCs and improving their conscious SR of the learning activity.

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Pedagogical Senses of Digital Learning ion the Context of the Covid-19 Pandemic: Case Studies of Several Eastern European Countries

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Abstract. In the context of the Covid-19 pandemic, teacher education at universities has faced great problems concerning the teaching-learning practice. Educational processes have become possible only with the help of digital technologies. The development of digital technologies and the new level of accessibility to educational resources have opened up new ways for teaching and learning and the creation of new didactic scenarios. The reopening of educational institutions after the Covid-19 is followed by many tasks that challenge the main actors in the teaching-learning process in a new way. The authors reflect on whether it makes sense for teachers and future teachers to continue learning how to work with digital technologies and create new learning formats for their students. In order to develop teacher education at universities and serious attention to digital didactics, not only the challenges but also the pedagogical senses of the Covid-19 pandemic need to be identified. The unconscious and «detached» perception of current digital transformations in educational policy, higher teacher education and school education hinders the development of teacher education at the university and decreases the role of the teacher in society. A comparative analysis of cases of teacher education from five Eastern European universities is used to address these goals. The analysis aims to examine the hypotheses stated with inductive reasoning.

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Педагогические смыслы цифрового обучения в условиях пандемии Covid-19: анализ кейсов отдельных восточно-европейских стран

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Аннотация. В условиях пандемии Covid-19 университетское педагогическое образование столкнулось с большими проблемами реализации процесса обучения. Образовательные процессы стали возможны лишь с помощью цифровых технологий. Вынужденное развитие цифровых технологий и новый уровень доступности к образовательным ресурсам открыли новые возможности для обучения и создания новых дидактических сценариев. Постепенное возобновление работы учебных заведений после начала пандемии Covid-19 сопровождается многочисленными задачами, которые бросают новый вызов основным участникам учебного процесса. Имеет ли смысл преподавателям и будущим учителям учиться дальше работать с цифровыми технологиями и создавать новые форматы обучения для своих будущих учеников? Для развития университетского педагогического образования и формирования осознанного отношения к цифровой дидактике нужно определить не только вызовы, но и педагогические смыслы пандемии Covid-19 как эпохального события в образовании. Неосознанное и «отрывное» восприятие актуальных цифровых трансформаций в образовательной политике высшего педагогического и школьного образования тормозит развитие педагогического университетского образования и снижает роль учителя в обществе. Для решения

поставленных целей используется компаративный анализ кейсов педагогического образования пяти восточно-европейских университетов. Анализ нацелен на проверку сформулированных гипотез с использованием индуктивного метода исследования.

Ключевые слова: педагогические смыслы пандемии, компаративный анализ, обучение в цифровом формате, цифровые компетентности, вызовы обучения в цифровом формате.

Исследование выполнено за счет средств Программы стратегического академического лидерства Казанского (Приволжского) федерального университета.

Научная специальность: 13.00.00 – педагогические науки.

Введение

Во всех университетах мира закончился третий семестр обучения в условиях пандемии Covid-19. Учитывая масштабы пандемии и время введения первого полного локдауна, можно поразиться скорости и масштабу введения цифрового преподавания и обучения, который на начальном этапе воспринимался как «запасной выход» из создавшейся чрезвычайной ситуации, получивший название «emergency remote teaching». Никогда еще меры по цифровизации образования не были так важны, а введение цифрового образования не проводилось так быстро. В течение нескольких недель были внедрены сценарии цифрового обучения, которые до пандемии рассматривались как возможность в преподавании, но не как необходимость. Следовательно, пандемия Covid-19 бросила вызов всей системе педагогического образования, поскольку реализация образования на всех ступенях обучения была возможна только в цифровом формате. Вопросы: «что означает обучение в цифровом формате», «эффективность обучения в цифровом формате», «факторы, способствующие реализации образования с использованием цифровых инструментов» побудили педагогическое сообщество переосмыслить категории времени и места обучения, оценить на практике уровень цифровых компетенций преподавателей. Опыт преподавания и обучения в цифровом формате в течение трех семестров позволяет сделать промежуточную рефлексию с точки зрения использования цифровых технологий преподавателями педагогического образования. Как показывает первичный анализ, в университетах, где созданы возможности пользоваться приложениями и доступны лицензии на программное обеспечение, преподавание было реализовано в режиме онлайн с учетом эффективности подготовки будущих учителей. В процессе цифровых занятий в большем объеме были реализованы задачи студенческого инициирования и поддержка автономных процессов обучения. Развитие самостоятельности в обучении студентов уже сегодня имеет большое значение в высшем и школьном образовании и особенно в университетском педагогическом образовании. При этом неосознанное и «отрывное» восприятие актуальных цифровых трансформаций в образовательной политике высшего педагогического и школьного образования тормозят развитие педагогического университетского образования и снижают роль учителя в обществе. В этой связи представляется важным определение новых педагогических смыслов цифрового образования в создавшемся конфликтогенном поле между новыми вызовами и традиционными формами обучения и преподавания. Необходима рефлексия преподавания и обучения, поскольку университетам предстоит планирование образовательной программы в контексте «неизвестности», исходя из опыта обучения в ситуации Covid-19 и учета критерия эффективности, опыт обучения в услови-

ях пандемии поможет развитию образовательных технологий с использованием цифровых сценариев, компетенций у преподавателей и их самооценке цифровых компетенций, а также определению роли и доли цифрового обучения в педагогическом образовании будущего.

Цель данного исследования – определение педагогических смыслов пандемии и цифровой дидактики, анализ вызовов преподавания в условиях пандемии Covid-19. С помощью индуктивного метода исследования необходимо проверить обоснованность следующих гипотез: (1) осознание педагогических смыслов преподавания в условиях пандемии поможет преодолеть принятие цифрового образования как временного, неприятного и конфликтогенного состояния в педагогическом образовании; (2) цифровая дидактика не заменяет образовательные технологии, являясь эффективным обогащением очного обучения. При этом значимость педагогических профессий повышается.

Для определения уровня развития цифровой компетентности преподавателей в университетском педагогическом образовании была использована модель цифровой компетентности, разработанной Европейской комиссией (DigComEdu, 2018).

Актуальность исследования заключается том, что в отличие от проведенных международных и национальных анализов образования в условиях пандемии Covid-19 (Arzhanova et al., 2020; Galazhinskii, 2020; Gafurov et al., 2020; Ivanova, 2021; Duschinská & High, 2020; Menter, 2021; Mizova et al., 2021; Vančura & Rokos, 2020) данное исследование сфокусировано на анализе университетского педагогического образования глазами преподавателей, активных участников процесса обучения «до» и «в условиях» пандемии Covid-19. Особую значимость исследованию придает выборка международных кейсов на примере избранных восточно-европейских университетов, а также задача определения не столько вызовов педагогического образования в условиях пандемии, сколько новых педагогических смыслов.

Материалы и методы исследования

В компаративном исследовании использованы теоретические методы анализа и синтеза, которые позволили выделить ключевые категории преподавания в условиях пандемии Covid-19 на примерах кейсов Технического университета Дрездена (Германия), Казанского федерального университета (Россия), Приднестровского государственного университета им. Т. Г. Шевченко (Приднестровье), Южночешского университета (Чехия), Софийского университета им. Св. Климента Охридского (Болгария). Участники исследовательской группы выбирались при соблюдении следующих принципов: владение русским как языком общения (уровень С); опыт преподавания педагогических дисциплин на педагогическом факультете до и во время пандемии; прямая причастность к педагогическому образованию пролонгированного характера. Использованные эмпирические методы (полуструктурированные анкеты, анализ университетских сайтов и групповая дискуссия) способствовали сбору качественных данных и их максимальной адаптации в контексте поставленных вопросов. Методологическими основаниями исследования являются дидактика взаимозависимости целей, содержания и способов обучения Хайманн (Heimann, 1976) и теория личностных смыслов Леонтьева (Leont'ev, 1999). Как научное понятие «смысл» используется в герменевтике, изучающей толкование и понимание текстов, эпохальных явлений. Обучение в условиях пандемии Covid-19 знаменует собой эпохальный разрез в истории педагогического образования на «до» и «после», который изменил формы и методы обучения. Методом герменевтической рефлексии исследовательская группа провела анализ учебного процесса в университетском педагогическом образовании в условиях пандемии Covid-19, чтобы сознательно регулировать развитие педагогического образования в процессе выхода из пандемии Covid-19. Для компаративного анализа интернациональных кейсов научная группа выделила следующие общие конструкты: (1) реализация цифрового обу-

чения в педагогического образования в условиях пандемии Covid-19; (2) определение общего уровня развития цифровых компетенций преподавателей педагогического факультета; (3) определение вызовов развития педагогического образования в условиях пандемии Covid-19; (4) осознание новых педагогических смыслов пандемии для дальнейшего развития педагогического образования.

Исследование проводилось в три этапа: (1) индивидуальный: каждый участник готовил письменный материал в виде кейса на уровне своего университета в контексте педагогического образования на основе своего личностного опыта, полуструктурированных анкет и изучения сайтов и практик цифровых сценариев; (2) кооперативный: проводили групповую дискуссию. Участники предоставили свой материал устно, он обсуждался 25 и 28 мая 2021 г. на двух семинарах экспертов в виде групповых обсуждений в формате видеоконференции. В ходе группового обсуждения были определены качественные категории анализа, обоснованные спецификой педагогического образования и выбора кейсов. Дискуссия имела саморегулирующий характер, была инициирована профессором Казанского федерального университета А. М. Калимуллиным и, в целом, осуществлялась участниками самостоятельно в ходе дискуссии и обсуждении докладов. Заключительный этап (3): индивидуально-кооперативный: письменные материалы были подвергнуты индивидуальной обработке для написания совместного текста.

В целях определения уровня развития цифровой компетенции преподавателей была выбрана шкала из трех категорий (DigComEdu, 2018), которая делится на шесть уровней (табл. 1).

Результаты

1. На данный момент времени в отдельных восточно-европейских университетах лекционные залы и семинарские аудитории все еще частично пустуют, но процесс педагогического образования реализован в новом качественном формате: лекции транслируются онлайн, видеосеминары, практические занятия проводятся и экзамены сдаются из «home-office» или «hybrid». Пандемия Covid-19 поменяла

Таблица 1. Уровни развития цифровой компетентности
Table 1. Levels of development of digital competence

Обозначение	Уровень	Краткое описание
Начальный ознакомительный	A1	Отсутствие или незначительный опыт работы с цифровыми платформами в социальных сетях и профессиональной деятельности
Практический	A2	Пунктуальное использование цифровой техники в профессиональной деятельности и в социальных сетях
Инсайдерский	B1	Использование цифровой техники в различных контекстах, освоение стратегий пользования цифровой техникой в социальных сетях и различных ситуациях
Экспериментальный	B2	Владение многообразием цифровых техник, постоянное освоение новых технических технологий, возможность оценки эффективности использования цифровых стратегий в социальных сетях и различных ситуациях
Лидерский	C1	Владение широким репертуаром стратегий с использованием цифровой техники в социальных сетях и профессионально, способность передавать знания, в различных ситуациях может выступать ментором для других
Экспертно-новаторский	C2	Развитие новых цифровых технологий в различных контекстах, дидактиках, пример для других

жизнь преподавателей и студентов и заставила освоить новые образовательные технологии и пространства. Для этого университеты участников научной группы используют следующие цифровые ресурсы (табл. 2).

2. Анализ ответов на вопрос «Ваши ориентиры в преподавании в условиях Covid-19 пандемии» показал, что общим и характерным для всех участников опроса является ориентация на студентов как основной принцип в организации преподавания. В таком случае можно предположить, что пандемия способствовала качественным изменениям в культуре преподавания, которые выражаются в трансформации фокуса преподавания и отказе от репродуктивной активности преподавателя в пользу увеличения студенческой активности, «Shift from teaching to learning» (Becker & Stang, 2020; Pasternak et al., 2018). Преподавательская активность в условиях пандемии Covid-19 сфокусирована на подготовку цифровой платформы общения, владения инструментами программы и создание интерактивной коммуникации в видеоформате. В связи с этим актуальным является вопрос мотивации развития цифровой компетентности у преподавателей и уровень развития автономного обучения у студентов. Оценивая уровень развития цифровой компетентности преподавателей на основе мониторинга самооценки, эксперты высказали единое мнение, что преподаватели педагогических факультетов в короткий срок значительно повысили уровень цифровых компетенций. Вместе с тем они отметили гетерогенность развития цифровых компетенций у преподавателей. Однако при мониторинге самооценки у многих преподавателей возникал вопрос по содержанию цифровых компетенций:

1) работа с информацией и грамотность в обработке информации;
2) интерактивный характер коммуникации и кооперации;
3) создание цифровых материалов;
4) безопасность и защита данных;
5) решение технических проблем.

Отсутствие широкого опыта по содержательным уровням цифровых компетенций или, например, использование программ, которые не лицензированы университетом, в целом осложнило определение самооценки цифровой компетентности у преподавателей. Особого интереса заслуживает дискуссия по теме разделения функций технического персонала и преподавателей в реализации цифрового образования. Следовательно, была выдвинута задача анализа понятия «цифровые компетенции», их соотнесенность с методическими компетенциями, чтобы определить горизонты дальнейшего развития цифровых компетенций преподавателей и студентов – будущих учителей с учетом университетской поддержки. Исследовательская группа сознательно отказалась от сравнения цифровых ресурсов университетов, так как сравнение не преследовало анализа предпринятых мер на институциональном уровне. В контексте обсуждения цифровых компетенций преподавателей важно было сформулировать новые тенденции развития педагогического образования будущего.

Таблица 2. Цифровые ресурсы для реализации педагогического образования
Table 2. Digital resources for the implementation of teacher education

Учебные платформы	Moodle, Opal, Opal Exam
Цифровые ресурсы	Zoom (частные лицензии), Zoom (институциональные лицензии без ограничения времени – ТУ Дрезден), MS Teams, Google Meet, Skype, BigBlueButton, Jitsi, GoTo-Meeting, E-Mail, Cloudstore, Dropbox, Facebook, Instagram, Whatsapp, Twitter
Расширение учебных ресурсов	бесплатный доступ к продуктам Microsoft Office 365; YouTube, электронный доступ к фондам библиотеки, автоматическое продление литературы и количественная неограниченность в выборе литературы на дом, медиотека и видеоресурсы

3. Для педагогического университетского образования в условиях пандемии Covid-19 были определяющими следующие вызовы (табл. 3).

4. Анализ международных кейсов преподавания и обучения на педагогических факультетах выдвинул новые смыслы терминов «образование» и «обучение» в условиях пандемии Covid-19 и их взаимозависимость от времени и места обучения. В качестве положительных следствий педагогического образования в условиях пандемии Covid-19 были отмечены: свободное планирование времени и места преподавания и обучения, положительная динамика посещения занятий (лекций и семинаров), виртуальная мобильность, возможность определения индивидуального темпа обучения, гибкость дидактических сценариев, использование обратной связи, повышение цифровой компетентности в использовании информационных технологий, апробация дидактических сценариев цифрового обучения (синхронное, а-синхронное); подготовка электронных лекций и пособий, интенсивность работы со студентами,

Таблица 3. Вызовы университетского педагогического образования
Table 3. Challenges for university teacher education

Уровень	Вызовы
Университета	в том числе привлечение талантливых специалистов, создание благоприятной среды для научного прогресса, обеспечение технической и квалификационной поддержки для профессорско-преподавательского состава и студентов, организация экзаменационных сессий и вступительных экзаменов, техническая оснащенность обслуживающего персонала, создание программных и управленческих баз данных и сервиса поддержки для дистанционного обучения, обеспечение электронных ресурсов и сохранности банка данных, увеличение объема письменной коммуникации
Педагогического факультета	в том числе подготовка виртуальных помещений для обучения и коммуникации, формирование цифрового самоопределения, обеспечение эффективности обучения и информационной доступности, адаптация учебных материалов, обсуждение дидактических сценариев обучения с учетом предоставленных электронных ресурсов (а-синхронное обучение, синхронное обучение, смешанное обучение), организация курсов с целью развития цифровой компетентности для преподавателей и студентов
Преподавания (преподаватели)	в том числе разработка цифрового сценария занятия, гетерогенный уровень цифрового самоопределения преподавателей, неоднородный уровень технической оснащенности преподавателей, разный уровень владения навыками работы с электронными ресурсами и использование IT-технологий, адаптация авторских курсов для электронных ресурсов; выбор, планирование и осуществление цифрового обучения, планирование объема заданий и проверочных и экзаменационных работ, организация межсетевого сотрудничества и реализации практики в школе, проведения экзаменов, ослабление отношений со студентами
Обучения (студенты)	в том числе разный уровень технической оснащенности (отсутствие камеры, качественный интернет), ограниченный доступ к бесплатному интернету в домашних условиях и неоднородное качество интернет-соединения, разный уровень владения навыками работы с компьютером (при высокой компетентности работы с телефоном отмечается дефицит работы с компьютером), прохождение школьной практики в дистанционном формате, адаптация различных цифровых платформ при посещении различных курсов, сложность понимания и выполнение практических и лабораторных работ на расстоянии, увеличение объема заданий, индивидуальное планирование учебного и свободного времени, формирование автодидактических навыков обучения и своего стиля самообразования, ослабление социальных связей на уровне студенчества

имеющими проблемы со здоровьем, увеличение возможностей индивидуальной работы со студентами и коллегами; законодательное введение мобильности работы и гибкости рабочего времени, расширение электронных ресурсов в университетской библиотеке.

В этом контексте были сформулированы следующие выводы:

(1) Термин «образование» в цифровом формате выводит на понимание его как структуры знаний, связанной с системой смыслов. В таком случае «образование в цифровом формате» обозначает структурное смыслообразующее самодвижение индивидуума, которое стимулируется системой и отношениями извне, но которое затем происходит как внутреннее качественное развитие, как автономный процесс внутреннего присвоения структуры знаний во взаимодействии с внешней культурой.

(2) Принятие термина «обучение» как открытие, познание и освоение нового и чужого знания подчеркивает значимость введения цифрового образования в условиях пандемии Covid-19, которое позволяет естественным путем создать горизонт относительной «незнакомости». В этом смысле образовательная работа, связанная с производством «не-знаний», т. е. с созданием интерфейсов к системно-структурным знаниям, которые еще не освоены, мотивирует не только педагогическое сообщество, но и всех граждан планеты к самообучению.

(3) Исходя из тезиса, что деятельность учителя направлена на передачу знаний, которые пользуются не только спросом, но и обеспечением доступа к возможностям обучения и сопровождения процессов обучения, которые на уровне индивидуума либо частично, либо еще не использованы, цифровое обучение обозначило новые темы развития педагогического исследования. Важным является в том числе исследование, насколько цифровые технологии, расширяя доступ к знаниям, включают в себя наблюдение и рефлексию и какова роль учителя в этом процессе.

(4) Эксперты единодушно признали факт, что успех образования в условиях пандемии лишь частично можно объяснить наличием или отсутствием технических проблем. Чаще всего эффективность образования зависит от отсутствия или признания деятельности учителей, качества общения и их трудностей, (не)ясных заданий, (отсутствия) культуры сотрудничества, наличия конкурентности и отсутствия или наличия доверия в процессе общения. Анализ педагогического образования в условиях пандемии Covid-19 вывел на признание важности нравственных ценностей, так как в педагогике обмен знаниями происходит в контакте людей, в данном случае с помощью техники. Но техника не заменит учителей в школе. Ректоры университетов и директора школ задаются одним вопросом, как и где они могут найти и удержать преподавателей и учителей, которые знают и умеют учить. Преподаватели, способные адаптировать новые технологии, в будущем будут работать только там, где их ценят, там, где им доверяют. Поэтому планирование трансформации педагогического образования лишь путем цифровизации не решает проблемы качества образования, в частности педагогического. В любой трансформации нужно увидеть смысл. Действительно впечатляющая составная цифровизации образования – это то, что она направлена на людей и общественные ценности. Цифровой формат образования возвращает нас к конкретным школьникам, студентам, коллегам, подчеркивая важность педагогизации учебной среды и общества. В условиях пандемии Covid-19 преподаватели работали в усиленном режиме, и инновационные технологии обучения сегодня плавно переходят в разряд традиционных. Если цифровой формат образования рассматривать с позиции повышения эффективности в процессе обучения, возникает новый смысл в использовании цифровых технологий после пандемии Covid-19, в осознании качества преподавательского сопровождения.

Заключение

В результате текущих социально-политических и образовательных событий преподаватели педагогических дисциплин

сталкиваются с различными вызовами, которые, как показал анализ, характерны для всех университетов – участников международной научной группы. Для развития глобальной педагогической среды были определены важные интернациональные задачи, которые обобщены в следующих целях развития педагогического образования в международном контексте: 1) развитие индивидуальности и кооперативного взаимодействия участников педагогического образования с с учётом возможностей цифровых технологий. Как показал анализ групповой дискуссии, участники педагогического образования уже сейчас неоднородны по своему составу. Следовательно, необходимо после пандемии не сужать, а создавать «гибкие» с точки зрения времени и места технологии, учебные сценарии с помощью цифровых учебных ресурсов, учитывая возможности как самостоятельного обучения, так и группового. Такая реализация индивидуальных и интерактивных процессов обучения для будущих педагогов поможет повысить значимость педагогических профессий и создания эффективного глобального педагогического образования. Отдельного рассмотрения заслуживает вопрос о количестве и качестве знаний и их сознательной переработке и структурировании преподавателями для очного и цифрового формата. (2) Для этого необходимо оказывать активную поддержку преподавателям в их развитии цифровой дидактической компетентности, чтобы они имели возможность самостоятельно планировать и реализовывать цифровые сценарии преподавания, совмещая теорию и практику в образовании будущих учителей, что в свою очередь способствует преподаванию, ориентированному на педагогическое исследование и, в частности, обогащение дидактических сценариев. (3) Педагогическое образование, организованное с цифровой поддержкой, поможет созданию модели «открытого» образовательного пространства, не отказываясь от очного формата, а лишь при изменении категории места и времени обучения, которое способствует развитию интернационализации педагогического образования и реализации учения на протяжении всей жизни. (4) Подведя промежуточные итоги, можно утверждать, что пандемия Covid-19 вызвала ситуацию стресса в образовании (Nikandrov, 2021; Zinchenko et al., 2021). Преподаватели и студенты вынуждены были выйти из зоны комфорта, что, однако, способствовало резкому качественному развитию образования в мире. (5) Компаративный анализ международный кейсов показал общность проблем, вызовов и педагогических смыслов пандемии. Различия на институциональном и социально-политическом уровнях оказывают влияние на качество и эффективность реализации цифрового образования. Осознание релевантности цифрового образования в условиях пандемии Covid-19 содействует формированию нового отношения к цифровым сценариям. Опыт преподавания в условиях пандемии Covid-19 можно и нужно использовать дальше в подготовке учителей, чтобы обучение в классной комнате становилось более гибким, современным, профессиональным и экологичным. Цифровое и гибридное обучение, форматы «смешанного обучения» или «перевернутого класса» необходимо использовать и дальше, так как это позволяет развивать методические и личностные компетенции, не отказываясь от формата очной школы как места педагогической встречи учащихся и учителей и как основного образовательного учреждения. Следовательно, введение и развитие цифрового образования должны стать не временным периодом в развитии дидактики обучения, а одной ее составляющей, направленной на интеграцию педагогических инноваций и обеспечение устойчивости образовательного процесса и эффективности педагогического образования в будущем, без отказа от формата личного контакта в педагогическом и школьном образовании. (6) Вопросы трансформации профессии «учитель» и эффективности преподавания и обучения в цифровом формате требуют новых исследований по теме цифрового самоопределения преподавателя-учителя и студентов-учащихся. Какие возможности развития

цифрового самоопределения для развития автономности обучения предлагают университетские программы подготовки учителей, предстоит проанализировать международному педагогическому сообществу в ближайшем будущем.

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Promotion of Social Values Among Young People as a Pedagogical Ideology (a Case Study of Russia and Kazakhstan)

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Abstract. The article deals with the promotion of national values among students in the context of pedagogical ideology. The authors are convinced that the understanding of ideology is not limited to politics and standards of sociality. In their view, ideology is broader than a means of legitimizing power claims or political expansion, it means having a core value. In the pedagogical context, ideology is a set of social and pedagogical values for building the desired society. In this context, the promotion of social values among students is a systematic set of tools for the realization of pedagogical goals and the formation of social ideals.

In the era of globalization, social values are undergoing a significant rethinking. In this context, the problem of promoting universal and national values should be solved in their dialectical unity. In this regard, the authors of the given article have conducted a comparative study of the level of involvement in social values among representatives of universities in Russia and Kazakhstan. The authors have a little deeper outlined the features of the formation of social values in Kazakhstan, in which nowadays a system of social values has been set at the national level, which was set out in the program article of the First President of Kazakhstan, Nursultan Nazarbayev, «Looking to the future: modernization of public consciousness». This program, known as the «Rukhani Zhangyru» spiritual revival program, was launched in 2017. But so far, the values of the «Rukhani Zhangyru» program have not been given a pedagogical interpretation that would allow us to present a holistic conceptual picture of their promotion in the university environment.

This is evidenced by a number of studies, including the study and analysis of various publications in the media (mass media, central and regional newspapers), a survey among

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teachers and students of a number of universities in Russia and Kazakhstan. The results of these studies, detailed in this article, allowed the authors to draw conclusions about the feasibility of developing a holistic concept for promoting the values of the «Rukhani Zhangyru» program in the university environment. Meeting the requirements of the pedagogical ideology, the proposed concept can be applied in any university in Russia and Kazakhstan with a certain degree of its adaptation to the specific conditions of each individual university.

Keywords: spiritual revival, student youth, university environment, social and pedagogical values, promotion of values, pedagogical ideology.

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Продвижение социальных ценностей в молодежной среде как педагогическая идеология (на примере России и Казахстана)

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Аннотация. Рассмотрены вопросы продвижения общенациональных ценностей среди студенческой молодежи в контексте педагогической идеологии. Авторы убеждены в том, что понимание идеологии не сводится к политике и стандартам социальности. По их мнению, идеология шире, чем средство легитимации властных претензий или политической экспансии, она означает наличие основной ценности. В педагогическом же контексте идеология есть набор социальных и педагогических ценностей для построения желаемого общества. В этом ключе продвижение социальных ценностей среди студенческой молодежи представляет собой системную совокупность средств для реализации педагогических целей и формирования социальных идеалов.

В эпоху глобализации социальные ценности претерпевают значительное переосмысление. В этом контексте проблема общечеловеческих и национальных

ценностей должна решаться в их диалектическом единстве. С таких позиций авторы провели сравнительное исследование уровня приобщенности к социальным ценностям представителей университетов России и Казахстана. Чуть подробнее авторы изложили особенности формирования социальных ценностей в Казахстане, где сегодня на национальном уровне задана система социальных ценностей, которая была изложена в программной статье Первого Президента Казахстана Нурсултана Назарбаева «Взгляд в будущее: модернизация общественного сознания». Данная программа, известная как программа духовного возрождения «Рухани жаңғыру», стартовала в 2017 году, но до сих пор ценностным установкам программы «Рухани жаңғыру» не дана педагогическая интерпретация, которая позволила бы представить целостную концептуальную картину их продвижения в университетской среде.
Об этом свидетельствует ряд исследований, в числе которых изучение и анализ различных публикаций в средствах массовой информации (СМИ, центральные и областные газеты), опрос преподавателей и студентов ряда университетов России и Казахстана. Результаты исследований, подробно изложенные в данной статье, позволили авторам сделать выводы о целесообразности разработки целостной концепции продвижения ценностных установок программы «Рухани жаңғыру» в университетской среде. Отвечая требованиям педагогической идеологии, предлагаемая концепция может быть применима в любом вузе России и Казахстана с определенной долей ее адаптации к конкретным условиям каждого отдельно взятого университета.

Ключевые слова: духовное возрождение, студенческая молодежь, университетская среда, социальные и педагогические ценности, продвижение ценностей, педагогическая идеология.

Статья подготовлена в рамках научного проекта AP08957310 Механизмы и стратегии продвижения ценностей «Rukhani Zhangyru» в высших учебных заведениях Казахстана при грантовом финансировании Министерства образования и науки Республики Казахстан.

Научная специальность: 13.00.00 – педагогические науки.

Introduction and literature review

Perhaps it is difficult to find a person in Kazakhstan who does not know or have not heard about the «Rukhani Zhangyru» program («Rukhani Zhangyru» program). Being aware of something, a person, as a rule, builds and shows their attitude to the subject of their awareness in a certain way.

Concerning the «Rukhani Zhangyru» program, we can safely state the ambiguity of emotional reactions, contradictory attitudes to this idea, and sometimes polar opposite opinions: if some consider it a blatant profanation, then others take a very serious part in the practical implementation of subprograms and projects. In general, the palette of emotions and relationships is very rich. This is connected, in our opinion, with the system of personal values of each person, their inner world, the strength of their faith and hope, positive or negative attitude, etc.

Therefore, in real everyday life, we often see outright attempts by many managers to pass off their regular work (festivals, sports competitions, and much more) as work on «Rukhani Zhangyru». We pay special attention to the fact that in addition to being a bit far-fetched, these are also one-time events designed for a fairly narrow range of interests. Of course, we cannot say that this is a total practice, there are also deep, well-thought-out projects.

The implementation of the Program concerns directly every citizen of Kazakhstan. This is its scale and complexity. Interpreting

the Program from the standpoint of pedagogical ideology, we focused our research on the problems of practical implementation, more precisely, the promotion of its values in the student environment. At the same time, we are convinced that ideology is not limited to politics and standards of sociality, it is broader than a means of legitimizing power claims or political expansion, and means the presence of a basic value. In the pedagogical context, ideology is a set of social and pedagogical values for building the desired society. In this context, the promotion of social values among students is a systematic set of tools for the realization of pedagogical goals and the formation of social ideals.

Theoretical framework

The theoretical foundations of the study are the definitions of the basic concepts. Among them: «Spiritual revival», or the program «Rukhani Zhangyru», «Social values», «Pedagogical values», «Pedagogical ideology».

Spiritual revival or the program «Rukhani Zhangyru»

The program «Rukhani Zhangyru» is already in its fourth year (On the approval of the Roadmap …; Methodological guide for the implementation of the Program…). The deadline is considerable, so there are reasons to look at the Program from today's point, stop for a while, look back and think about further actions. At the same time, it is important to decide which further direction to take: either along the path of a modern civilized society with the preservation of national culture, or along the path of developing national consciousness, rejecting everything new in favor of the original. We believe that the first option is more appropriate. One should start their journey with a conceptual, holistic understanding of program ideas. If we approach it from these positions, then the essence of the Program can be stated in three dimensions: continuity, consistency, and complexity.

The first one, i. e. continuity, means that the Program is a logical and qualitatively new continuation of «Mangilik El» ('Eternal nation') (Sem' printsipov Mangilik El…, 2014) patriotic act, i. e. the idea of «Rukhani Zhangyru» is not the fruit of blind chance, but is a product of common sense. Moreover, this advanced idea of modernizing the public consciousness of Kazakhstanis is subsequently supported by a program for preservation and development of the cultural code. We are talking about «Seven faces of the Great Steppe» program (Nazarbayev, 2018). We tend to see in this not a political curtsey towards the avant-garde or conservative part of the Kazakh community, but an attempt to respond to the global challenges of our time, which can be summarized as follows: today the world needs not so much knowledgeable, but thinking people who are able to think creatively and positively, act in the name of creation, self-development and self-learning.

The second dimension, i. e. consistency, demonstrates the presence of two parts in «Rukhani Zhangyru» program: theoretical and practical. The first of them proclaims six principles of modernization of public consciousness (Competitiveness. Pragmatism. Preservation of national identity. The cult of knowledge. Evolutionary, not revolutionary, development of Kazakhstan. Openness of consciousness). These principles are relevant for the spiritual revival of Kazakhstan right now, in the era of the fourth industrial revolution. Other times require other principles. For comparison, Sultan Baibars (Sultan Baibars) in the 13th century turned Egypt into a powerful nation, guided by the principles of the warrior.

The practical part of the program, consisting of six social projects (Gradual transition of the Kazakh language to the Latin script, «New humanitarian knowledge. 100 new textbooks in the Kazakh language», «Tugan Zher» ('Motherland'), «Sacred geography of Kazakhstan», «Modern Kazakh culture in the global world», «100 new faces of Kazakhstan»), is a logical continuation of the conceptual block.

Finally, the third dimension is complexity. The program is a logical set of 4 subroutines, 6 special and more than 10 basic projects.

Social values

The most recognized definition of this concept is the version given in dictionaries, in which it is interpreted in a broad and nar-

row sense. In the first case, social values are understood as the significance of phenomena and objects of real reality from the point of view of their compliance or non–compliance with the needs of society, a social group, or an individual, and in the second, as moral and aesthetic requirements developed by human culture and are products of public consciousness. In this interpretation, it correlates with the term «social norms», which is understood as standards of activity and rules of behavior, their implementation is expected from a member of a group or society and is supported by sanctions. In addition, social norms regulate social interactions.

Especially significant for us is the opinion of O. V. Bondarenko (Bondarenko, 1998) on the division of social values into two types: terminal (universal, i. e. universal, general social, i. e. socially integrative), and instrumental (traditional and modern). If the first of them perform the role of the unifying «core», then the second perform the differentiating role. It is this position of the scientist that is directly related to the values of the Rukhani Zhangyru program.

Pedagogical values

The study of the problem of pedagogical values and their classification are devoted to the work of S. G. Vershlovskii (Vershlovskii, 1990), I. F. Isaev (Isaev, 1993), E. N. Shiyanov (Shiyanov, 1991). Scientists offer classifications of pedagogical values on different grounds. However, the interpretation of the concept of «pedagogical values» is more important for us. T. Yu. Katricheva (Katricheva, 2004) judging by the research data, believes that values reflect a socially determined and fixed orientation in the personality's psyche towards the goals of activity and the means to achieve them. The essence of this idea in the projection on pedagogical values allows to understand them as the values of a teacher, teaching staff, as well as the generally accepted human values that serve as guidelines in professional activity (Nezdaiminova, 2019, Bolotova, 2016). For our study, these positions mean that in order to promote the values of the «Rukhani Zhangyru» program in the student environment, they must necessarily become the values of the teacher and teaching staff, since it is teachers who are professional agents of socialization of children and youth.

Pedagogical ideology

The concept of ideology is usually identified with politics, with the political form of its existence. But today, both in science and in social practice, there is a clear tendency to overcome this identification. Without subjecting the presence of politics in the field of education to polemics, and recognizing the interest of political power in the implementation of pedagogical goals, «projects» and ideas, following Letyagin L. I., we tend to consider pedagogical ideology «as a system of views, ideas, values, meanings of a certain social group as 'ultimate', 'final' (Letyagin, 2014). At the same time, let us note that in pedagogy, not everything depends on ideology. But it is extremely important for us to recognize that any ideology develops around values. Taking into account the above definitions of social and pedagogical values, by «pedagogical ideology» we mean a set of these proposed for implementation and reproduction. At the same time, we agree that pedagogical values cover not only the content and goals of education, but also the methods, means and technologies of their implementation (Pantyukhin, 2014). In this aspect, the values of the «Rukhani Zhangyru» national program in their essence fully correspond to the social and pedagogical values of the modern Kazakh community. Therefore, there are full grounds to consider the promotion of value attitudes in the educational environment, including the university environment, as a pedagogical ideology. In particular, in the field of higher education, the pedagogical ideology is projected, first of all, into the ideology of high qualifications, since in modern conditions their absence guarantees a low social status. «For many, especially those who perform unskilled or low-skilled work, this work is hard, stupefyingly boring, tedious, monotonous and leads to degradation» (Gouldner, 2003). Self-improvement and self-realization in these conditions are unlikely to happen.

Methodology

To achieve the goal of our research, we used the method of a sociological survey, as well as interviews and survey of participants to clarify individual questions and strengthen conclusions.

The conducted online survey was aimed at identifying the degree of involvement of students and teachers of a number of Kazakh universities in the values that were identified as the main guidelines for the modernization of public consciousness. The survey was conducted using the anonymous questionnaire method, which guarantees the confidentiality of the responses. Before the Google form of this survey was launched, the questionnaire was tested in one of the universities in order to check the validity and optimality of the volume of questions, the correctness and brevity of their wording. Respondents were given the opportunity to choose the language of the questionnaire: Kazakh and Russian. Therefore, the survey allows to compare the responses of Kazakh- and Russian-speaking respondents. Here, one feature should be also noted: Kazakh language is usually chosen by Kazakhs in Kazakhstan, while Russian language is chosen by representatives of all other Kazakhstani ethnic groups (there are more than 130), including Kazakhs, since there are many Russian-speaking people among them. Our research does not pursue the direct goal of studying the ethnic aspects of the problem under consideration, but the results of the survey can be considered in terms of ethnopedagogy and ethnopsychology. In other words, we see this as promising for our research, which is important for the development of certain scientific areas. In addition, the survey was organized in such a way that we had an opportunity to draw another comparative line: the responses of students and the responses of teachers. This gives a more detailed picture for a verified generalization of the information received.

Compiling the questionnaire, methodological errors were eliminated as much as possible, so there are grounds to say that the information received will not be distorted. The questions were compiled in such a way as not to complicate the technological procedures for collecting and processing the flow of information.

Eight questions of the questionnaire out of 9 were of closed type, while one question was aimed at ranking:

1. In your opinion, is education the main factor of your success?

2. Who do you consider yourself in the first place?

3. Rank the factors of personal competitiveness from 1 to 6 (where 1 is the minimum important factor, and 6 is the most important factor)

4. «Are the following aspirations typical for you?»

5. Are you familiar with the Program Article of the President of the Republic of Kazakhstan «Looking to the future: Modernization of public consciousness»?

6. Are you aware of the projects implemented within the framework of the «Rukhani Zhangyru» program?

7. Do you think that knowledge of these projects contributes to changing the public consciousness of Kazakhstanis?

8. Do you think that the state policy conducted in Kazakhstan contributes to the formation of interethnic harmony and tolerance of young people?

9. In your opinion, which of the above factors can contribute to the progressive development of Kazakhstan in the near future?

When launching the online survey, the sample population was representative due to the fact that the respondents included students and teaching staff of four Kazakh universities from three regions: northern, western and central Kazakhstan, as well as two universities of the Russian Federation (one federal and one private).

Results and discussion

The number of respondents was distributed as follows (Table 1):

At the same time, more than half of the survey participants were Russian-speaking respondents (54.7 %), and the group of respondents from among students (89.0 %) also dominates: teachers in the survey were less active (Fig. 1).

Table 1. Information about respondents

Conditional name of the university	Questionnaire language	Total respondents	Students		Teaching staff	
			number	proportion	number	proportion
A (Western Kazakhstan)	kaz	0	0	0	0	0
	rus	126	79	62.7	47	37.3
B (Central Kazakhstan)	kaz	134	128	95.5	6	4.5
	rus	107	99	92.5	8	7.5
C (Northern Kazakhstan)	kaz	66	63	95.5	3	4.5
	rus	290	266	91.7	24	8.3
D (Northern Kazakhstan)	kaz	927	848	91.5	79	8.5
	rus	840	733	87.3	107	12.7
TOTAL	kaz	1,127	1,039	92.2	88	7.8
	rus	1,363	1,177	86.4	186	13.6
	total	2,490	2,216	89.0	274	11.0

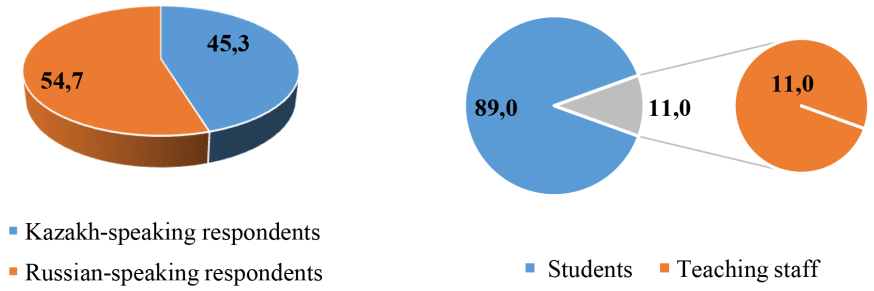


Fig. 1. Information about Kazakhstani respondents (in Russian) in proportion

The study on the Russian perspective involved respondents studying at the second stage of higher education – the master's level. The overwhelming majority of respondents major in the humanities and belong to various age categories from young people (22–35 years old) to elderly people (49–56 years old). Overall, 77 respondents from Russia took part in the Google survey. The sample is considered representative.

The first question of the questionnaire was introductory and was aimed at identifying the respondents' attitude to higher education. If we take into account that all the survey participants are studying at universities, then some confusion is appropriate, since 18.6 % of respondents do not consider higher education as the main factor of their success in life (Fig. 2). At the same time, the teachers' responses were quite predictable: the share of teaching staff who answered this question positively is higher than in the same group of respondents from among students (91.9 %:80.2 % = 0.9:0.8). It should be noted that, judging by the answers to this question, a more focused study of the situation where higher education in the system of personal values is more demonstrated by Kazakh-speaking respondents (85.9 %:76.5 %) is required.

A comparative analysis of the answers of Russian respondents shows a significant difference, since only slightly more than half of the respondents (58.4 %) associate their success with having a higher education diploma, while the share of negative answers to this question was 26 % (Fig. 2.1).

Due to the discovered difference, we conducted an express interview with teachers and

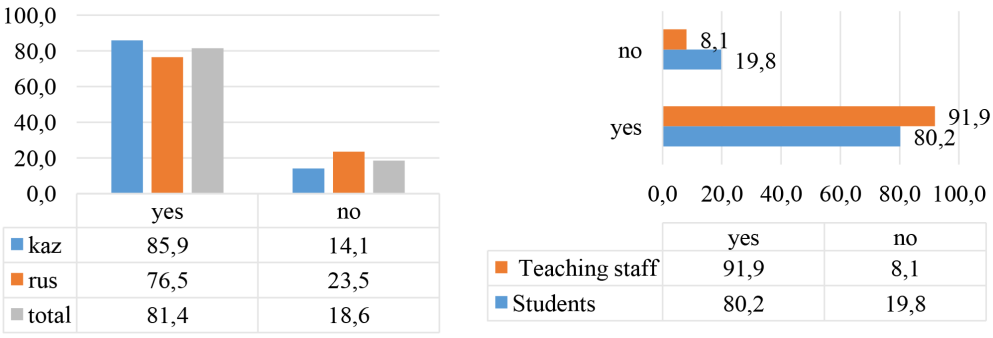


Fig. 2. Percentage of Kazakhstani respondents' answers to the question «Do you think education is the main factor of your success?»

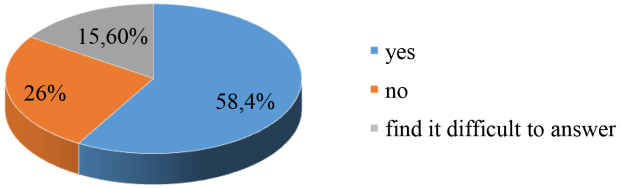


Fig. 2.1. Answers of Russian respondents to the question «Do you think education is the main factor of your success?» (in %)

scientists who did not raise much concern, explaining this by the fact that today many of the respondents have undergone various advanced training and retraining courses, expanding the range of soft competencies formed in the framework of formal education. The need for lifelong learning in the Life Long Learning paradigm indicates that traditional higher education is experiencing a crisis at the present stage of society's development and is entering competition for consumers of high-quality educational content with non-formal and informal education provided by various stakeholders.

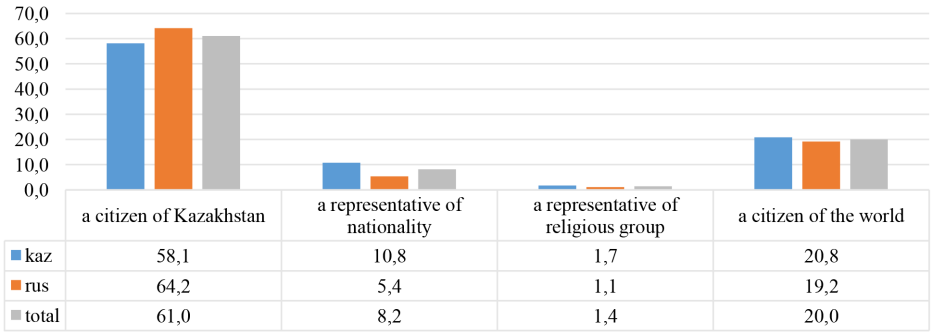
Respondents who found it difficult to answer the given question are still pondering on its exclusivity in order to build successful horizons for the future.

In our opinion, it is necessary to correct the question asked in order to clarify what kind of higher education we are talking about: the second, postgraduate (master's degree, in particular), postgraduate (advanced training) or about higher education as the only (not just basic) factor of success.

In general, we can talk about a general tendency of a decrease in demand for only a higher education diploma due to its non-recognition as the only condition for achieving success. It can be assumed that the existential meaning of success for university representatives is associated with deeper components of the success of a modern person (family, friends, work, money, love, leisure).

The next question of the questionnaire was aimed at identifying the degree of social self-identification of university students and teachers, which in many respects is a key position for the development of public consciousness of Kazakhstanis and determines their commitment to national values. Here, we interpret the picture as favorable, since the majority of respondents (61.0 %) consider themselves a citizen of Kazakhstan (Fig. 3).

The possibility of choosing several or additional answers (9.3 % of respondents call themselves mainly a person, a free person, an individual\a human) allows us to judge the prevalence of civil self-identification in the minds of students and university teachers, the



	a citizen of Kazakhstan	a representative of nationality	a representative of religious group	a citizen of the world
kaz	58,1	10,8	1,7	20,8
rus	64,2	5,4	1,1	19,2
total	61,0	8,2	1,4	20,0

Fig. 3. Percentage of Kazakhstani respondents' answers to the question «Who do you consider yourself in the first place?»

perception of Kazakhstan as a common home for representatives of various faiths and more than a hundred Kazakh ethnic groups.

At the same time, Russian-speaking respondents show less commitment to their ethnic roots (5.4 %:10.8 %).

Kazakh-speaking respondents, as it turned out during the interview (in addition to the survey, we conducted an interview on this issue, since the phenomenon of personal identity itself, according to experts in the field of the fourth industrial revolution (Schwab, 2016), is undergoing a certain transformation in the modern world), there is a variety of identities: many representatives of this group of respondents, perceiving their homeland as a common home for all citizens of Kazakhstan, also choose their ethnic group as a reference.

Regarding the fact that a fifth of the respondents (20.0 %) consider themselves to be citizens of the world: this question was also asked during the interview. The opinions of the interview participants coincided in terms of what they mean by this concept. They are unanimous in the opinion that «a citizen of the world is the one who, first of all, sees himself not as a representative of any state, tribe or people, but as a representative of the human race, and the one who is ready to act on the basis of these beliefs to find solutions to the most complex world problems (Hugh Evans…, 2016). In essence, these are global problems, and they can only be solved with the participation of the world's citizens, who demand global solutions from their leaders» (On the approval of the Roadmap…). Based on this, this indicator (20.0 %) can be interpreted as a positive self-identification. As a positive trend, we can also note the indicator of respondents' adherence to a certain religious group, since their share tends to a minimum of 1.4 %. In the context of a comparative analysis of the responses of teachers and students, data on the self-identification of respondents with world citizens showed that the older generation of Kazakhstanis is more conservative and pragmatic about the possibilities of solving problems at the global level (Fig. 3.1)

University teachers identify themselves as citizens of Kazakhstan to a greater extent than students (71.5 %:59.8 %), but the ethnic identity is demonstrated by an almost equal share of teaching staff and students (8.1 %:8.2 %).

In general, understanding self-identification as a stable identification with any (large or small) social group or community, acceptance of its goals and value system, awareness of oneself as a member of this group or community (The meaning of the word «self-identification»…), we believe that the respondents' answers to this question of the questionnaire show a positive trend for Kazakhstan, when one of the values of the modernization of public consciousness is the preservation of national identity. The essence of this value is that «the concept of spiritual modernization implies changes in the national consciousness. There are two points here. First, it is a change in the national consciousness. Second, it is the preservation of the inner core of the national «self» while changing some of its features»

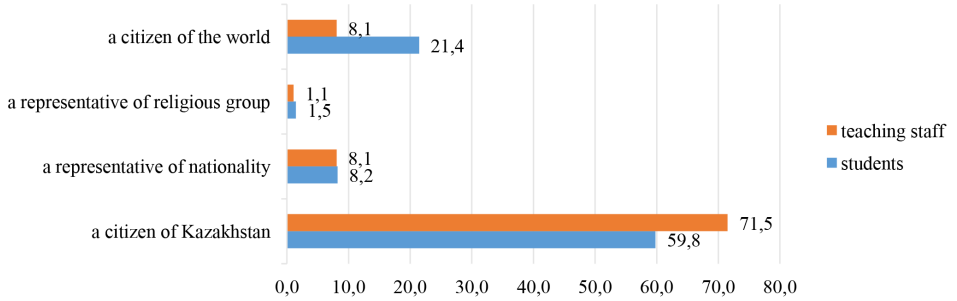


Fig. 3.1. Percentage of Kazakhstani respondents' answers to the question «Who do you consider yourself in the first place?» (comparative aspect: teachers/students, in particular)

(Nazarbayev, N.A., 2017). In other words, the modernization of public consciousness, or spiritual revival, carried out in Kazakhstan should not be considered as a transition from a national model of development to a single, universal one. The fact is that different regions and countries, as practice shows, have worked out their own development models, and national roots and national spirit are the determining factors.

Regarding the answers of the Russian respondents, it can be noted that only one third of the respondents consider themselves to be citizens of Russia. This actualizes the need for deeper research into the national and civic identities of students studying at Russian universities.

A quarter of the respondents consider themselves to be citizens of the world, which may indicate a new perception of borders, openness of education in the context of digital transformation, and globalization of the information space in the minds of this group of respondents.

The factor that unites social groups regardless their ethnicity is adherence to religion. Almost a quarter of the respondents showed themselves as representatives of a particular religion. This testifies to the presence of religious preferences and manifestations of faith in society.

The indicator of perceiving oneself as a representative of one's nationality was revealed in a small part of the respondents, only 16 %. This is a rather low indicator of ethnic identification, which indirectly correlates with the results of previous sociological studies among students, which showed the predominance of Russian identity over national identity in the minds of young people.

Along with this, only 1 % of the respondents perceive themselves as just a person, which indicates the practical absence of this category in self-awareness (Fig. 3.2).

The next question of the questionnaire was related to the understanding of the competitiveness of an individual and was aimed at identifying the most important, in the opinion of respondents, qualities of such a person. The study of a number of scientific works, the analysis of the definitions that were given by researchers to this concept, allowed us to identify the following qualities necessary for the competitiveness of the individual: 1) timely achievement of the final result; 2) sociability, ability to cooperate; 3) stress resistance, ability to overcome difficulties; 4) working capacity, ability to professional growth; 5) knowledge of foreign languages; 6) computer literacy.

We identify the first four qualities basing on the unanimous opinion of experts in the field of becoming a competitive personality, where the most significant are orientation to a socially significant result of activity and responsibility for it; conscious focus of the individual on a certain result, the ability to set clear goals and follow them in the activity; awareness and value attitude to the social significance of the result of the activity, as well as ensuring its achievement on their own.

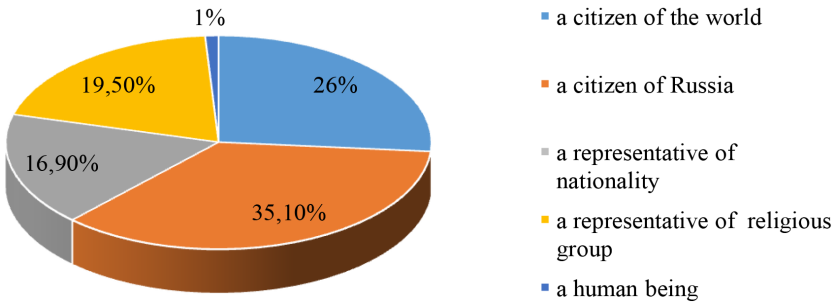


Fig. 3.2. Answers of Russian respondents to the question «Who do you consider yourself in the first place? (one choice)»

The main mechanism for achieving this goal, according to the researchers, is communication. Therefore, for the competitiveness of a person, the ability to act taking into account the interests, goals, and characteristics of those with whom they interact is very important. Therefore, we have identified such qualities as sociability and the ability to cooperate.

Stress tolerance, the ability to overcome difficulties, in our opinion, are the guarantee of successful adaptation of a person in the «no comfort» zones, which are characteristic of the modern world of instability, uncertainty, complexity and ambiguity.

Moreover, for a successful and adequate competition, a person, of course, needs to develop such qualities as efficiency and the ability to advance professional growth.

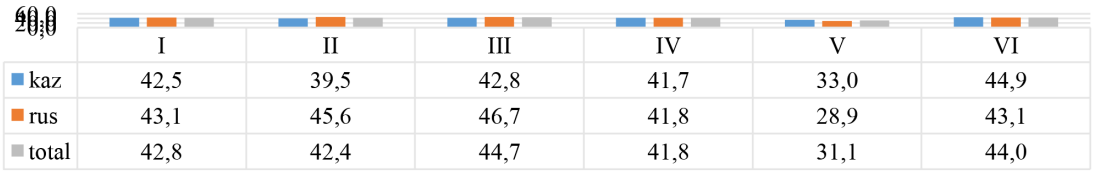
We firmly believe that the last two qualities are necessary for the formation of a competitive personality in the context of the general trends in the development of modern Kazakh society. Almost none of the available scientific sources mention these qualities directly, unambiguously and so specifically, but for the successful implementation of professional activities in the realities of the Kazakh labor market, they are of lasting importance.

Before testing the questionnaire that we developed, this question assumed the choice of other qualities that indirectly affect the competitiveness of a person. But the analysis of the results of the approbation confirmed us in the opinion that it will be enough to indicate the six above-mentioned factors of personal competitiveness in the answers to this question.

Therefore, we present an analysis of the answers to the question «Rank the factors of personal competitiveness from 1 to 6 (where 1 is the least important factor, and 6 is the most important factor)». In Figures 4 and 4.1, these factors are conventionally indicated by numbers: I-efficiency, ability to professional growth; II-sociability, ability to cooperate; III-stress resistance, ability to overcome difficulties; IV-timely achievement of the final result; V-knowledge of foreign languages; VI-computer literacy.

According to respondents, the most important factors of personal competitiveness (Fig. 4) are stress resistance, the ability to overcome difficulties (44.7 % of respondents gave the maximum six points to this factor) and computer literacy (44.0 %). At the same time, Russian-speaking respondents (45.6 %) emphasize such factors as sociability and the ability to cooperate. The smallest share of respondents (31.1 %) choose such a factor as knowledge of foreign languages.

A slightly different picture is formed when comparing the responses of students and teachers (Fig. 4.1). Here, the largest share of respondents gave the maximum six points to such factors as efficiency and ability to professional growth (62.4 % of teaching staff) and sociability, ability to cooperate (61.3 % of teaching staff). Also important for the older generation are stress tolerance, the ability to overcome difficulties (59.7 % teaching staff) and computer literacy (57.5 % of teaching staff). Respondents from among students prefer stress resistance and ability to overcome



	I	II	III	IV	V	VI
kaz	42,5	39,5	42,8	41,7	33,0	44,9
rus	43,1	45,6	46,7	41,8	28,9	43,1
total	42,8	42,4	44,7	41,8	31,1	44,0

Fig. 4. Percentage of Kazakhstani respondents' answers to the question «Rank the factors of personal competitiveness from 1 to 6 by the degree of importance for you»

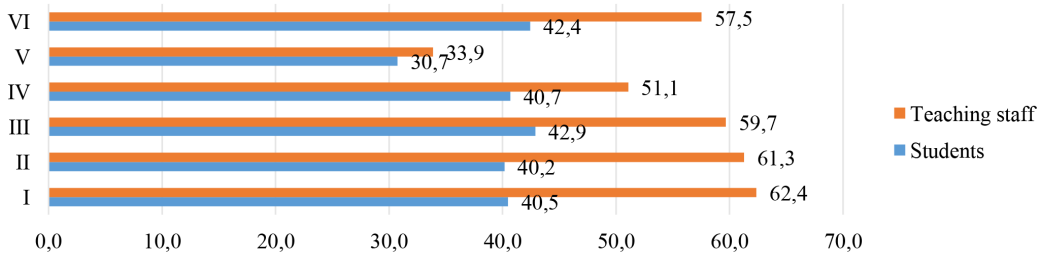


Fig. 4.1. Percentage of Kazakhstani respondents' answers to the question «Rank the factors of personal competitiveness from 1 to 6 by the degree of importance for you»

difficulties in the list of competitiveness factors (42.9 %).

It should be noted here that the factors of personal competitiveness chosen by the respondents meet the requirements of the time, for which «soft» skills are important. Sometimes they are more important than hard (or 'professional' in our interpretation) skills (Zhetpisbayeva et al., 2020). It is quite puzzling that among the factors of human competitiveness that we have indicated, knowledge of a foreign language does not occupy top places in the ranking. Based on the analysis of the answers to this question, we can recommend that the leadership of Kazakhstan's universities pay attention to the need to strengthen measures to improve students' and teachers' computer literacy, as well as the formation of their stress resistance and ability to work in a team, more precisely take into account the opinion of their students and teachers when organizing advanced training courses for teaching staff and building the educational trajectory of students.

The results of the study of a group of experts, among which the course of distance learning of computer science teachers draws attention, are crucial in this aspect. The significance of this study lies in the fact that the course proposed by the authors can be fully applied in the educational process of universities, thereby contributing to the development of computer literacy of students (Mukasheva et al., 2020), which is considered by many to be one of the important factors of the competitiveness of modern people.

All these factors of competitiveness fully reveal the essence of the concept of «flexible skills», which together with professional ones make up the so-called «soft and hard skills». In particular, for a single-profile pedagogical university, this opens up prospects for the development and implementation of such minor programs as «Mediation in Education», «Management in Education», «Information Technologies in Education», «Art Technologies in Education», «Business and Entrepreneurship in Education», etc. This list of additional programs can be continued, taking into account the specifics of a particular (other than pedagogical) direction of training specialists.

These recommendations, taking into account the answers to the following question, can make their own adjustments not only in innovative, but also in traditional (classical) academic disciplines of educational programs. In particular, to develop and support

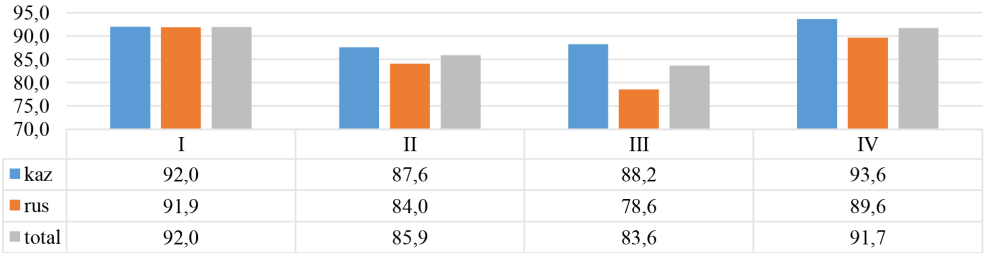
such aspirations of students as achieving their goals taking into account their capabilities (92.0 %) and caring for nature and ecology (91.7 %). These two aspirations were the most characteristic of our respondents (Fig. 5). However, in our opinion, we should also pay attention to the formation of such qualities as efforts to lead a healthy lifestyle (85.9 %) and to be successful in school (83.6 %). At the same time, quite an alarming point is associated with a noticeable difference in the indicators of Kazakh-speaking and Russian-speaking respondents: the low aspiration for success in learning among the latter (78.6 %). We are sure that this indicator needs more in-depth study, taking into account the ethno-psychological aspects of education in Kazakh universities.

Note that this quality was also demonstrated by the lowest proportion (39.2 %) of respondents from among university teachers (Fig. 5.1).

There is a certain pattern in this: higher motivation in education for those students whose teachers themselves know how to learn and study. This is the power of personal example – students, even as students, imitate their teachers.

It should also be noted that these data correlate with the general picture of professional development of teachers of Kazakhstani universities. Additional interviews with the heads of the institutes (centers) of advanced training of the four universities where this survey was conducted, indicate a formal approach of the majority of students from among the teaching staff to the ongoing advanced training courses: they need certificates only to pass the next certification, which is usually held once every five years. We believe that this aspect of our research should be the subject of special attention of the heads of higher educational institutions.

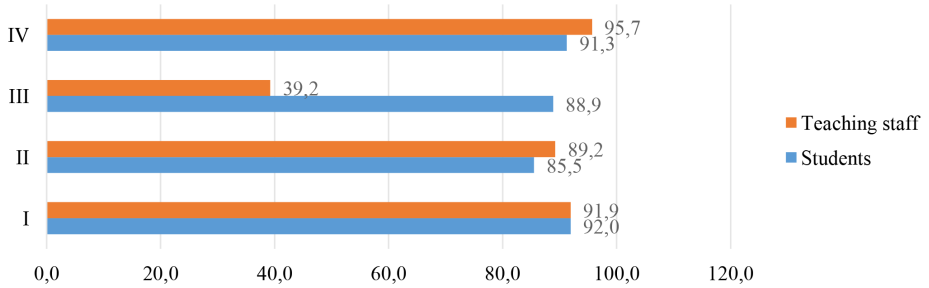
Analyzing the answers of Russian respondents, we can conclude that the overwhelming



	I	II	III	IV
kaz	92,0	87,6	88,2	93,6
rus	91,9	84,0	78,6	89,6
total	92,0	85,9	83,6	91,7

Notes to the figure: I. I try to achieve my goals based on my capabilities; II. I lead a healthy lifestyle; III. I try to be successful in my studies; IV. I take care of nature, ecology

Fig. 5. Percentage of Kazakhstani respondents' answers to the question «Are the following aspirations typical for you?»



Notes to the figure: I. I try to achieve my goals based on my capabilities; II. I lead a healthy lifestyle; III. I try to be successful in my studies; IV. I take care of nature, ecology

Fig. 5.1. Percentage of Kazakhstani respondents' answers to the question «Are the following aspirations typical for you?»

majority of respondents strive to treat nature and ecology with care, which can be regarded as a positive component of the social portrait of Russians. One can note the purposefulness of the respondents, who, when achieving goals, take into account their capabilities as a positive situation as well.

Only half of the respondents adhere to a healthy lifestyle, which is a disappointing indicator. It indicates a low degree of awareness of the need to monitor one's physical health. An alarming situation is developing in the motivation of education, since half of the respondents who are representatives of universities do not particularly strive for academic success. However, these answers correlate with the answers to the question «Is higher education the main factor of your success?»

If the first five questions of the questionnaire are asked in the general context of the modernization of public consciousness, then the following questions are directly related to the «Rukhani Zhangyru» program. As we have already noted, the program article of N. Nazarbayev identified the main vectors of development that are strategically important for the modern Kazakh community. Therefore, during the survey, it was absolutely natural to clarify how well our respondents are aware of this article. Despite the fourth year of implementation of «Rukhani Zhangyru» national program (starting from 2017), with the materials of the article of the First President of Kazakhstan called «Looking to the future: modernization of public consciousness», among the respondents were those who were not familiar with this article (Fig. 6), not only among students (15.5 %), but also among teachers (11.8 %) of universities.

Note that in the comparative aspect, the responses of Kazakh- and Russian-speaking

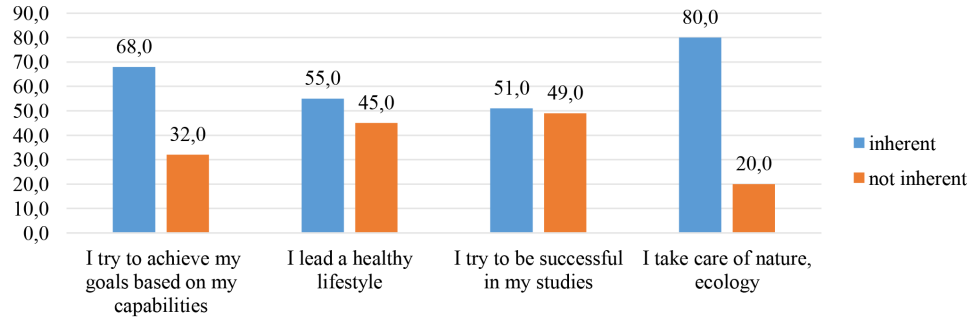


Fig. 5.2. Answers of Russian respondents to the question «Are the following aspirations typical for you?» (in %)

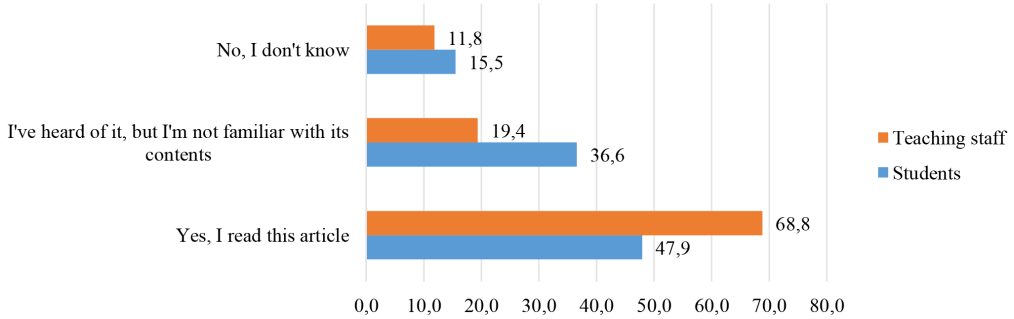


Fig. 6. Percentage of Kazakhstani respondents' answers to the question «Are you familiar with the Program article of the First President of the Republic of Kazakhstan «Looking to the future: modernization of public consciousness»?»

respondents do not have a significant difference (Fig. 6.1).

If we take into account that a third of the respondents admit to ignorance of the content of this program article, then the university management is strongly recommended to step up work to promote the values of spiritual modernization of the Kazakh community. This is important for the further socio-economic and cultural development of the country as a whole. We once again emphasize the strategic importance of this program for the successful social adaptation of Kazakhstanis to the conditions of an extremely volatile world full of uncertainty, instability and impermanence.

Regarding the basic projects of this program, the survey results revealed the greatest interest of respondents to «Transition of the Kazakh language to the Latin alphabet» (52.6 %) and «100 new Faces of Kazakhstan» (50.8 %) projects, of the least interest (36.8 %) is «Tugan Zher» project, and it is the least popular among Kazakh-speaking respondents (Fig. 7).

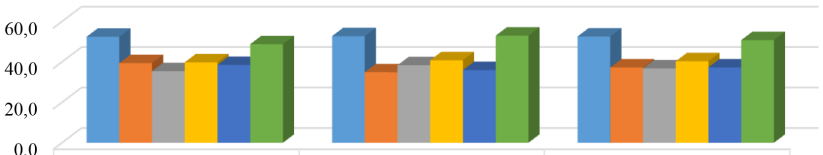
In the comparative aspect, the answers to this question show that teachers are more aware of the projects implemented within the framework of the «Rukhani Zhangyru» program than students (Fig. 7.1).

This information gives real chances to use the potential of the teaching staff for more active promotion of the values of «Rukhani Zhangyru» in the university environment, not only among young people, but also among adult representatives of the university community.

A more positive picture can be observed when analyzing the respondents' opinions

	Yes, I read this article	I've heard of it, but I'm not familiar with its contents	No, I don't know
kaz	53,5	31,8	14,7
rus	46,4	38,0	15,6
total	50,1	34,7	15,1

Fig. 6.1. Percentage of Kazakhstani respondents' answers to the question «Are you familiar with the Program article of the First President of the Republic of Kazakhstan «Looking to the future: modernization of public consciousness»?»



	kaz	rus	total
I	52,4	52,7	52,6
II	39,4	34,9	37,2
III	35,4	38,3	36,8
IV	39,8	40,8	40,3
V	38,5	36,0	37,3
VI	48.8	53.0	50.8

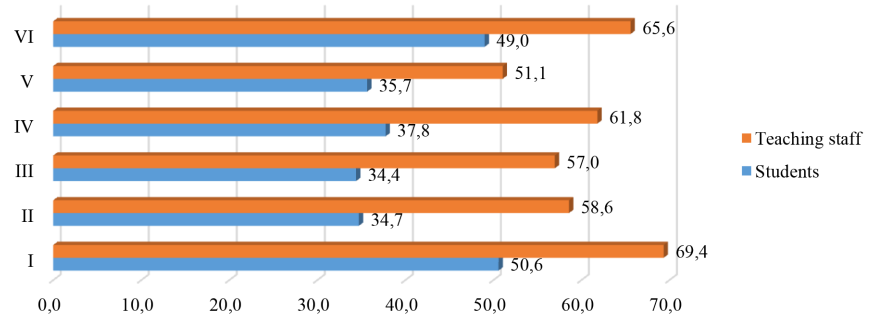
Notes to the drawing: I. «Transition of the Kazakh language to the Latin alphabet»; II. «New humanitarian knowledge. 100 new textbooks in the Kazakh language»; III. «Tugan Zher» Program; IV. «Spiritual shrines of Kazakhstan» or «Sacred geography of Kazakhstan»; V. «Modern Kazakh culture in the global world»; VI. «100 new faces of Kazakhstan»

Fig. 7. Percentage of Kazakhstani respondents' answers to the question «Are you aware of the projects implemented within the framework of the «Rukhani Zhangyru» program?»

about the effectiveness of the basic projects, their ability to influence the public consciousness. Here, the majority of respondents (69.0 %) were optimistic, regardless of the chosen language of the questionnaire (Fig. 8).

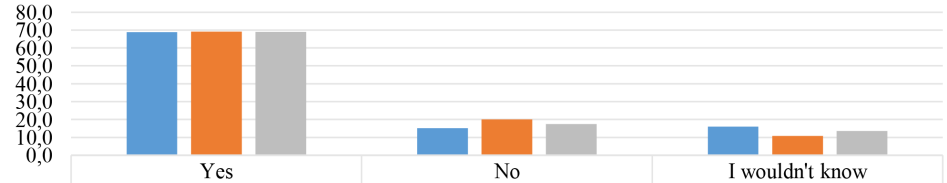
Let us make a small remark: speaking about the language of the respondents, we once again clarify that the Kazakh language of the questionnaire is chosen in Kazakhstan, as a rule, by Kazakhs, while the Russian language is chosen by representatives of all Kazakhstani ethnic groups (there are more than 130 of them), including Kazakhs (there are many Russian-speaking representatives among modern Kazakhs). That is why any sociological survey conducted in two languages is of scientific interest in terms of ethnopsychology, ethnopedagogy and ethnosociology. However, the ethnic aspects of the modernization of the public consciousness of modern Kazakhstanis are not the subject of this study. It should be noted as a positive trend that both students and university teachers showed equal optimism in this issue (Fig. 8.1). Nevertheless, a certain categorical attitude of teachers is also of interest to our research, since among them a very small proportion are doubters (5.9 %). We believe that this is due to the fact that not all teachers can judge the very essence of the «Rukhani Zhangyru» program (see Fig. 6 above).

In contrast to the previous question, the respondents' opinions on the impact of the state policy implemented in Kazakhstan on the formation of interethnic harmony and tolerance of young people are less optimistic (Fig. 9), as only half of the respondents (46.7 %) answered



Notes to the drawing: I. «Transition of the Kazakh language to the Latin alphabet»; II. «New humanitarian knowledge. 100 new textbooks in the Kazakh language»; III. «Tugan Zher» Program; IV. «Spiritual shrines of Kazakhstan» or «Sacred geography of Kazakhstan»; V. «Modern Kazakh culture in the global world»; VI. «100 new faces of Kazakhstan»

Fig. 7.1. Percentage of Kazakhstani respondents' answers to the question «Are you aware of the projects implemented within the framework of the «Rukhani Zhangyru» program?»



	Yes	No	I wouldn't know
kaz	68,8	15,1	16,1
rus	69,2	20,0	10,8
total	69,0	17,4	13,6

Fig. 8. Percentage of Kazakhstani respondents' answers to the question «Do you think that knowledge of these projects contributes to changing the public consciousness of Kazakhstanis?»

in the affirmative, and the Russian-speaking respondents were more positive (50.6 %). As a positive trend in this question, we estimate the low share of negative categoricity in the responses of respondents (6.2 %). Here, a third, or 27.7 %, of respondents have difficulties in their answers, which once again emphasizes the non-categorical nature of the assessment of state policy in the field of interethnic harmony.

In the comparative aspect, teachers are more optimistic about this issue (Fig. 9.1), which indicates that universities have the pedagogical potential to activate the processes of spiritual revival of the Kazakh community.

Russians were asked a similar question. A third of Russian respondents believe that the state policy pursued in Russia contributes to the formation of interethnic harmony and tolerance of young people, another third note the insignificance of the government's actions in carrying out this policy. At the same time, the share of those who find it difficult to answer this question and the share of respondents who give a negative assessment of the processes of forming interethnic harmony and tolerance of young people can be assessed as an alarming trend. We also associate the latter result with low political literacy and complete indifference of a number of respondents to interethnic problems in society (Fig. 9.2).

The answers to the last question of the questionnaire were aimed at ranking the factors that, in the opinion of our respondents, can contribute to the progressive development of their countries in the near future.

Nine factors were proposed as a choice, among which the most effective, according to Russian respondents, are: 1) improving the quality of education and healthcare, 2) developing industry and infrastructure, 3) upbringing a free personality. An important factor in the progressive development of Russia and Sibe-

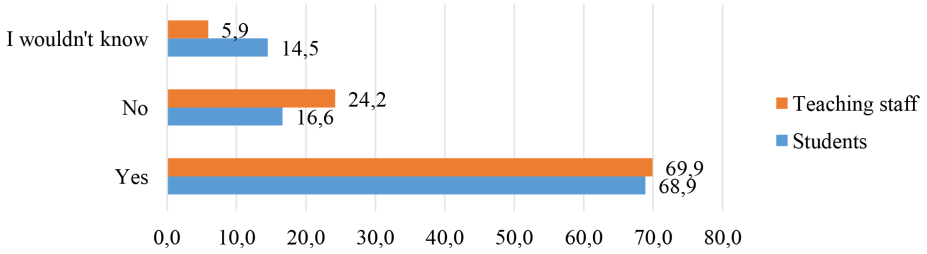
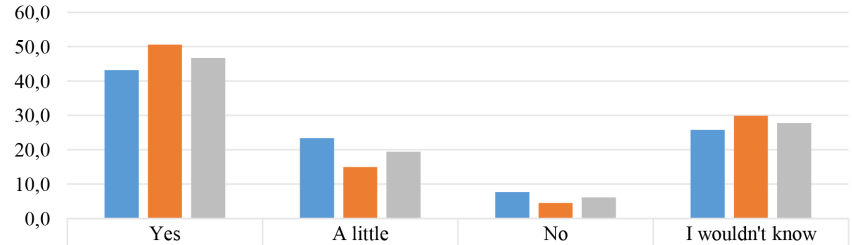


Fig. 8.1. Percentage of Kazakhstani respondents' answers to the question «Do you think that knowledge of these projects contributes to changing the public consciousness of Kazakhstanis?»



	Yes	A little	No	I wouldn't know
kaz	43,1	23,4	7,7	25,8
rus	50,6	15,0	4,5	29,9
total	46,7	19,4	6,2	27,7

Fig. 9. Percentage of Kazakhstani respondents' answers to the question «Do you think that the state policy implemented in Kazakhstan contributes to the formation of interethnic harmony and tolerance of young people?»

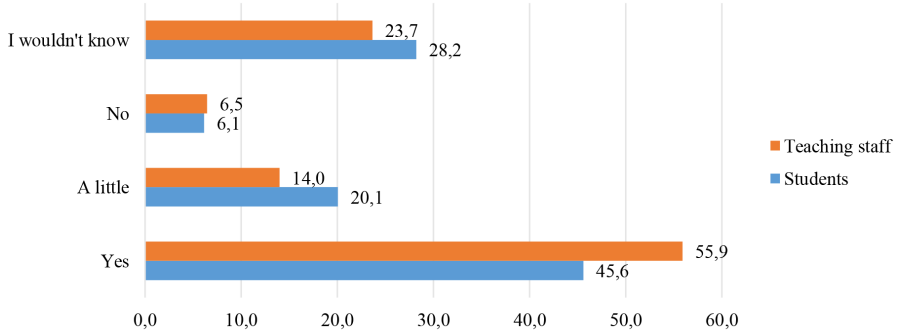


Fig. 9.1. Percentage of Kazakhstani respondents' answers to the question «Do you think that the state policy implemented in Kazakhstan contributes to the formation of interethnic harmony and tolerance of young people?»

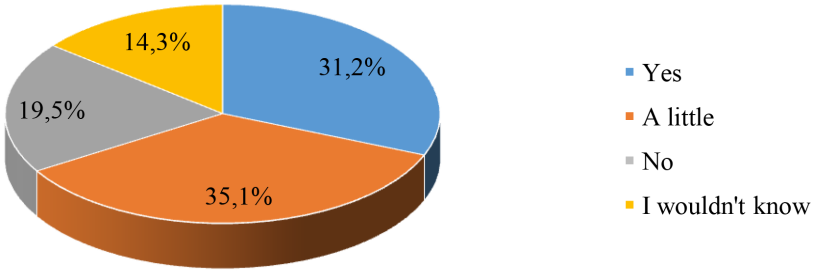


Fig. 9.2. Answers of Russian respondents to the question «Do you think the current state policy in Russia contributes to the formation of interethnic harmony and tolerance of young people?»

ria, first of all, according to the respondents, is the development of science and technology (28.6 %), civil society (26 %), and democratic institutions (20.8 %).

16.9 % of respondents believe that it is necessary to eliminate corruption for the sake of the development of Russia.

As a positive trend, one can note the low share of respondents who prefer protest movements for the development of the country. For centuries Siberia has been a multinational family for many peoples, but the share of respondents who prefer the activities of opposition parties as a factor in Russia's development is somewhat alarming (Fig. 10).

Answers of Kazakhstani respondents were ranked in descending order of importance and are shown in the following table.

Thus, the respondents consider the elimination of corruption as a factor of primary importance in the progressive development of Kazakhstan. This fact confirms the loyalty of the anti-corruption policy pursued in Kazakhstan (National report on anti-corruption policy…).

In the last place, the respondents placed protest movements as a factor contributing to the progressive development of Kazakhstan. This attitude of the absolute majority of respondents to conflict behavior, the manifestation of mass discontent and group negativism indicates, in our opinion, the absence of marginalized strata among the university community of Kazakhstan, as well as individuals with an increased (inadequate) level of claims (according to experts, these two categories of people mainly take part in protest movements) (Social and protest movements…). We also believe that such a negative attitude towards protest movements is traditionally characteristic of Kazakhstanis, in particular, it is characteristic

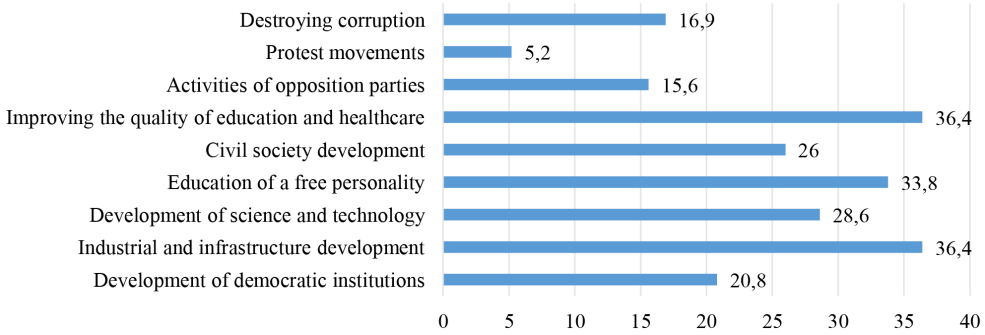


Fig. 10. Answers of Russian respondents to the question «In your opinion, which of the listed factors can contribute to the progressive development of Russia in the near future?» (in %)

Table 2. Ranking of factors contributing to the progressive development of Kazakhstan in the near future

Rank position	Factors	Percentage of respondents	Ratio of shares	
			students	Teaching staff
1st place	Destroying corruption	93,9	94,4	89,2
2nd place	Improving the quality of education and healthcare	86,4	85,7	91,9
3rd place	Civil society development	81,4	80,9	85,5
4th place	Development of science and technology	56,6	55,1	69,9
5th place	Industrial and infrastructure development	55,3	55,5	53,8
6th place	Education of a free personality	39,6	41,4	24,7
7th place	Development of democratic institutions	38,0	37,9	39,2
8th place	Activities of opposition parties	14,5	15,4	7,5
8th place	Protest movements	10,5	11,3	3,2

of the mentality of the titular ethnic group – the Kazakhs. This statement is not categorical, but rather axiomatic. It is impossible and impractical to give an unambiguous assessment of such complex social phenomena as protest movements. There are a lot of facets, sometimes contradictory trends. Therefore, the results of the answers to this question of the questionnaire can become a starting point for serious scientific research by sociologists.

Following the general logic of our research, we draw attention to the significant difference in the responses of students and teachers in three positions:

– education of a free personality;
– activities of opposition parties;
– protest movements.

Here, the share of respondents from among students is much higher than the share of teachers. In other words, the younger generation is more likely to believe that the education of a free person is one of the factors of the progressive development of Kazakhstan. In a conversation with several young people, we found out their general understanding of the essence of this concept. As it turned out, our interlocutors clearly understand that there is no absolute freedom of a person, even if they live outside of society (say, somewhere in the jungle, on a desert island). A free person, however, according to young people, is a person who has the opportunity to choose, who does not feel

constant fear of possible punishment and obstacles, is aware of and accepts any restrictions and understands the need to comply with the rules and norms that regulate safe relations between people, etc.

We believe that this should form the basis for the interaction of teachers and students in the educational process of the university, and should also be legally enshrined in the internal documents regulating the activities of the university.

Regarding two other positions: the activities of opposition parties and protest movements. Based on numerous studies in the field of protest psychology, we note that the readiness for protest behavior is more characteristic of youth (Psychology of protest behavior…). The reasons, as a rule, lie in the gradual loss of fear, when you are among the constant environment of a large number of similar people. It is no coincidence that experts say that the probability of protests is higher in cities. The rapidly growing penetration of the Internet may also be a decisive factor in the further mobilization of the protest movement (Zakharov, 2013). All this is just typical for the youth environment. With age, the circle of such close and constant communication narrows. Therefore, for people of mature and elderly age, the readiness to protest is observed many times less. At the same time, protest activity in youth is mainly characterized by opposition, which is understood as rivalry, lack of desire to achieve goals, external openness in confrontation and provocative behavior, incitement. This is in contrast to the protest behavior, for example, of adolescents, who are more characterized by escapism – the transition of activity into transformative activity, and in people of mature age, this behavior is based on emancipation – the desire for autonomy, the desire to preserve the stability of the social structure.

Taking into account the above, the low probability of protest behavior of representatives of Kazakhstani universities (11.3 %) can be safely assessed as a positive trend. At the same time, the results of the survey in this aspect should also be taken into account by the management and teachers of universities.

Conclusion

In general, the results of the survey showed a heterogeneous picture of students' involvement in the values of the «Rukhani Zhangyru» program. The majority of students share the Program's ideological message, but at the same time demonstrate detachment from its specific values. We believe that this is due to the fact that many students perceive the proposed projects as something mandatory not for them, but for other people. A change in the situation can be facilitated by professional support from teachers for the formation of students' social experience to project the ideas of the Program on the personal value system.

Therefore, a detailed analysis of the answers to each question of the questionnaire is completed. However, the conducted sociological survey was important for us in order to offer more effective mechanisms for promoting the values of «Rukhani Zhangyru». Thus, based on the results of the opinion poll, we decided to develop a Concept for promoting the values of «Rukhani Zhangyru» national program among students. According to our concept, the goal of promoting the values of the Program at the university is to create the necessary conditions for the involvement of the absolute majority of students and employees of the university in the processes of modernization of public consciousness. As step-by-step actions to achieve this goal, we suggest solving the following tasks:

- analysis, explanation and popularization of the ideas mentioned in «Looking to the Future: modernization of public consciousness» and «Seven Facets of the Great Steppe» articles;
- scientific and methodological interpretation of the historical essence and significance of the ideas of «Rukhani Zhangyru»;
- scientific and methodological support for the implementation of ideas and «Rukhani Zhangyru» program directions;
- introduction of the program foundations of spiritual modernization in the educational and research activities of the university.

To solve these problems, the following provisions are proposed as principles:

1) transition from one-time events to long-term social projects – while maintaining traditional one-time events, the promotion of the values of the «Rukhani Zhangyru» program should be carried out through long-term projects involving the vast majority of students and university staff;

2) access to the external environment – a very wide range of external stakeholders should be involved in the implementation of long-term projects (parents, friends and relatives of students and employees, applicants, domestic and foreign partners of the university, including other educational organizations, industrial enterprises, public organizations, etc.);

3) integration of the values of «Rukhani Zhangyru» in educational programs and research works-synchronization of the content of individual academic disciplines, the topics of theses, master's theses, scientific research of scientists with the ideas of modernization of public consciousness.

The details of the proposed Concept should be reflected in a special document, for example, an Action Plan related to the objectives of the Concept. Therefore, we propose to allocate such sections as:

1) scientific and methodological support for the promotion of the ideas of «Rukhani Zhangyru»;

2) scientific and methodological support for the implementation of the ideas of «Rukhani Zhangyru»;

3) social projects of the university;

4) initiative activities of departments and faculties.

In the first section of the Plan, it is necessary to provide for the implementation of research works of departments and the study of issues of spiritual modernization in the framework of theses and master's theses.

The second section of the Plan should be devoted to the issues of synchronization of the content of individual academic disciplines, primarily social and humanitarian orientation, with the ideas of «Rukhani Zhangyru».

The third section of the Plan involves the implementation of long-term projects in which all students and teachers of the university will participate. The number of such projects depends on the specific conditions of each university.

The fourth section of the Plan should include activities proposed by teachers, student groups, and departments. At the same time, the level of events can vary from the cathedral to the regional level.

In general, the success of the Program depends on the participation of everyone, regardless of age and gender, education and profession, national and religious identity. Here we are talking about spiritual values.

That is why the participation of every student, master's student, doctoral student, teacher and employee in the promotion of the values of «Rukhani Zhangyru» program is very important.

The existence of such a nationwide program as «Rukhani Zhangyru» indicates that modern Kazakh society has realized the need to form a new generation of Kazakhstanis who are attached to the values of spiritual revival. Thanks to this Program, Kazakhstanis received specific strategies for changing their worldview. The mechanisms for implementing the Program should be developed by the academic community, whose participation will ensure the integration of the idea of spiritual revival into the educational and research content of educational programs.

The results of the survey show an insufficient degree of formation of the majority of students of universal spiritual values necessary for life in the 21st century. This means that with sufficient awareness of the provisions of the Program, most students have not made them part of their personal system of values, goals and attitudes.

We believe that it is important to apply conceptual, systematic, and integrated approaches in promoting the Program's ideas. The proposed concept of promoting the Program's values is aimed at universities and provides for step-by-step planning of complex measures. We believe that this conceptual approach will ensure the broad involvement of students in the activities related to the Program and the measurability of the results of participation, for example, writing a final paper, participating in the volunteer movement, visiting sacred places

in Kazakhstan, learning the Kazakh language, publishing an article about Kazakhstan in a foreign publication, preparing a film, videos with Kazakh content, etc. In the end, a balanced social portrait of a modern young Kazakhstani should be formed.

Since the «Rukhani Zhangyru» program is built on the basis of historical continuity, it will make it possible to update the centuries-old heritage of the ancestors, making it understandable and in demand in the modern life of the Kazakh society.

Declarations of Ethics

Competing interests

On behalf of all authors, the corresponding author declares that all authors have no competing interests.

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Digital Footprint in the Educational Environment as a Regulator of Student Vocational Guidance to the Teaching Profession

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Abstract. The article is devoted to the digital footprint in education as a method of improving the career guidance of students of pedagogical higher education at all stages of their theoretical and practical training. The article discusses approaches to students' career guidance and pedagogical orientation based on the analysis of their digital footprint in the learning environment and external resources. The review of researches in collecting, analysing and interpreting students' digital footprint and in career guidance of future teachers is provided. Moreover, the article outlines preliminary adjustments to the concept of vocational guidance to the teaching profession in a digital learning environment. The authors analyse the possibility of using the technology of fixing and interpreting various digital data to manage the process of gradual development of career guidance grounded in the actualization of pedagogical orientation. As a result, the authors conclude that the use of digital footprint brings the process of students' vocational guidance to the teaching profession to a new quality level by regulating the pedagogical orientation of future teachers and identifies areas of their professional interests and motives in order to individualize professional training. The practical result is a section «Vocational guidance» in the personal account of the pedagogical university student.

Keywords: teaching career guidance, pedagogical orientation of the educational process, digital educational environment of the university, analysis of the digital footprint of the participants in the educational process, personal account of the student.

Research area: pedagogy.

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Цифровой след в образовательной среде как регулятор профориентации студентов на педагогическую профессию

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Аннотация. В статье рассматривается проблема совершенствования профориентации студентов педагогического вуза на всех этапах их теоретического и практического обучения на основе исследования цифрового следа в образовании. Целью статьи является описание подходов к анализу цифрового следа студента в цифровой образовательной среде вуза и внешних ресурсах для управления его профориентацией и педагогической направленностью. Для достижения данной цели проводится обзор отечественной и зарубежной научной литературы, рассматриваются научные исследования по проблемам сбора, анализа и интерпретирования данных цифрового следа студентов и профориентации будущих педагогов. Более того, в статье намечаются предварительные корректировки понятия профориентации в условиях погружения учебно-воспитательного процесса в цифровую образовательную среду с учетом развития мотивации и педагогической направленности обучаемых. Авторы анализируют возможность применения технологии фиксации и интерпретации различных цифровых данных, отражающих результаты образовательной деятельности студентов, в процессе поэтапного развития их профориентации на основе актуализации педагогической направленности. В результате авторы статьи пришли к выводу, что применение данных цифрового следа позволит вывести на новый качественный уровень процесс непрерывного формирования профориентации обучаемых на педагогическую профессию путем регулирования педагогической направленности будущих педагогов, выявлять направления развития их профессиональных интересов и мотивов с целью индивидуализации профессиональной подготовки. Намечена структура профиля «Профориентация» при разработке личного кабинета студента педагогического вуза.

Ключевые слова: профориентация на педагогическую профессию, педагогическая направленность, цифровая образовательная среда университета, цифровой след, личный кабинет студента.

Научная специальность: 13.00.00 – педагогические науки.

Введение в проблему исследования

В сложившихся социально-экономических условиях в разных регионах России наблюдается острая нехватка педагогических кадров. Данная потребность сохраняется по определенным причинам, среди которых отмечается слабая профориентация на педагогическую профессию. Выпускники общеобразовательной школы, поступающие в педагогические вузы, в основном ориентируются не на педагогическую деятельность, а на содержание приоритетных для них учебных дисциплин. Зачастую педагогическое образование абитуриенты выбирают в силу того, что не смогли поступить на другие направления подготовки (Krylova, 2015). В период первого года обучения, когда закладываются основы профессиональной мотивации, студенты, как правило, еще не имеют профессиональных планов, опыта работы с детьми и личностных ощущений.

Следует отметить, что и после завершения адаптационного периода актуализированные профессиональные интересы не всегда приводят к осознанию совместимости себя и будущей профессии. В результате в этот период наблюдаются академические задолженности и отчисления по собственному желанию. А у многих трудоустроенных в школах студентов старших курсов часто проявляется профессиональная дезадаптация из-за повышенной учебной нагрузки, завышенных требований работодателя и отсутствия со стороны вуза психологической, методической поддержки. Это приводит к разочарованию в выбранной профессии и по окончании обучения поиску места работы вне сферы образования (Solodova, Galaganova, Epanchentseva, 2015). Недостаточность профориентационной работы в вузах подтверждена результатами исследования, проведенного Консалтинговым центром «ВЫ+МЫ» (г. Томск) и Санкт-Петербургским государственным университетом телекоммуникаций им. проф. М. А. Бонч-Бруевича (2019 г.). Эти исследования показали, что в большинстве вузов профориентацией все еще считают работу с абитуриентами и трудоустройство выпускников. Лишь 26 % из числа респондентов реализуют такие последовательные и непрерывные мероприятия профориентации студентов, как знакомство с местом будущей работы, с представителями профессий, привлечение студентов к исследованиям, проектам, конференциям, консультации по планированию карьеры (15,7 %) (Proforientatsionnaia …, 2019). Для педагогических вузов сохраняется потребность реализации целенаправленной комплексной профориентационной работы преимущественно на трех этапах: поиск абитуриентов, профессиональное развитие и самоопределение студентов, трудоустройство выпускников.

Развитие цифровых технологий актуализирует исследования, связанные с поиском новых эффективных методов, средств фиксации, интерпретации данных о результатах профориентации будущих педагогов, создании системы хранения, доступа и обмена этими данными между всеми участниками образовательного процесса. В настоящее время активно развивается учебная аналитика на основе цифрового следа – современного подхода к образованию, позволяющего использовать массивы данных для извлечения из них смыслов и применения их для совершенствования образовательного пространства и повышения качества педагогической работы (Universitet 20.35, 2021; Tsai, Rates, Moreno-Marcos, Muñoz-Merino, Jivet, Scheffel, Drachsler, Kloosc, Gaševića, 2020).

Таким образом, по нашему мнению, педагогическая проблема, которая может быть решена в условиях педвуза, состоит в создании педагогических условий применения технологии фиксации и интерпретации различных цифровых данных, отражающих результаты образовательной деятельности студентов, в процессе поэтапного развития их профориентации на основе актуализации педагогической направленности. В этой связи целью статьи является описание подходов к анализу цифрового следа студента в цифровой образовательной среде вуза и внешних ресурсах для управления его профориентацией и педагогической направленностью.

Концептологические основания исследования

Для отечественных и зарубежных психолого-педагогических исследований проблематика профессиональной ориентации на педагогическую деятельность не является новой и рассматривается с точки зрения двух позиций: с одной стороны, как внутреннее состояние человека, позволяющее ему определиться в выборе и далее развиваться в профессии, с другой – как некая система мер, сопровождающих профессиональное самоопределение (Priazhnikova, 2013; Kartal, Kaya, Öztürk, Ekici, 2012). Творческий процесс профессионального самоопределения, по словам Э.Ф Зеера, предполагает выработку собственной позиции в условиях большой неопределенности (Zeer, 2006).

В контексте профессионального самоопределения будущих педагогов целесообразно уделять внимание вопросам развития педагогической направленности.

Исследованию феномена педагогической направленности посвящены отечественные работы Н. В. Кузьминой (Kuzmina, 1985), А. К. Марковой (Markova, 1996), Л. М. Митиной (Mitina, 2004) и др. Трактовка термина «профессиональная направленность педагога» дается через определение факторов формирования и развития деятельности педагога как субъекта образовательного процесса и его многообразных способностей. В научно-педагогических публикациях Н. В. Кузьминой под педагогической направленностью понимается интерес к педагогической профессии, осознание трудностей в работе учителя, мотивации к самосовершенствованию (Kuzmina, 1985). Л. М. Митина дает следующее определение этого понятия: «…система эмоционально-ценностных отношений, задающая иерархическую структуру доминирующих мотивов личности учителя, побуждающих учителя к ее утверждению в педагогической деятельности» (Mitina, 2004: 41). А. К. Маркова считает, что «педагогическая направленность – это мотивация к профессии учителя, главное в которой действенная ориентация на развитие личности ученика» (Markova, 1996).

Изучение педагогической направленности помогает понять стремление студентов развиваться в выбранном профессиональном направлении, а целенаправленная работа по развитию данного качества способствует формированию устойчивого желания быть педагогом. Данное качество проявляется и в стремлении к профессиональному самообразованию будущих педагогов, в их активности в раскрытии и обогащении своих образовательных потребностей, творчества, личного потенциала. Мотивационная сфера самообразовательной деятельности студентов включает мотивы изучения выбранной предметной области, стремление к творческой деятельности, к профессиональному и карьерному росту (Roness, 2011). Отсутствие мотивации профессионального самообразования у студентов, влияющее на удовлетворенность образовательных потребностей, видение перспектив на будущее, определяет ранний уход из профессии молодых педагогов (Struyven, Vanthournout, 2014).

Еще одним значимым для нашего исследования компонентом педагогической направленности являются творческие достижения *студентов*. По мнению В. И. Зягвязинского, «творчество – это необходимое условие становления самого педагога, его самопознания, развития и раскрытия его личности» (Zagviazinskii, 1987: 16). М. М. Поташник отмечает разнообразие проявления творчества в практической деятельности педагога: «…в нестандартных подходах к решению проблем; в разработке новых методов, форм, приемов, средств и их оригинальных сочетаний; в эффективном применении имеющегося опыта в новых условиях» (Potashnik, 1987: 5). Студент, стремящийся к профессиональному росту, может представить свой творческий опыт с помощью электронного *портфолио*, что является значимым ресурсом, отражающим результаты профориентации. О. Г. Смолянинова выделены основные характеристики электронного портфолио в системе оценивания профессиональной подготовки будущих педагогов, которые могут быть учтены в профориентационной работе: способствует формированию культуры мышления; ориентировано на развитие умений анализировать, систематизировать, классифицировать научную, образовательную, профессиональную информацию; способствует развитию коммуникативных компетенций, расширяет социальные контакты (Smolianinova, 2018; Smolianinova, Bezyzvestnykh, 2019).

Педагогические вузы несут ответственность за создание условий для обеспечения возможностей студентам полностью раскрыть свой профессионально-педагогический потенциал. Исследование I. Rots, A. Aelterman, G. Devos, P. Vlerick показывает прямую взаимосвязь между качеством педагогического образования и намерением выпускников стать учителем (Rots, Aelterman, Devos, Vlerick, 2010). А турецкими исследователями M. Ceylan, E. Turhan доказано, что некоторые негативные представления студентов

об образовании и профессии учителя переходят в позитивные, если в вузе созданы соответствующие условия для профориентационной работы (Ceylan, Turhan, 2010).

Образовательная деятельность будущих педагогов реализуется в цифровой образовательной среде (ЦОС) педагогического вуза, которая признана одним из основных источников цифровых данных о направлениях и результатах деятельности студентов. С. Л. Атанасяном обоснована специфика ЦОС педагогического вуза как среды освоения новых форм, методов, средств обучения на основе ИКТ, которые будущие учителя смогут применять в дальнейшей профессиональной деятельности (Atanasian, 2009). Теоретическая подготовка будущих педагогов осуществляется параллельно с практикой в школах, в процессе которой фиксируются ее результаты в цифровой образовательной среде, делая ее «прозрачной» для оценивания и повышения качества. Рассматриваются технологические, дидактические, методико-организационные условия интеграции ЦОС педагогического вуза с региональными образовательными средами с целью обеспечения новых возможностей по взаимодействию студентов с профессиональным сообществом и их участию в решении педагогических задач электронного обучения (Lapchik, Ragulina, Fedorova, Lapchik, Gaidamak, 2015). ЦОС становится мощным инструментом по сбору и анализу цифрового следа студентов.

Анализ научных источников показал, что четкого определения понятия «цифровой след» применительно к образованию пока не выработано исследователями, согласно разным точкам зрения он включает как информацию, которая фиксируется в логах цифровой системы, так и контент, «цифровые артефакты», которые обучаемый размещает в цифровой среде. В. В. Мантуленко в своей статье обобщает подходы к применению цифрового следа студента в высшем образовании, отмечает отсутствие целостного взгляда на проблему и выделяет три перспективных направления использования цифрового следа студентов: обеспечение преемственности и интеграции образовательных уровней (например, школа – вуз); организация учебного процесса (например, создание индивидуальных образовательных траекторий, оптимизация учебных планов); управление образовательной системой (educational management), в частности, в аспектах обеспечения качества образования, конкурентоспособности вузов (имидж, брендинг и др.) (Mantulenko, 2020).

В работе белорусского исследователя В. Н. Курбацкого рассматривается цифровой след в контексте образовательных и творческих интересов студента, что позволяет изучить актуальные компетенции студента с учетом индивидуальных способностей и потребностей (Kurbatskii, 2019). Творческий коллектив под руководством И. Г. Захаровой исследует особенности постановки и решения управленческих задач на основе фундаментального процесса анализа данных цифрового следа студента в образовательной среде вуза, описывает основные типы информационных сервисов, обеспечивающих принятие решений на основе данных (Zakharova, Karpov, Lobuntsov, 2020). На основе анализа цифрового следа исследователи из университета города Дублина Д. Аскона, И. Сяо и А. Ф. Смитон разработали собственный подход, позволяющий автоматически выявлять «группы риска» среди студентов при обучении компьютерному программированию (Azcona, Hsiao, Smeaton, 2019).

На сегодняшний день большая часть работ по образовательной аналитике и интеллектуальному анализу данных образовательной среды сосредоточена на онлайн-курсах. Некоторые отечественные и зарубежные исследователи занимаются анализом цифрового следа, который студенты формируют в образовательной среде, построенной на различных платформах: в LMS Moodle, в мессенджере WhatsApp, социальных сетях для решения задач повышения качества и индивидуализации обучения. Специализированные сервисы мониторинга учебной активности студентов в Moodle позволяют собирать, хранить и интерпретировать различные

данные для определения индивидуальной траектории обучения, для адаптивной настройки среды и коррекции методик преподавания (Suhonen, 2019). В работе P. Blikstein, M. Worsley представлена попытка объединения нескольких источников данных, таких как жесты, взгляд, речь или письмо при помощи видеокамер или записи лекций, чтобы использовать цифровые следы студентов. Эти данные могут помочь выстроить индивидуальные траектории обучения студентов в более сложной и открытой образовательной среде (Blikstein, Worsley, 2016).

Интерес вызывает подход, применяемый в исследовании M. Misuraca, G. Scepi, M. Spano, где осуществляется семантический анализ текстовых комментариев, ответов, отзывов студентов, написанных на естественном языке. Чаще всего в вузах используются рейтинги студентов для анализа результатов обучения. Применение методов Opinion Mining, интегрирующих статистику, лингвистику и информатику, позволяет обрабатывать комментарии студентов и создавать мощную аналитику (Misuraca, Scepi, Spano, 2021). Изучение цифрового следа студента, «оставленного» в социальных сетях, дает возможность исследовать его «цифровую идентичность». Современных студентов бакалавриата, магистратуры можно считать компетентными в области цифровых технологий, но попрежнему остается актуальным развитие их ответственности, которую они несут в процессе создания интернет-контента (Gamacho, Minelli, Grosseck, 2012).

Таким образом, анализ литературы показал перспективность и новизну научного исследования использования данных цифрового следа студентов в образовательной среде вуза в процессе профориентационной работы и развития педагогической направленности. Научная новизна данного исследования состоит в актуализации не задействованных ранее цифровых данных, образующихся в процессе образовательной деятельности студентов педагогического вуза, для повышения эффективности профориентационной работы, нацеленной на развитие педагогической направленности будущих педагогов, в определении основных источников фиксации цифрового следа по результатам деятельности студентов с целью регулирования профессиональной ориентации на педагогическую профессию и их согласования с этапами профориентационной работы в вузе.

Методология

Материалы и методы исследования определялись его целью, задачами, концептуальными подходами: изучение и теоретический анализ психолого-педагогической, методической литературы, посвященной проблемам профориентации будущих педагогов, и развитие педагогической направленности; электронных образовательных ресурсов и компонентного состава электронной образовательной среды педагогического вуза; анализ образовательных стандартов, учебных планов, программ, учебных пособий подготовки будущих педагогов.

Обсуждение

Рассмотрим цели сбора, фиксации и анализа цифрового следа в структуре профориентационной работы педагогического вуза.

На *этапе набора абитуриентов* данные цифрового следа позволяют сделать вывод о принятии обучающимися решения о своем профессиональном выборе, желании занять определенное место в социальной структуре общества, в социальной группе. Проводимые на этом этапе мероприятия профпросвещения, профдиагностики направлены на выявление интересов и способностей выпускника школы к педагогической профессии.

На *этапе предметной подготовки* (дисциплины предметной, психолого-педагогической подготовки, пассивные практики) (1–2 курсы) происходит формирование представлений о выбранной профессии, установление взаимосвязи учебных дисциплин с профессией педагога. Данные цифрового следа на этом этапе позволят более активно воздействовать на мотивацион-

ную сферу студента с целью формирования профессиональных намерений в соответствии с общественными потребностями, знакомства с особенностями профессии, формирование представлений о ценностно-смысловой стороне педагогической деятельности.

Этап *методико-технологической подготовки и адаптации к профессиональной деятельности* (методические дисциплины, активные практики) (3–5 курсы) направлен на апробирование себя в профессиональной роли, рефлексию и саморазвитие профессионально значимых качеств. На данном этапе продолжается развитие интересов и способностей, связанных с педагогической деятельностью в ходе производственной практики. Данные цифрового следа на данном этапе профориентационной работы в вузе позволяют активизировать процессы формирования профессиональной направленности и самоанализа способностей и возможностей студентов.

На *этапе трудоустройства о*сновной акцент делается на ценностно-смысловую сторону самоопределения, определение профессиональных планов. Педагогическая направленность рассматривается как совокупность устойчивых мотивов. Данные цифрового следа позволяют на данном этапе активизировать процессы рефлексии своей готовности к педагогической деятельности.

Определим основные источники фиксации цифрового следа по результатам деятельности студентов с целью регулирования профессиональной ориентации на педагогическую профессию. Источником для сбора информации могут быть как внутренние информационные ресурсы, так и внешние. Ниже рассмотрены возможные источники на примере Омского государственного педагогического университета (рисунок).

Образовательный портал ОмГПУ является источником следующих данных, которые могут быть полезны при анализе и регуляции профессиональной ориентации студентов:

– статистические данные по результатам обучения по дисциплинам предметной, психолого-педагогической, методической подготовки (балльно-рейтинговая система);

– продукты образовательной деятельности по дисциплинам основной образовательной программы (творческие, исследовательские, проектные задания, курсовые работы);

– данные по результатам педагогических практик (тексты отчетов, продукты практической деятельности, видеоресурсы, фотографии, презентации итоговых конференций по педпрактикам);

– данные по результатам выбора и записи на курсы;

– данные учебных дискуссионных форумов в рамках дисциплин предметной, психолого-педагогической, методической подготовки;

– данные об участии в проектной деятельности;

– данные анкетирования студентов на всех этапах обучения.

Еще одним компонентом ЦОС ОМГПУ является *портал «Школа»*, который обеспечивает открытую образовательную среду сетевого взаимодействия, обмена информационными ресурсами, технологическую поддержку новых образовательных взаимодействий учитель – студент, учитель – студент – ученик, студент – преподаватель – ученик, группа студентов – преподаватель – учитель, группа учителей – группа студентов и др. Это составная часть системы образовательных порталов региональной системы образования. Создаются условия по вовлечению студентов в обстановку будущей профессиональной деятельности и усилению практико-ориентированной подготовки (Fedorova, Ragulina, Udalov, Lapchik, 2019). Перечислим основные направления для сбора данных на образовательном портале «Школа», которые могут быть полезны в процессе регуляции педагогической направленности студентов:

– статистические данные активности студентов на портале;

– данные об участии студентов в разработке и проведении сетевых инициатив для школьников (телекоммуникационные проекты, конкурсы, викторины, квесты);

– данные об участии студентов в разработке и апробации электронных курсов по предметам для школьников;

– данные об участии студентов в научно-практических конференциях, форумах, мастер-классах, проводимых на портале «Школа».

Портал открытого образования OPEN. ОмГПУ содержит бесплатные открытые дистанционные курсы на русском языке, мотивом для обучения на которых служит исключительно личный образовательный и практический интерес, а распоряжение результатами обучения – это дело каждого обучающегося. Данный портал может стать источником следующих данных: тематика выбранных студентами курсов; результаты обучения на онлайн-курсах.

Важным направлением профориентационной работы выступает саморазвитие, и поэтому целесообразно учитывать результаты обучения студентов на внешних онлайн-курсах и ресурсах по профилю подготовки (МООК, тематические вебинары, видеолекции специалистов и др.).

Значимой характеристикой педагогической направленности педагога является мотивированное стремление к взаимодействию с коллегами в сети с целью обмена опытом, коллективной разработки и апробации новых методик обучения. На основе разнообразных форм продуктивного сотрудничества (вебинары, форумы, дистанционные мастер-классы и др.) студенты осваивают технологии, которые в дальнейшем смогут применять при работе с учащимися. Поэтому кроме ресурсов ОмГПУ большой интерес представляют такие внешние ресурсы, как *социальные сети*, *сервисы для коллективной работы*, ресурсы региональных и межрегиональных *виртуальных методических объединений*. Возможность сбора актуальных данных с внешних ресурсов основана на активном участии самих студентов. Интерес со стороны тех, о ком собирается информация, поможет студенту понять, куда двигаться в своем профессиональном развитии. В этом случае необходимо сопоставить вузовский профиль обучаемого с профилем пользователя на других ресурсах. Сделать это можно различными способами, самый простой – предложить обучаемому самостоятельно указать ссылки на профили ресурсов в его личном кабинете. Таким образом можно определить круг профессиональных интересов обучаемого и его активность в профессиональных сообществах.

Дополнить данные, характеризующие педагогическую направленность студента, можно из результатов и сведений, которые отражаются в личном кабинете и электронном портфолио студента:

– награды – дипломы, грамоты, сертификаты и т. д.;

– курсовые работы и ВКР;

– сведения об общественной, волонтерской деятельности;

– научные и творческие работы.

Еще одним важным источником информации о профессиональной направленности студента служит информационная система управления процессами вуза «1С*: У*ниверситет 8 ПРОФ», которая содержит сведения об абитуриенте – участие в школьных педагогических олимпиадах, конкурсах, наличие направления на целевое обучение в педвузе, сведения о профильной довузовской подготовке.

В нашем исследовании мы предлагаем создать информационную систему «Цифровой профиль «Профориентация», в которой аккумулируются и систематизируются сведения о цифровом следе студента из различных источников; расширить функционал личного кабинета студента путем добавления аналитического модуля для обработки накопленных данных; разработать и провести апробацию специального программного комплекса для сбора информации непосредственно с рабочего места обучаемого, что позволит охватить данные из большого числа внешних источников: ЭБС, форумов, социальных сетей, методических объединений педагогов, информационных систем, обучающих ресурсов, образовательных платформ и т. д. (рисунок).

Рис. Источники для фиксирования цифрового следа
Fig. Sources for capturing digital footprints

Заключение

Применение цифрового следа позволяет вывести на новый уровень процесс регулирования профориентации будущих педагогов, отследить направления развития их профессиональных интересов и мотивов. Сбор учебной аналитики помогает прогнозировать успешность/неуспешность обучения, формировать рекомендации по обновлению образовательных программ дисциплин и педагогических практик, оптимизировать процесс привлечения студентов к мероприятиям методической, научно-исследовательской направленности. Как ожидается, данные цифрового следа позволят эффективно и вовремя среагировать на возможные затруднения и падение мотивации, снижение успеваемости, помогут поддержать, дать некоторые советы студентам, направить их и сделать профессиональную подготовку ориентированной более индивидуально.

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Mutual Integration of Information and Mathematical Training for Engineers in the Digitization Era

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Abstract. The article is devoted to the study of the development of interdisciplinary integration on the example of the disciplines «Computer Science» and «Mathematics» in training future engineers in the digitization era. It is considered the trends and directions for development of engineering education at the world level, among which a special role is given to the CDIO approach for implementing interdisciplinary training of future engineering personnel on the base of student-centered learning. It is revealed that information and mathematical modeling is the system-forming factor in the integration of knowledge in Computer Science and Mathematics. It is proposed a classification of IMM on the basis of which it is possible to create integrated educational and practical tasks with interdisciplinary content. *In the experimental part of the research methods of questionnaire, survey, experiment are involved. In order to realize* mutual integration of information and mathematical training the authors developed the scheme of implementation of the models in independent work of students throughout the entire training at ecosystem of technical university. It is defined student-centered learning technology and it is formulated the methodological recommendations for its implementation of the processes of mutual integration of the disciplines in the process of its teaching to students of engineering specialties of universities.

Keywords: engineering education, digitization, student-centered learning, computer science, mathematics, information and mathematical model, interdisciplinary integration, independent work, students' research work.

Research area: pedagogy.

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Взаимная интеграция информационно-математической подготовки инженеров в эпоху цифровизации

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Аннотация. Статья посвящена исследованию проблемы развития межпредметной интеграции на примере дисциплин «Информатика» и «Математика» при подготовке будущих инженеров в эпоху цифровизации. Рассмотрены тенденции и направления развития инженерного образования на мировом уровне, среди которых особая роль отводится концепции CDIO для реализации междисциплинарного обучения будущих инженерных кадров на студентоцентрированной основе. Выявлено, что системообразующим фактором интеграции знаний по информатике и математике выступает информационно-математическое моделирование. Предложена классификация информационно-математических моделей, на основе которой возможно создавать интегрированные учебно-практические задания междисциплинарного содержания. В экспериментальной части исследования задействованы методы анкетирования, опроса, эксперимента. С целью реализации взаимной интеграции информационно-математической подготовки разработана схема применения информационно-математических моделей в самостоятельной работе студентов на протяжении всего обучения в экосистеме технического вуза, определены студентоцентрированные технологии обучения и сформулированы методические рекомендации к осуществлению процессов взаимной интеграции рассматриваемых дисциплин в процессе их преподавания студентам инженерных специальностей вузов.

Ключевые слова: инженерное образование, цифровизация, студентоцентрированное обучение, информатика, математика, информационно-математическая модель, межпредметная интеграция, самостоятельная работа, научно-исследовательская работа студента.

Научная специальность: 13.00.00 – педагогические науки.

Введение

Стремительное внедрение концепции «Индустрия 4.0» обусловило динамику развития цифровой экономики, порождающей новые экономические и технологические потребности, для реализации которых требуются высококвалифицированные инженерные кадры, готовые к изменениям и непрерывному обучению в течение всей жизни в новых условиях информационного общества. При этом цифровая трансформация находит свое отражение и в сфере образования, в том числе инженерного. Университет рассматривается в качестве «цифровой образовательной экосистемы» (Education, 2018), внутри которой осуществляется переход к образованию, главной отличительной чертой которого является ориентация на студента. В этом случае речь идет о студентоцентрированной направленности обучения как основополагающем принципе в современной образовательной парадигме, заложенном в образовательные стандарты нового поколения (Baidenko, 2018; Drozdova, Lobanov, 2007; Education, 2018; Hannafin, Hannafin, 2010; Nosko, 2011; Pak et al., 2015; Pak et al., 2017; Student-Centred Learning, 2010; Vaganova, Iliashenko, 2018; Wright, 2011). Выпускник вуза должен обладать креативным и критическим мышлением, быть ориентированным на непрерывное развитие, самоорганизацию своей деятельности, направленной на создание инновационного продукта.

В связи с чем в настоящее время одной из приоритетных тенденций развития высшего инженерного образования становится подготовка студентов к самообразованию и самоорганизации на основе студентоцентрированных технологий обучения, что соответствует требованиям подхода Международного общества инженерной педагогики (IGIP) и цели внедрения идеи концепции инновационного подхода CDIO (англ. Conceiving – Designing – Implementing – Operating, «планировать – проектировать – производить – применять»), предполагающего практико-ориентированную модель организации учебного процесса в инновационном инженерном образовании. В эпоху цифровой трансформации экономики и общества инженерная деятельность заключается в проектировании, конструировании и разработке современных технических объектов, оптимизации и инжиниринга инновационных производственных процессов, внедрении наукоемких и передовых цифровых технологий, в основу которых положены математические методы, реализованные на базе информационно-коммуникационных технологий (ИКТ). Это предъявляет к профессиональным и цифровым компетенциям инженера требование сформированности умений применять информационно-математическое моделирование для решения профессиональных задач. А потому подготовка будущих инженеров в технических вузах на современном этапе должна быть ориентирована преимущественно на формирование и развитие именно этих умений (Moiseeva, Poliakova, 2018; Noskov, Popova, 2015). Поскольку значительная роль в решении соответствующей задачи отводится совершенствованию методики обучения дисциплинам «Информатика» и «Математика» в контексте их взаимной интеграции, то один из основных вопросов, который ставят перед собой авторы настоящей статьи, – исследование вопросов осуществления межпредметной интеграции на уровне не только знаний, но и видов деятельности.

На сегодняшний день тенденции развития инженерного образования во всем мире основаны на внедрении подхода CDIO (Taajamaa et al., 2016; Yasseri et al., 2018; Zabalawi, 2018, etc.) и подхода к подготовке инженера, выработанного международным обществом инженерной педагогики IGIP (Auer et al., 2013; Auer, 2014; Prikhod'ko, Solov'iev, 2013, etc.). Направленность CDIO: «основным способом обучения выступает включение в основные образовательные программы (ООП) учебно-практических заданий-проектов (индивидуальных или групповых)» (Klarin, 2018) или «интегрированных учебно-практических заданий (ИУЗ), имеющих междисциплинарное содержание» (Fedoseev, 2016); введение проблемного и проектного обучения (Krasavina, 2017; Yasseri, 2018). При этом особая роль в контексте данного подхода к обучению

отводится вопросам осуществления междисциплинарной интеграции и студентоцентрированному обучению, с которыми связаны перспективы развития инженерного образования (Chuchalin, 2018; Dolzhenko, 2017; Fedoseev, 2016; Krasavina, Shikhova, 2017; Perminov et al., 2019; Rodionov et al., 2018; Vainshtein et al., 2016; Verbiczkii, 2010). Направленность подхода IGIP: «умение учить и учиться является ключевым моментом эволюционного развития общества» (Auer, 2013), поэтому будущий инженер должен обладать способностью к самообразованию и самоорганизации.

Обзор литературы

Проблема смены образовательных парадигм в сторону студентоцентрированного характера образовательного процесса в настоящее время активно обсуждается в мировой научной образовательной среде. Особенности технологий студентоцентрированного обучения представлены в работе (Student-Centred Learning, 2010), являющейся частью проекта «Время новой парадигмы в образовании: студентоцентрированное обучение» (t4SCL). Студентоцентрированное обучение тесно связано с личностно-ориентированным подходом, основы которого изложены в трудах известных отечественных ученых-психологов, таких как Б.Г. Ананьев, Л.С. Выготский, А.Н. Леонтьев, С.Л. Рубинштейн, И.А. Зимняя и др. Из чего следует, что «российские ученые еще задолго до Болонского процесса стали рассматривать личность в роли субъекта деятельности, которая сама определяет характер деятельности» (Vaganova, Iliashenko, 2018). В.И. Байденко (Baidenko, 2018) определяет студентоцентрированный подход в обучении «как основной принцип высшего образования, предполагающий активную деятельность обучающихся». При этом «активизация студентов, связанная с достижением конкретного результата, является центральной во всем педагогическом процессе, а его образовательные интересы направлены на формирование профессионально-образовательных ориентиров» (Vaganova, Prohorova, Karpova, 2019).

Значимую роль в реализации студентоцентрированной направленности обучения современных инженеров играет междисциплинарный подход (Baidenko, 2018; Student-Centred Learning, 2010; Vaganova, Iliashenko, 2018, etc.). Первыми в отечественной педагогике затронули проблемы интеграции исследователи Г.И. Батурин, С.Я. Баев и Н.Н. Петухов. В системе образования понятие «интеграция» выступает в двух значениях: «1) создание у обучающегося целостного представления об окружающем мире; 2) нахождение общей платформы сближения предметных знаний» (Berulava, 1993). В структуре интеграции значимое место занимают уровни ее реализации. М.Н. Берулава рассматривает три уровня интеграции содержания образования: «1) уровень целостности; 2) уровень дидактического синтеза; 3) уровень межпредметных связей» (Berulava, 1993). Существенная роль в решении вопросов интеграции отводится также выбору ее основ, которые и будут играть системообразующую роль. В.С. Безрукова отмечает, что «определение системообразующего фактора интеграции – это нахождение основания для объединения» (Bezrukova, 1994: 60).

Анализ научно-методической литературы показал наличие множества подходов к осуществлению интеграционных процессов в преподавании математики и информатики как с точки зрения осуществления интеграции непосредственно между этими двумя дисциплинами, так и каждой из этих дисциплин с дисциплинами естественнонаучного цикла. Так, А.Г. Гейн в своем диссертационном исследовании (Gein, 2000) обосновывает, что информационное моделирование выступает в качестве средства реализации межпредметных связей информатики с дисциплинами естественнонаучного профиля, а понятие информационной модели является принципиальным связующим звеном между информатикой и естественнонаучными знаниями. Мнение академика А.П. Ершова: «Информатика, как отдельная наука, вступает в свои права, когда для изучаемого фрагмента мира построена так называемая информационная

модель … Информационная модель – это то сопряжение, через которое информатика вступает в отношения с частными науками, не сливаясь с ними и в то же время не вбирая их в себя» (Ershov, 1986: 29–30). Предвосхищая появление цифровой эпохи, А. П. Ершов обозначил требование к цифровым навыкам современного инженера: «Понимание необходимости и способности к построению информационной модели должно стать … глубинной составляющей инженерно-технического мышления специалиста» (Ershov, 1985: 2).

В научной работе (Dalinger, 2002: 108) обращается внимание на то, что «системообразующим фактором интеграции естественнонаучных и математических дисциплин выступает математическое моделирование, так как оно позволяет интегрировать математические и естественнонаучные знания в процессе построения и исследования математических моделей реальных процессов и явлений». По мнению авторов работ (Dalinger, 2018; Salleh, Zakaria, 2016), преподавание и изучение математики в школах и университетах следует осуществлять с использованием интерактивных средств ИКТ на примере математических сред Maple и MathCAD. А. И. Чучалин, проводя сравнительный анализ компетенций в американской и болонской профессиональных моделях инженера, выделяет «наличие высокого уровня понимания принципов инженерии, основанных на математике и других научных дисциплинах, имеющих отношение к специализации» (Chuchalin, 2007: 88). М. А. Родионов отмечает, что «рассмотрение вопросов преподавания математики в технических вузах целесообразно осуществлять в ракурсе интеграционной модели учебного процесса», что, в свою очередь, актуализирует «потребность в специальном согласовании методологии математики с методологией инженерной деятельности и технических наук» (Rodionov et al., 2018: 383).

Таким образом, опираясь на анализ научных трудов отечественных и зарубежных ученых и анализируя существующие подходы, связанные с вопросами осуществления междисциплинарной интеграции как одного из перспективных направлений развития инженерного образования в современном мире, в настоящей работе в качестве системообразующего фактора интеграции знаний по информатике и математике обозначим информационно-математическое моделирование, а в качестве основной проблемы, на решение которой направлено исследование, – выявление содержания и методических особенностей включения информационно-математического моделирования в надвигающуюся цифровую образовательную экосистему технического университета. Цель: уход от многопредметности в обучении, лишающей связи между изучаемыми дисциплинами, и переход к межпредметной интеграции, в основу которой положено формирование целостного знания по изучаемым дисциплинам на студентоцентрированной основе.

Материалы и методы

Теоретические выводы, представленные в данном исследовании, основаны на изучении и анализе научно- и учебно-методической литературы, трудах отечественных и зарубежных ученых в области обучения математике (М. Клайн, А. Н. Колмогоров, Л. Д. Кудрявцев, В. А. Гусев, С. М. Никольский, В. Ф. Бутузов, В. А. Далингер, С. Н. Дворяткина и др.) и информатике (А. Г. Гейн, С. А. Бешенков, А. П. Ершов, К. К. Колин, А. А. Кузнецов, М. П. Лапчик, Н. И. Пак, Е. С. Полат, И. В. Роберт, Е. К. Хеннер и др.). Методологическую основу исследования составили: контекстно-компетентностный (В. И. Байденко, И. А. Зимняя, Дж. Равен, А. В. Хуторской, В. Д. Шадриков, А. А. Вербицкий и др.) и практико-ориентированный подходы к обучению (А. А. Вербицкий, Р. А. Кубанов, И. Ю. Калугина и др.); современные концепции субъект-субъектного взаимодействия: личностно-ориентированный (А. Г. Асмолов, Б. Г. Ананьев, Л. С. Выготский, А. Н. Леонтьев, С. Л. Рубинштейн, И. А. Зимняя, И. С. Якиманская и др.) и студентоцентрированный подходы (Н. В. Дроздова, М. Ноулз, Г. Райт, К. Роджерс, М. Ханафин, Ф. Х. Хейворд и др.); концепции инновационного под-

хода CDIO в инженерном образовании (Э. Ф. Кроули, Й. Малмквист, С. Остлунд, Д. Р. Бродер, К. Эдстрем, А. И. Чучалин и др.).

В результате изучения программ и учебно-методических комплексов по дисциплинам (УМКД) математического и информационного циклов проведен подробный анализ существующих межпредметных связей в рамках тем и разделов рассматриваемых дисциплин, на основе которого выдвинута гипотеза о возможных путях осуществления соответствующих интеграционных процессов в обучении студентов инженерных специальностей вузов. При этом, как было обозначено выше, системообразующим фактором интеграции знаний по информатике и математике выступает *информационно-математическое моделирование*. Выбор форм, средств и методов обучения осуществляется на основе компетентностного, личностно- и практико-ориентированного, а также CDIO подходов. Особое внимание уделяется организации самостоятельной работы студентов (СРС), способствующей активизации деятельности студента, его мотивации, развитию способности к самообразованию и самоорганизации.

Экспериментальное обучение в рамках поставленной исследовательской задачи, связанной с осуществлением междисциплинарной интеграции математической и информационной подготовки будущих инженеров, основанной на включении в процесс обучения информационно-математического моделирования, предусматривало подготовку студентов к выступлениям с докладами на научных конференциях, публикации научных статей, помощь в выполнении ими выпускных квалификационных работ (ВКР).

Анкетирование студентов первого и второго курсов ФГБОУ ВО «ОмГУПС» в рамках выполнения научно-исследовательской работы с целью определения потребностей будущего инженера в области ИКТ позволило в дальнейшем провести анализ основных разделов и соответствующих им тем лабораторных работ в дисциплине «Информатика», в которых целесообразно работать с информационно-математическими моделями (ИММ). Более подробно результаты проведенного опроса и их анализ (табл. 1) представлены в разделе «Результаты исследования и обсуждение» настоящей статьи.

Кроме того, нами был проведен опрос студентов, цель которого заключалась в том, чтобы выяснить, какие именно умения были использованы ими при работе с ИММ. Первый путь подразумевает работу с уже готовыми моделями, исследование которых производится с применением средств ИКТ (например, студенты рассчитывают работу двигателя по его индикаторной диаграмме в ходе проведения опыта, затем берут определенный интеграл, изучают его свойства, физический смысл и приводят его в соответствие с рассматриваемой ситуацией, подобрав соответствующую подынтегральную функцию и произведя расчеты с помощью Excel). Второй вариант связан с тем, что студентам предстоит самостоятельно построить ИММ анализируемой ситуации в задаче, а также исследовать с помощью нее поведение системы в зависимости от изменения рассматриваемых параметров (например, подобную работу можно провести при изучении работы двигателя внутреннего сгорания, в котором трехгранный ротор движется по известной математической кривой – эпитрохоиде. В зависимости от параметров ротора эпитрохоида принимает различные формы. Студенты самостоятельно производят вывод формул для определения координат точек эпитрохоиды, опираясь на результаты опытных данных и знания по геометрии. Применение системы MathCAD во многом облегчает выполнение этой работы, сокращая время ее выполнения и делая соответствующее исследование наглядным. В опросе принимали участие 118 студентов первого и второго курсов ФГБОУ ВО «ОмГУПС» и ФГБОУ ВО «СибАДИ», которые хотя бы раз участвовали в научных конференциях различного уровня, а также выполняли задания исследовательского характера при написании курсовых работ (КР). Результа-

Таблица 1. Перечень разделов и тем, изучаемых в дисциплине «Информатика»
Table 1. The list of sections and topics studied in the discipline «Informatics»

№ п/п	Наименование раздела		Наименование темы лабораторной работы
1	Теоретические основы информатики		Системы счисления (B1)
			Объемный и вероятностный способы измерения информации (B2)
			Кодирование информации (B3)
2	Архитектура вычислительных систем		Представление данных в компьютере (D1)
			Логические основы функционирования ЭВМ (D2)
3	Программные средства реализации информационных процессов	Технология обработки числовой информации. Электронные таблицы	Ввод, редактирование и форматирование данных (T1)
			Создание формул. Встроенные функции (T2)
			Вычисления с проверкой условия (T3)
			Графики и диаграммы. Графическое решение уравнений (T4)
			Обработка массивов данных. Макросы (T5)
			Обработка списков данных. Защита данных (T6)
			Основы обработки экспериментальных данных в ЭТ (T7)
			Подбор параметра. Поиск решения (T8)
			Решение оптимизационных задач (T9)
		Технология обработки текстовой информации	Создание и редактирование графических объектов. Редактор формул (W1)
			Вычисления в таблицах с помощью формул (W2)
		Технология баз данных. Системы управления базами данных	Создание вычисляемых запросов к таблице базы данных (A1)
			Создание отчетов к таблице базы данных (A1)
4	Основы алгоритмизации и программирования		Линейные вычислительные процессы. Форматный ввод-вывод данных
			Разветвляющиеся вычислительные процессы. Простые и сложные разветвления
			Разветвляющиеся вычислительные процессы. Выбор по условию
			Циклические вычислительные процессы. Арифметический цикл со счетчиком. Цикл с разветвлением
			Циклические вычислительные процессы. Арифметический цикл со счетчиком. Накопление сумм и произведений
			Циклические вычислительные процессы. Итерационные циклы (циклы с предусловием и постусловием)
			Массивы
			Подпрограммы (функции и процедуры)
			Разработка Windows-приложений средствами языка объектно-ориентированного программирования

ты опроса позволили выяснить сформированность следующих умений, необходимых для работы с ИММ при решении задач в профессиональной деятельности:

– самостоятельно осуществлять поиск информации, необходимой для работы с ИММ (76 %);

– работать с готовой ИММ (62 %);

– строить самостоятельно ИММ рассматриваемой ситуации из профессиональной области (35 %);

– применять средства ИКТ при исследовании ИММ (готовой или построенной самостоятельно) (64 %);

– интерпретировать результаты построения ИММ согласно рассматриваемой реальной ситуации (45 %).

Исследование показало, что включение в процесс обучения метода информационно-математического моделирования как средства взаимной интеграции подготовки студентов по дисциплинам «Математика» и «Информатика» способствовало пониманию значимости математики, ее идей и методов в будущей профессиональной деятельности студентов, более прочному усвоению знаний не только по указанным дисциплинам, но и по специальным дисциплинам, а также повышению уровня самостоятельности обучаемых в решении проблем и задач, поставленных перед ними. При этом полученные результаты позволили сделать вывод, что на начальном этапе обучения в вузе умения студентов, связанные с работой с ИММ, развиты недостаточно. Например, особую сложность представляли задания, в которых требовалось самостоятельно построить ИММ, а затем правильно интерпретировать результаты работы с ней согласно ситуациям из области профессиональной деятельности студентов. Тогда как сформированность именно этих умений является ключевым вопросом при подготовке ВКР на старших курсах, а также в дальнейшей работе в профессиональной области. В связи с чем встал вопрос поиска оптимального содержания и методических путей включения ИММ в процесс обучения в контексте взаимной интеграции изучаемых дисциплин на уровне не только знаний, но и видов деятельности для получения целостного знания по математическим, информационным и специальным дисциплинам.

Результаты исследования и обсуждение

В соответствии с основной целью статьи ставится задача выявления особенностей обучения будущих инженеров информационно-математическому моделированию при выполнении СРС в условиях реализации студентоцентрированного обучения. Необходимость работы в направлении организации СРС подтверждается анализом научно- и учебно-методических пособий по выполнению и оформлению рефератов, КР, проектов, производственной практики и других отчетов СРС, ВКР.

Различают два вида СРС:

1. СРС в аудитории: конспектирование лекций; критическая оценка выступления студентов на семинаре, групповых занятиях, конференциях и т. д.

2. СРС вне аудитории: подготовка к аудиторным занятиям; доработка записей по лекционному материалу; проработка учебного материала по другим источникам информации; выполнение домашних заданий, рефератов, расчетно-графических работ, КР, ВКР; подготовка к экзаменам или зачетам; научно-исследовательская работа студента (НИРС) и т. д.

В число основных видов НИРС входят:

1. Учебная НИРС, предусмотренная учебными планами (КР, производственная/преддипломная практика, ВКР, магистерская диссертация).

2. Исследовательская работа сверх тех требований, которые предъявляются учебными планами (домашние исследовательские задания, лабораторный отчет, реферат, написание научной работы и подготовка доклада для участия в научно-практической конференции (НПК), внутривузовском и национальном конкурсах, научные кружки).

По мнению В. М. Федосеева, НИРС «может быть использована в качестве организационно-методической формы интегрированного обучения. Однако для этого она должна строиться на регулярной

основе и стать плановым видом учебной работы: с нагрузкой, методическим обеспечением и прочим атрибутом» (Fedoseev, 2016: 131).

В процессе НИРС по фундаментальным естественнонаучным и техническим дисциплинам будущим инженерам часто приходится иметь дело с построением ИММ. Вопросам внедрения методов информационного и математического моделирования в процесс обучения посвящен ряд исследований (Babich, Kremlev, 2016; Chuchalin, 2007; Dalinger, 2002; Dalinger, 2018; Ershov, 1985; Ershov, 1986; Gein, 2000; Monica, 2019; Zagvyazinskiy, 2006, etc.). В построении информационно-математической модели средствами ИКТ и в работе с ней значительную помощь оказывает владение навыками, полученными в результате изучения студентами дисциплины «Информатика». В качестве примера можно привести темы научных работ, выполненных студентами второго и третьего курсов ФГБОУ ВО «ОмГУПС», результаты которых были апробированы в рамках ежегодной Всероссийской студенческой научной конференции, проводимой на базе университета, кафедра «Информатика и компьютерная графика»:

1. «Применение языка программирования Visual Basic for Applications для формирования схем при расчете стержней на растяжение-сжатие».

2. «Синтез логической схемы семисегментного индикатора».

В работе (Moiseeva, 2018) представлены современные средства ИКТ, направленные на оптимальную организацию СРС по информатике и математике и в то же время способствующие трансформации познавательной деятельности современного студента в эпоху цифровизации.

Информационно-математическое моделирование как системообразующий фактор взаимной интеграции знаний по информатике и математике

Анализ содержания дисциплин, связанных с изучением математического моделирования в среде специализированного математического пакета, «позволил выявить следующие разделы математики, задачи из которых рекомендуется решать на лабораторных занятиях по информатике: исследование функций и построение графиков; решение задач по теории вероятностей и математической статистике; построение корреляционных и статистических зависимостей; работа с матрицами; решение систем линейных алгебраических уравнений; вычисление определителей различных порядков и т. д.» (Moiseeva, Poliakova, 2018) (эти темы будут включены в табл. 2).

Вышесказанное можно подкрепить полученными результатами НИРС, выполненной студентом ФГБОУ ВО «ОмГУПС» под руководством одного из авторов настоящей статьи, на предмет исследования потребностей будущего инженера в информационных технологиях. Результаты анкетирования студентов старших курсов ФГБОУ ВО «ОмГУПС» показали, что 96 % среди опрошенных студентов систематически применяют офисный пакет Microsoft Office, 4 % – Open Office, 90 % – математический пакет MathCAD. Наряду с использованием указанных программных средств они также применяют такие специализированные программные средства как LabVIEW и Multisim, выбор которых обусловлен спецификой обучения на соответствующем факультете. Обработка анкетных данных в НИРС осуществлялась с помощью встроенных статистических функций Excel. Отметим, что данная НИРС была представлена на студенческой научной конференции с международным участием «СТУДЕНТ: НАУКА, ПРОФЕССИЯ, ЖИЗНЬ», проводимой на базе ФГБОУ ВО «ОмГУПС», с рекомендацией к публикации в сборнике трудов конференции (Karev, Martyushev, 2018).

Результаты анкетирования, проводимого в рамках описанной выше НИРС (Karev, Martyushev, 2018), а также анализ рабочих учебных программ по подготовке студентов технических вузов по дисциплинам информационно-математического цикла на примере ФГБОУ ВО «ОмГУПС»

Таблица 2. Матрица наполнения содержания лабораторных работ в разделах «Теоретические основы информатики», «Архитектура вычислительных систем», «Технология обработки числовой информации. Электронные таблицы»

Table 2. The matrix of filling the contents of laboratory work in the section «Theoretical foundations of computer science», «Architecture of computer systems, «Technology of processing numerical information. Spreadsheets»

Наименование разделов и тем дисциплины «Математика»	B1	B2	B3	D1	D2	T1	T2	T3	T4	T5	T6	T7	T8	T9
Действия вычислительного характера с натуральными числами и дробями	+	+	+	+	+	+	+	+		+	+			
Вычисление логарифмов		+	+			+	+	+		+		+	+	
Моделирование числовых рядов				+		+	+	+		+	+	+	+	
Вычисление производной						+	+	+	+					+
Вычисление пределов						+	+	+	+					
Вычисление определенного интеграла						+	+	+						
Функция. Построение графиков функций						+	+	+	+	+	+	+	+	+
Кривые второго порядка на плоскости и поверхности второго порядка в пространстве						+	+		+	+				
Матрицы и действия над ними						+	+	+		+	+	+		+
Решение уравнений с одним неизвестным						+	+	+	+				+	
Системы линейных алгебраических уравнений						+	+	+					+	
Алгебра высказываний, булевы функции					+	+	+	+		+	+			
Элементы теории вероятностей и математической статистики		+				+	+		+	+	+	+		
Решение задач теории оптимизации						+	+	+					+	+

и ФГБОУ ВО «СибАДИ» позволили выделить основные разделы и соответствующие им темы лабораторных работ (табл. 1) в дисциплине «Информатика», в которых задания целесообразно строить на идеях и методах информационно-математического моделирования.

Некоторым темам дисциплины «Информатика» поставлен код (табл. 1), с помощью которого их можно сопоставить с соответствующими темами в математике (табл. 2, 3). Отметим, что поскольку для создания ИММ необходимо написать программу, используя в совокупности конструкции соответствующего языка программирования, то при составлении списка тем лабораторных работ, осваиваемых студентами в разделе «Основы алгоритмизации и программирования», их сопоставление с темами по математике не проводилось. Необходимо отметить, что при выполнении лабораторных работ (табл. 2) требуется привлечение знаний по математике для реализации информационно-математического моделирования.

С позиции реализации вычислений, свойственных математике, функциональные возможности текстового процессора и системы управления базами данных ограничены, поэтому темы (см. табл. 1), связанные с этим ПО, сопоставим с некоторыми темами математики (табл. 3).

Анализ существующих связей в рассмотрении вопросов, изучаемых в дисциплинах информационно-математического цикла, результаты которого отражены в табл. 1–3, а также методических подходов к преподаванию математики и информати-

Таблица 3. Матрица наполнения содержания лабораторных работ в разделах «Технология обработки текстовой информации» и «Технология баз данных. Системы управления базами данных»

Table 3. The matrix of filling the contents of laboratory work in the sections «Technology of processing textual information» and «Technology of databases. Database Management Systems»

Наименование разделов и тем дисциплины «Математика»	W1	W2	A1	A2
Создание схем, блок-схем, диаграмм и т. д. для описания математических понятий, формул и пр.	+			
Визуализация результатов вычислений	+			+
Вычисление несложных формул с использованием базовых математических и статистических функций		+	+	+

ки позволил сформулировать методические рекомендации к организации процесса обучения студентов в рамках осуществления интеграционного подхода при изучении данных дисциплин.

1. Включение в процесс обучения примеров и задач, подразумевающих работу с блок-схемами: чтение блок-схем, самостоятельное их построение. Анализ специальной технической и учебно-методической литературы показал, что блок-схемы широко используются для визуализации технических процессов, алгоритмов функционирования технических устройств и т. д. Кроме того, методические указания по написанию КР и ВКР также содержат требование по использованию блок-схем.

2. В ходе подготовки студента в рамках дисциплин «Информатика» и «Математика» целесообразно предлагать задания для выполнения СРС, в которых используются ИММ.

2.1. Особое внимание необходимо уделять организации НИРС студентов. Следует проводить такие формы НИРС, как реферат и НПК. При этом важно то, что эти дисциплины изучаются на первом курсе и, как следствие этого, прививают будущим инженерам навыки самостоятельной и исследовательской работы с использованием ИММ средствами ИКТ.

2.2. Метод проектов, по мнению ряда специалистов в области методики преподавания различных дисциплин, является одним из эффективных методов организации СР, реализующим деятельностные основания компетентностного и CDIO подходов (Yasseri et al., 2018). В этой связи при разработке заданий НИРС для НПК особая роль отводится методу электронных междисциплинарных проектов (Krasavina, Shikhova, 2017), результаты выполнения которых следует оформить в виде доклада и мультимедийной презентации и представить на студенческой НПК.

Главная задача, которая ставится перед инженером в процессе проектирования технического объекта (ТО), – адекватно описать нужный процесс в математических терминах: построить математическую модель и провести ее математический анализ. При этом обработку материала (результаты тестирования модели, экспериментальную часть исследования) можно осуществить с помощью специальных программных средств (компьютера). Это опять же указывает на то, что в процессе математического моделирования важна как математическая подготовка будущего инженера, так и то, насколько глубоко он владеет навыками работы с ИКТ.

Не случайно «математическую основу информатики составляют значимые разделы современной математики, особенно те из них, на которых базируются прикладные разделы математики. В зависимости от этапа решения задачи математические методы, используемые для его поиска, могут быть весьма разнообразны. Например, при постановке задачи речь может идти

о математическом моделировании, что, в свою очередь, определяет состав входной информации, а также о действиях различного характера, связанных с алгоритмизацией задачи» (Nastashchuk, Poliakova, 2017). Последнее оказывает существенное влияние на выбор математических методов, необходимых как для переработки входной информации, так и для получения требуемых промежуточных или окончательных результатов.

Информационно-математическое моделирование в содержании обучения будущих инженеров

Анализ содержания табл. 1–3 показывает преобладание в дисциплине «Информатика», прежде всего, тех тем, в которых реализация математических моделей изучается посредством соответствующих программных средств. Математические модели рассматриваются как разновидность информационных моделей в информатике, поэтому эти модели можно назвать «информационно-математическими моделями» (Mogilev et al., 2012).

Математическая модель – информационная модель, построенная с использованием математических понятий и формул.

Математическая модель технического объекта – совокупность математических объектов и отношений между ними, которые верно отражают свойства разрабатываемого устройства.

Академик А. А. Самарский считается основоположником отечественного математического моделирования. Именно он выразил методологию математического моделирования знаменитой триадой «модель – алгоритм – программа» (Samarskii, Mikhailov, 2005).

I этап. Модель. Выбирается или создается модель исследуемого ТО, отражающая его значимые свойства в математической форме.

II этап. Алгоритм. Выбирается или разрабатывается алгоритм для реализации построенной модели на компьютере. Проводится изучение построенной ИММ методами вычислительной математики.

III этап. Программа. Создается компьютерная программа для реализации ИММ и алгоритма на компьютере.

Предложенная методология получила свое развитие в виде технологии «вычислительного эксперимента». В настоящее время принято говорить о компьютерном математическом моделировании, или *компьютерной (информационно-) математической модели (КММ)*, под которой будем понимать программу, которая исполняет расчеты состояния моделируемой системы по ее ИММ (Samarskii, Mikhailov, 2005).

КММ реализуются с помощью средств систем программирования, технологии ЭТ, математических пакетов и другого специализированного ПО для моделирования. Необходимо отметить, что важным свойством КММ является возможность визуализации результатов расчетов с помощью средств компьютерной графики (анимация, блок-схема, диаграммы, схемы, чертежи и др.).

Аналитический обзор специализированной литературы (Mogilev et al., 2012; Samarskii, 2005; Sovetov, Sovetov, 2017; etc.) позволил выявить методы реализации ИММ на компьютере (табл. 4): графические (Гр), аналитические (Ан), вероятностно-статистические (ВС), имитационные (Им), численные (Чс) методы. Эти методы можно использовать как самостоятельно, так и комплексно.

В табл. 5 представлено ПО, функциональные возможности которого позволяют реализовать рассмотренные выше методы (см. табл. 4).

Для системного описания большого разнообразия ИММ, используемых специалистами инженерного профиля, требуется их классификация. Анализ работ авторов, занимающихся вопросами математического и информационно-математического моделирования (Dalinger, 2018; Khekalo, 2015; Mogilev, 2012; Samarskii, Mikhailov, 2005; Sovetov, 2017, etc.), позволил объединить существующие подходы к классификации математических моделей, применяемых в задачах по информатике для будущих инженеров (табл. 6).

Таблица 4. Методы реализации ИММ
Table 4. Methods for implementing IMM

Наименование метода	Назначение ИММ	Краткая характеристика метода
Графические	Оценивают порядок входных параметров ИММ и направление исполнения расчетных алгоритмов	Представляют ТО в виде технологических карт, диаграмм, блок-схемы и т. д.
Аналитические	Выражают неизвестные величины через входные параметры в явном функциональном виде: $y_j = F_j(x_1, x_2, \ldots, x_n)$, $(j = 1, 2, \ldots, k)$. По данным формулам выполняются любые вычисления для нужных значений входных параметров	Реализуются в специализированных математических пакетах, в которых ИММ представляет собой систему уравнений, при решении которой получают параметры для оценки ТО
Вероятностно-статистические	Устанавливают зависимости между выходными характеристиками ТО и его входными параметрами, в случае если эти зависимости стохастичны по своей природе и выявляются на основании выборочных данных статистического наблюдения за анализируемыми переменными	Используются при обработке результатов, полученных имитационными методами
Имитационные	Анализ ТО, в котором стохастические воздействия преобладают	Визуализируют реальные процессы и ситуации, характерные для ТО
Численные	Используются в том случае, когда не удается получить аналитическое решение для ИММ	Реализуются средствами вычислительной математики, в которых ИММ представляет собой систему линейных и нелинейных уравнений

Таблица 5. ПО для методов реализации ИММ
Table 5. Software for methods of implementing IMM

№ п/п	Наименование ПО		Методы				
	Группа	Вид	Гр	Ан	ВС	Им	Чс
1	Прикладное ПО общего назначения	Электронные таблицы (Microsoft Excel, QuattroPro OpenOffice.Org Calc, и др.)	+	+	+	+	+
		Текстовый процессор (Microsoft Word, OpenOffice.org Writer и др.)	+	+/-	+/-		
		Системы управления базами данных (Microsoft Access, Informix, Oracle и др.)		+/-	+/-		
2	Специализированное прикладное ПО	Математические пакеты (MathLab, MathCad, Maple, «Математика» и др.)	+	+	+		+
		Программные средства для имитационного моделирования (Arena, AveSim, Any-Logic, GPSS, Simula и др.)				+	+
		Программные средства статистической обработки данных (Statistica, SPSS, StatGraphs и др.)	+		+	+	
3	Системы программирования (Embarcadero C++ Builder, Microsoft Visual Basic, Microsoft Visual C++, Fortran и др.)		+	+	+	+	+

«+» – функциональные возможности ПО реализуют метод в полном объеме. «+/-» – функциональные возможности ПО частично реализуют метод.

Таблица 6. Классификация ИММ
Table 6. IMM classification

№ п/п	Признак классификации		Типы ИММ
1	По цели моделирования ТО		Дескриптивные (описательные)
			Кибернетические (игровые)
			Имитационные
			Оптимизационные однокритериальные
			Оптимизационные многокритериальные
2	По характеру процессов, протекающих в ТО	Наличие неизвестных факторов	Детерминированные
			Стохастические (вероятностные)
			Нечеткие
			Комбинированные
		Наличие временных факторов	Статические
			Динамические
		По области определения независимых переменных	Дискретные
			Непрерывные
			Дискретно-непрерывные
3	По принадлежности к иерархическому уровню описания ТО		Модель микроуровня
			Модель макроуровня
			Модель метауровня
4	По способу представления свойств ТО		Алгоритмические
			Аналитические
			Имитационные
5	По характеру отображаемых свойств ТО		Структурные
			Функциональные
			Функционально-логические
6	По способу получения функциональных зависимостей ТО		Теоретические
			Формальные
			Эмпирические

С точки зрения применения ИММ к описанию свойств и процессов, характерных для ТО, эти модели проектируются и обрабатываются в большей степени инструментарием специализированного прикладного ПО, которое используется в научной и практической деятельности инженера.

Опираясь на представленную классификацию ИММ (см. табл. 6) и темы, изучаемые будущими инженерами в вузовском курсе информатики (см. табл. 1–3), составим матрицу, которая наглядно отразит его потенциал для создания ИММ (табл. 7).

Содержание табл. 7 показывает, что на первом курсе не все ИММ возможно реализовать при изучении тем вузовского курса «Информатика» и, соответственно, организации СР студентов. Рекомендуется формулировать ИУЗ, решение которых основано на построении, реализации и исследовании обозначенных ИММ (табл. 7). Типология ИУЗ по информатике и матема-

Таблица 7. Матрица возможной реализации ИММ в вузовском курсе «Информатика»
Table 7. The matrix of the possible implementation of IMM in the university course «Informatics»

№ п/п	Типы ИММ	Темы, изучаемые в вузовском курсе Информатика»													
		T1	T2	T3	T4	T5	T6	T7	T8	T9	P	A1	A2	W1	W2
1.	Дескриптивные	+	+	+	+			+			+	+	+	+	+
2.	Кибернетические	+	+	+	+	+	+	+	+	+	+				+
3.	Имитационные	+	+	+	+	+		+			+	+	+	+	+
4.	Оптимизационные однокритериальные	+		+	+	+	+			+	+				+
5.	Оптимизационные многокритериальные	+	+	+	+	+	+	+	+	+	+	+	+	+	+
6.	Детерминированные	+	+	+	+		+		+		+	+	+		+
7.	Стохастические	+	+	+		+	+	+	+		+	+	+	+	+
8.	Нечеткие	+			+	+			+		+				+
9.	Комбинированные	+	+	+	+	+	+	+	+	+	+	+	+	+	+
10.	Статические	+	+	+	+						+				+
11.	Динамические	+	+	+	+	+	+	+	+	+	+	+	+	+	+
12.	Дискретные	+	+				+		+		+				+
13.	Непрерывные	+	+	+	+	+	+	+		+	+	+	+	+	+
14.	Дискретно-непрерывные	+	+	+	+		+			+	+	+	+	+	+
15.	Модель микроуровня	+	+	+		+		+			+			+	+
16.	Модель макроуровня	+	+	+		+					+		+		+
17.	Модель метауровня	+	+	+		+		+			+			+	+
18.	Алгоритмические	+	+	+		+					+		+		+
19.	Аналитические	+	+	+	+	+	+	+	+	+	+	+	+	+	+
20.	Имитационные	+	+	+	+		+	+	+	+	+	+	+	+	+
21.	Структурные	+	+	+		+	+				+			+	+
22.	Функциональные	+	+	+	+	+	+	+	+	+	+	+	+	+	+
23.	Функционально-логические	+	+	+	+	+	+	+	+	+	+	+	+	+	+
24.	Теоретические	+	+	+		+	+	+		+	+	+	+	+	+
25.	Формальные	+	+	+		+	+				+			+	+
26.	Эмпирические	+	+	+	+	+	+	+	+	+	+	+	+	+	+

тике для будущих инженеров представлена в работе (Dalinger et al., 2020).

Схема непрерывной интеграции информационно-математической подготовки будущих инженеров

Анализ ООП и учебных планов подготовки будущих инженеров показал, что дисциплины, в которых изучается математическое моделирование ТО с помощью специализированного ПО, как правило, начинают преподавать студентам на втором курсе (см. табл. 5). Затем студенты продолжают осваивать специальные дисциплины, изучают ИКТ или/и автоматизированные информационные системы в соответствующей отрасли производства, для которой осуществляется подготовка будущих инженеров. В рамках этих дисциплин студенты строят ИММ с помощью средств математического обеспече-

ния специализированной ИКТ или/и автоматизированной информационной системы. Таким образом, при обучении будущего инженера в техническом вузе его готовят к непрерывному образованию, в том числе в области информационно-математического моделирования.

На основе анализа содержания табл. 7, форм внеаудиторной СРС определим возможную схему реализации ИММ в СР будущего инженера в процессе всей подготовки в техническом вузе (табл. 8). Введем следующие обозначения внеаудиторной СРС, в которых целесообразно исследовать ТО, особенности его функционирования и поведения посредством ИММ, реализованной на компьютере:

СР^{И} – СРС по дисциплине «Информатика»;

СР^{М} – СРС по дисциплине «Математика»;

СР^{ММ} – СРС по дисциплине, в которой изучается математическое моделирование ТО;

Таблица 8. Реализация ИММ в самостоятельной работе будущего инженера при обучении в техническом вузе

Table 8. IMM implementation in the future engineer's independent work while studying at a technical university

№ п/п	Курс, семестр Тип ИММ	1	2	3	4/4^{Б}	5/5^{С}	6^{М}
		1–2	3–4	5–6	7–8	9–10	11–12
1	2	3	4	5	6	7	8
1.	Дескриптивные	СР^{И}, СР^{М}	СР^{ММ}	СР^{СД}, П	СР^{СД}, П	СР^{СД}, П	
		НИРС^{И}, НИРС^{М}	НИРС, КР	НИРС, КР	КР, ВКР^{Б}	КР, ВКР^{С}	КР, ВКР^{М}
1	2	3	4	5	6	7	8
2.	Кибернетические	СР^{И}, СР^{М}	СР^{ММ}	СР^{СД}, П	СР^{СД}, П	СР^{СД}, П	
		НИРС^{И}, НИРС^{М}	НИРС, КР	НИРС, КР	КР, ВКР^{Б}	КР, ВКР^{С}	КР, ВКР^{М}
3.	Имитационные	СР^{И}, СР^{М}	СР^{ММ}	СР^{СД}, П	СР^{СД}, П	СР^{СД}, П	
		НИРС^{И}, НИРС^{М}	НИРС, КР	НИРС, КР	КР, ВКР^{Б}	КР, ВКР^{С}	КР, ВКР^{М}
4.	Оптимизационные однокритериальные	СР^{И}, СР^{М}	СР^{ММ}	СР^{СД}			
		НИРС^{И}, НИРС^{М}	НИРС, КР	НИРС, КР			КР, ВКР^{М}
5.	Оптимизационные многокритериальные	СР^{И}, СР^{М}	СР^{ММ}	СР^{СД}	СР^{СД}, П	СР^{СД}, П	
		НИРС^{И}, НИРС^{М}	НИРС, КР	НИРС, КР	КР, ВКР^{Б}	КР, ВКР^{С}	КР, ВКР^{М}
6.	Детерминированные	СР^{И}, СР^{М}	СР^{ММ}	СР^{СД}	СР^{СД}, П	СР^{СД}, П	
		НИРС^{И}, НИРС^{М}	НИРС, КР		КР, ВКР^{Б}	КР, ВКР^{С}	ВКР^{М}
7.	Стохастические	СР^{И}, СР^{М}	СР^{ММ}	СР^{СД}, П	СР^{СД}, П	СР^{СД}, П	НИРС^{М}
		НИРС^{И}, НИРС^{М}	НИРС, КР	НИРС, КР	КР, ВКР^{Б}	КР, ВКР^{С}	ВКР^{М}
8.	Нечеткие	СР^{И}, СР^{М}	СР^{ММ}	СР^{СД}, П	СР^{СД}, П	СР^{СД}, П	ВКР^{М}
		НИРС^{И}, НИРС^{М}	НИРС, КР	НИРС, КР	КР, ВКР^{Б}	КР, ВКР^{С}	НИРС^{М}
9.	Комбинированные	СР^{И}, СР^{М}	СР^{ММ}	СР^{СД}, П	СР^{СД}, П	СР^{СД}, П	ВКР^{М}
		НИРС^{И}, НИРС^{М}	НИРС, КР	НИРС, КР	КР, ВКР^{Б}	КР, ВКР^{С}	НИРС^{М}
10.	Статические	СР^{И}, СР^{М}	СР^{ММ}	СР^{СД}, П	СР^{СД}, П	СР^{СД}, П	ВКР^{М}
		НИРС^{И}, НИРС^{М}	НИРС, КР	НИРС, КР	КР, ВКР^{Б}	КР, ВКР^{С}	
11.	Динамические	СР^{И}, СР^{М}	СР^{ММ}	СР^{СД}, П	СР^{СД}, П	СР^{СД}, П	ВКР^{М}
		НИРС^{И}, НИРС^{М}	НИРС, КР	НИРС, КР	КР, ВКР^{Б}	КР, ВКР^{С}	НИРС^{М}
12.	Дискретные	СР^{И}, СР^{М}	СР^{ММ}	СР^{СД}, П	СР^{СД}, П	СР^{СД}, П	ВКР^{М}
		НИРС^{И}, НИРС^{М}	НИРС, КР	НИРС, КР	КР, ВКР^{Б}	КР, ВКР^{С}	

$СР^{СД}$ – СРС по дисциплине, где изучаются ИКТ или/и автоматизированные информационные системы в соответствующей отрасли, для которой осуществляется подготовка будущих инженеров;

$НИРС^{И}$ – НИРС по дисциплине «Информатика» (реферат, НПК);

$НИРС^{М}$ – НИРС по дисциплине «Математика» (реферат, НПК);

КР – курсовая работа;

П – производственная, преддипломная практика;

$ВКР^{Б}$ – ВКР инженера-бакалавра;

$ВКР^{М}$ – магистерская диссертация;

$ВКР^{С}$ – ВКР инженера-специалиста;

$4^{Б}$ – четвертый курс обучения инженера-бакалавра;

$5^{С}$ – пятый курс обучения инженера-специалиста;

$6^{М}$ – шестой курс обучения инженера-магистра.

Заключение

Проведенный анализ актуальных подходов к осуществлению взаимной интеграции информационно-математической подготовки в рамках настоящего исследования позволил сформулировать следующие выводы.

1. Показана значимость информационно-математической подготовки в условиях реализации стандартов нового поколения инженерного профиля. Обозначено, что информационно-математическое моделирование выступает системообразующим фактором взаимной интеграции, так как оно позволяет интегрировать знания по информатике и математике в процессе построения и исследования ИММ ТО. При этом определен потенциал информационно-математического моделирования для ИУЗ, являющихся основой технологии взаимной интеграции дисциплин «Информатика» и «Математика».

2. Предложена классификация ИММ ТО и систематизировано ПО для реализации методов ИММ, которые служат основой отбора учебного и специализированного материала при формировании системы ИУЗ, ориентированных на практическое применение полученных знаний будущим инженером, что соответствует студентоцентрированной направленности обучения в рамках идеологии компетентностного подхода.

3. Определена одна из наиболее эффективных организационных форм взаимной интеграции информатики и математики – СРС – в период обучения студента в экосистеме технического вуза. Представлены методические аспекты интеграции информационно-математической подготовки, реализуемые посредством использования в обучении интерактивных, контекстных и проектных технологий. Предложена схема реализации ИММ в СРС при обучении в экосистеме технического университета.

Таким образом, проведенное исследование показало необходимость усовершенствования студентоцентрированной направленности обучения будущих инженеров в условиях прогрессирующей цифровизации экономики и общества. Дальнейшие перспективы исследования заключаются в продолжении разработки проблемы интеграции информатики и математики на уровне дидактического синтеза в эпоху становления и развития методологии цифровизации образовательного процесса, а также масштабных и ускоряющихся технологических изменений в мире.

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Formation of Digital Competences of University Library Users

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Abstract. The paper presents various approaches to defining the concepts of 'information competencies' and 'digital competencies'. The point of view of scientists on the essence, structure and ways of developing digital competencies are considered, the concept of students' digital competence in modern conditions is clarified. The influence of this process on the development of the university library is emphasized. Digital competence is defined as the student's high-level ability to communicate in the digital space (highly mobile intelligent devices, smart technologies, network professional communities) with the goal of self-realization and continuous innovative development.
Among new challenges for the university library in digital environment the main ones are considered to be the emergence of new social and technological tasks, the specifics of working with users of the university library, and changing access to electronic resources while maintaining the invariability of main functional purpose of university library. The integrity and systemic development of digital competence of students in the conditions of the university library is reflected. The purpose of this paper is to unlock the potential of the university library as a subject of digital competencies development of students who will work in the digital age.
The experience of the Scientific Library of the Siberian Federal University on developing digital competence of students is presented. Profiles of digital competencies of library users are proposed, which include two areas of responsibility: 1) information competencies and 2) digital competencies. The results of the study were refined and summarized, the results of the study were systematized, methodological recommendations were prepared to increase the effectiveness of libraries.

Keywords: competency approach, digital competencies, digital culture, information competence, digital literacy, digital services, university library, electronic library, user training.

Research area: culturology.

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Формирование цифровых компетенций пользователей университетской библиотеки

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Аннотация. Представлены различные подходы к определению понятий «информационные компетенции» и «цифровые компетенции». Рассмотрена точка зрения ученых на сущность, структуру и пути развития цифровых компетенций, уточнено понятие цифровой компетентности студентов в современных условиях. Подчеркнуто влияние этого процесса на развитие университетской библиотеки. Цифровая компетентность определена как способность студента высокого уровня общаться в цифровом пространстве (высокомобильные интеллектуальные устройства, интеллектуальные технологии, сетевые профессиональные сообщества) с целью самореализации и непрерывного инновационного развития.
Новыми вызовами для университетской библиотеки в цифровой среде считают появление современных социальных и технологических задач, специфику работы с пользователями, изменение доступа к электронным ресурсам при сохранении неизменности основного функционального назначения. Отражена целостность и системность развития цифровой компетентности студентов. Цель данной статьи – раскрыть потенциал университетской библиотеки как субъекта развития компетенций студентов, которые будут работать в цифровую эпоху.
Представлен опыт Научной библиотеки Сибирского федерального университета по развитию цифровой компетентности студентов. Предложены профили компетенций пользователей библиотеки, которые включают две области ответственности: 1) информационные компетенции и 2) цифровые компетенции. Результаты исследования были уточнены, обобщены и систематизированы, подготовлены методические рекомендации по повышению эффективности работы библиотек.

Ключевые слова: компетентностный подход, цифровые компетенции, цифровая культура, информационная компетентность, цифровая грамотность, цифровые услуги, университетская библиотека, электронная библиотека, обучение пользователей.

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Introduction

The rapid growth of digital technologies has a significant impact on the development of the economy and society. The role of individual technologies, such as artificial intelligence, the Internet of things and blockchain, is increasing, what leads not only to the transformation of production processes, but also to the emergence of

new markets, a radical change in business models (platforms, ecosystem companies etc.) (Hallo et al. (2016)). Decisions based on digital technologies give opportunity to optimize processes, simplify scientific and technological cooperation, promote the connectivity of territories, and involve small enterprises in value chains. The key resources of the digital economy are intangible assets (information, knowledge, competencies) (Abdrakhmanova et al. (2020).

One of the main conditions for the development of digital technologies and their implementation into practical activities is the process of formation and development of digital competencies. The study of digital competencies problems in Russia was actively promoted after the adoption of the national program 'Digital Economy of Russian Federation' in 2018. Russian Federation Ministry of Digital Development, Communications and Mass Communications has been appointed the responsible executor of the national project 'Digital Economy'. On December 24, 2018, the Passport of the national program 'Digital Economy of the Russian Federation' was approved, the Passport provides the long-term (until 2024) implementation of the following federal projects: normative regulation of the digital environment, information infrastructure, personnel for the digital economy, information security, digital technologies, digital public administration.

According to the Federal Project 'Personnel for the Digital Economy', the concept of the basic model of the digital economy competencies, a list of key competencies and updating mechanism of these competencies should be developed. In February of 2019, the Analytical Center under the Government of the Russian Federation held a round table on 'Discussion of approaches to the formation and implementation of the basic model of the digital economy competencies'. The developed model will be created in advance, it will be integrated into different levels of education. Professional standards will be taken into account, and digital competencies will be reflected in federal state educational standards.

However, currently there is no unambiguous method of digitalization process. All the definitions of the digital economy that are found in the literature describe digital economy as «economy created on a new technological basis» and «economy multiplied by new technological capabilities, primarily the ability to collect, store and transfer huge amounts of data».

Global technological advances are forcing organizations to digitize their resources and functions. This process is becoming more intense. Digital tools provide a variety of possibilities to manage changes. They help employees of the organization communicate globally and in a new way. The problem of people being ready for existence and development in the digital environment has become relevant. However, these tools still are not publicly available in modern organizations not only in Russia (Kohnke (2017), Astakhova (2019), but also abroad (Dempsey (2017), Ducas (2020), Khan (2017), Pontika (2019).

The process of digitalization is also underway in the field of higher education. Educational institutions are equipped with high-quality software, information systems presenting access to educational resources, electronic scientific libraries, the results of modern scientific research and development. In these circumstances, the problem of the active use of digital resources in accordance with the goals and objectives of modern education is relevant. To solve this problem, it is necessary to form training competencies that they will need in the conditions of digital economy development.

The purpose of this paper is to unlock the potential of the university library as a subject of digital competencies development of students who will work in the digital age.

Digital transformation of education

The rapid development of the digital economy in Russia requires the system of higher professional education to train specialists who can easily adapt to the quickly changing conditions of the professional environment, to the fast perception and processing of large amounts of information, to master modern tools, methods and technologies of work (Cox et al. (2019).

Digitalization of the economy affects the life of the people and the functioning of the labor market. The demand for labor is also trans-

forming under the influence of digital technologies: the need for specialists in the field of information and communication technologies is increasing, and skills in working with these technologies are becoming mandatory for many professional groups. Digital skills determine the competitiveness of an individual in the labor market: the number and quality of jobs available to him, the level of wages. And the prevalence of such skills affects the level of development and competitiveness of the country's economy (Abdrakhmanova et al. (2020).

According to the National Doctrine of Education in the Russian Federation until 2025, the education system is designed to provide training for highly qualified specialists capable of professional growth and professional mobility in the conditions of society digitalization and the development of new knowledge-intensive technologies, which is impossible without their developed ability to implement complicated information activities.

The reform of higher vocational education on the basis of a competent approach and its use in assessing the quality of future specialists' training has updated the study of problems related to the definition of ways to form competencies, not individual knowledge and skills. In accordance with the Federal State Educational Standards for Higher Professional Education, which are based on a competent approach, graduates of all educational areas must have general cultural and professional competencies, related to information processes in one way or another. Despite the fact that information education in universities is actively developing, employers still point to a low level of knowledge of graduates of information work technologies, their information and analytical thinking (Smolina (2016).

The wide and intensive development of computer educational programs, primarily online ones, radically changes the process and format of higher education and is a serious challenge to higher school – both in the content of the educational process and in its organization. Digitalization requires new, completely different competencies. The main function of learning and education is to «teach to learn», to be ready for changes, to work with more complex projects, to borrow advanced practices including foreign ones, to expand the outlook by tracking trends in other industries and professions (Adeleke et al. (2019), Green et al. (2017). Moreover, the digital competence of university graduates should exceed the existing nomenclature of competencies – in order to work ahead of the situation. Digital technologies radically change the content of taught disciplines and the form of their submission. Universities are actively entering the mass education market of the already established international form of distance education with open Internet access (Tulchinsky (2017).

Competence and digital competencies

Modern imperatives of mastering new digital technologies have actualized the problems of digital literacy and digital culture. Emergence and wide circulation of the competence-based approach to education which united in itself knowledge, abilities, possession and personal qualities of the person led to emergence of the new term – information competences which is smoothly transformed to digital competences today. The term digital competencies today is the most common in the West (Praseptiawan et al. (2019), Raza et al. (2019), Shen (2019), Sinisalo (2015), Soltovets et al. (2020) but not in Russia (Astakhova (2019).

There is no consensus on the concept and structure of digital competence in pedagogical science. We will determine the concepts of information and digital competence, which are an instrument for the development of the information and digital culture of an individual.

Information culture of personality includes information worldview, value aspects and is characterized by integration into the sphere of culture. Since information can exist in different forms, including digital, it is logical to assume that digital culture is part of information culture (Astakhova (2019). To seize information culture it is necessary to have information competences (knowledge, abilities, skills).

The concept of information competence is quite broad. N.I. Gendina analyzed various definitions related to the concept of information culture, and came to the conclusion: at

present «non-unified terminology is used, which often does not have a clear definition… instead of such simple for some people concepts defining a person's knowledge and skills in such work with information, as… 'computer literacy', 'information literacy', 'information culture' (Gendina (2005). T. S. Vinogradova imagines information competence as «personality quality, which is a combination of knowledge, skills and value attitude to the effective implementation of various types of information activities and the use of new information technologies to solve socially significant problems that arise in real situations of a person's daily life in society» (Vinogradova (2012), Smolina et al. (2019).

Tabachuk N. P. defines information competence as an integral characteristic related to the experience in information reality, methods of interaction with technology and technology in order to realize the general and professional information needs of a person (Tabachuk (2019).

Thus, information competence is an integrative quality of a person, which is the result of interpretating the processes of selection, absorption, processing, transformation and generation of information into a special type of subject-specific knowledge, which allows you to develop, make, predict and implement optimal decisions in various areas of activity.

Digital culture is a set of competencies that characterize the ability to use information technologies and communication technologies for a comfortable life in a digital environment, to interact with society and solve digital problems in professional activities (Mikhailova et al. (2019).

Astakhova L. V. defines the digital competence of a person as their high-level ability for information interaction in the digital space of highly mobile intelligent devices, smart technologies and network professional communities with the goal of self-realization and continuous innovative development (Astakhova (2019).

Tabachuk N. P. defines digital competence as high-level meta-abilities for the existence in digital space of highly mobile intelligent devices; SMART-competence as a formation of SMART-person's personality, which perfectly utilizes SMART-technologies for search, analysis of information and creation of innovations, and interacts in professional network communities (Mikhailova et al. (2019).

The European system of digital competencies for citizens, known as DigComp 2.0, includes 5 areas of digital competencies (Astakhova (2019): 1. Information literacy. 2. Communication and cooperation. 3. Creation of digital content. 4. Safety. 5. Problem solving.

Competencies of digital culture can be divided into universal, general professional and professional competencies. The universal competencies of students' digital culture meet the social and personal needs of harmonious personal development and socialization in the information society based on the use of invariant technology for the collection, processing and interpretation of data arrays in digital form and are common to all areas of training of relevant levels of higher education.

The general professional competencies of digital culture characterize the ability of a graduate to use subject-independent technologies for collecting, processing and interpreting content-invariant data arrays in digital form (Baker et al. (2016), Chalkiadaki (2018), Grant et al. (2020).

Professional competencies of digital culture characterize the ability of a graduate to use subject-oriented technologies for collecting, processing and interpreting object-oriented data on the tasks of professional activity and the content of data arrays in digital form. The basic (key) competencies of digital culture, which include universal and general professional competencies, are common (mandatory) for various profiles of university training (Mikhailova et al. (2019)).

Role of the university library in the formation of digital competencies

The university library has always made great efforts to develop information education in the country as an information and educational center of the university. The library of the university is traditionally engaged in the collection, cataloguing and promotion of the library fund, systematic study of the informa-

tion needs of users, raising the level of library's bibliographic and information knowledge, and popularization of services. With the development of information technologies, there was a need for training in the search for information on the Internet, work with scientific databases and licensed electronic resources (Kudrina et al. (2019).

The formation of competencies that allow you to not only search for information, but also critically evaluate it, protect yourself from harmful effects in the media space, create new content, distribute information through various channels come to the fore. Any specialist's success in professional activity in the conditions of informatization of society will depend on the ability to function in the 'information field' (Smolina et al. (2019).

The range of digital competencies as an object of teaching students by the university library may include their ability (Chalkiadaki (2018), Soria et al. (2017), Wadson (2019), Wadson (2019), Zaitseva et al. (2017).

): 1) to consume digital content: its search, selection, understanding, evaluation, interpretation, storage, protection; 2) reproductive activity in the digital environment: interaction and cooperation, interchange of digital content based on network etiquette standards; 3) productive activities in the digital environment: creation, integration and creative processing of digital content, including processing that uses programming and machine learning technologies, copyright protection; 4) reflexive activities in the digital environment: identifying information and digital needs and gaps in digital competence for the implementation of various activities in this environment (consuming, reproductive and productive). We believe that modern Russian university libraries can focus on expanding the range of competencies related to these aspects of user information behavior in the digital environment.

The forms of information competence libraries users training are diverse. Its content is to teach to use the library resources both on material and electronic media, remotely; develop search skills on the Internet, in the database and electronic catalog of the library; information quality assessment etc. The choice of the training form depends on the goals of the university library, the level of trainees' information culture and the librarians' style of work (Smolina et al. (2019).

In a digital society, forms of learning must inevitably change: traditional library lessons into a mixed learning, i. e. combined with video instructions, hypertext and interactive textbooks, specially developed web pages etc. For successful development of students' digital competencies in explained earlier limits including use of innovative forms and methods university libraries require closer integration at all levels: with the university management, faculty, students, employers etc. (Astakhova (2019).

Training in digital competencies by the university library has to be integrated into the curricula and plans of all levels of education, including graduate school. One of the principles of this process is continuity: the library can actively cooperate with employers to develop the digital competencies of current and future employees of organizations.

Materials and methods

Stages of the study

Siberian Federal University (SibFU) is a leading university, driver of economic development of the East Siberian region. SibFU is multidisciplinary higher educational institution conducting educational activities in 41 main educational programs. Some of its tasks are the digitalization of educational and research processes, increasing the level of digital literacy, developing competencies for the digital transformation of education.

The scientific library of the SibFU (SL SibFU) as one of the divisions of the university provides information support for the educational process and scientific research. Students make up to 90 % of the total number of users, respectively, the key task of the library is to promote the educational, scientific and professional activities of students.

A significant part of library processes has been put into digital mode. An extensive fund of electronic information resources has been formed (today about 60 million documents are available to users); A document search system

has been set up. There are various services for readers: users are registered in an automated mode; order and reception of literature, electronic copies of documents on inter-library subscription. Users are informed about new sources of information in accordance with individual thematic requests. Library employees conduct training on working with information databases, library services, bibliographic managers etc. The electronic course «Digital information resources for research and educational activities» has been developed. Online seminars are regularly held on the preparation of scientific articles for publication in highly rated foreign publications with the involvement of leading scientists of the SibFU.

To determine the effectiveness of training events, study and analyze the digital competencies of library users, identify possible problems and form an information promotion strategy, a study was conducted to determine the digital competencies of users.

All the work carried out within the framework of this study can be divided into three main stages.

At the first stage, a detailed analysis of scientific sources was carried out, on the basis of which it was possible to identify existing approaches to the definition of the concepts of 'information competencies' and 'digital competencies'.

At the second stage, the state of the problem of developing the digital competence of students in domestic and foreign science and the practice of higher educational institutions was analyzed, the concept of developing the digital competence of students in modern conditions is clarified. The influence of this process on the development of the university library in the conditions of digitalization is emphasized.

At the third stage, experimental work was carried out to develop the digital competencies of students at the university. Profiles of digital competencies of SL SibFU users are proposed, which include two areas of user responsibility: 1) information competencies and 2) digital competencies. The results of the study were refined, summarized and systematized, methodological recommendations were prepared. The study identified students' priorities in the use of electronic resources. The results of the study make it possible to develop a Library Development Strategy and identify measures to increase the effectiveness of the library.

Experimental study base

The scientific library of the Siberian Federal University is the experimental base of this study.

Analysis of digital skills of students of SFU

The sociological study «Digital competencies of SL SibFU users» was organized in order to analyze the digital competencies of library users. It should help to adjust the work of the library to train users, satisfy their needs and requests as much as possible, improve the comfort of service.

The method of collecting information was a survey (questionnaire) was conducted in electronic form. The questionnaire was anonymous. Google tools were used during data processing. The questionnaire consisted of 13 questions, which provided a multivariable way of answering (one question was open and suggested a detailed answer). Answers for some questions used the method of users' self-assessment of their digital competencies level.

Students of 15 university institutes took part in the questionnaire. A total of 948 respondents were interviewed.

Research hypothesis: users of the Scientific Library have a sufficient level of digital competence related to the search for information and work with electronic information resources and services, as well as high digital skills that allow them to work effectively in a digital environment.

The questions were grouped into clusters and presented in table 1:

1. Information competencies in digital environment.

2. Digital competencies.

Analysis of study results

The first set of questions showed that about 79 % of respondents have a level of knowledge of information technologies sufficient for educational activities that allow them to search the Internet and the library. When answering the

Table 1. Grouping Questionnaire Questions by Block

Type	Questions
Information Competencies	*Rate the overall level of digital technology proficiency of university students.* *Are you having difficulties finding information for training?* *What information resources are the most convenient for you?* *What educational resources do you use the most for preparation to classes?* *How often do you use the electronic catalog of the Scientific Library to search for information?* *Which forms of digital resource training do you think are most effective?* *Are you part of the online communities of the Scientific Library of the SibFU on social networks?*
Digital Competencies	*What digital services and/or computer programs do you use in training the most?* *Which digital services are most convenient for you to use in distance learning?* *Which of the Russian scientific and educational databases that are subscribed to by the Scientific Library of the SibFU have you worked with?* *Which of the foreign databases that are subscribed to by the Scientific Library of the SibFU have you worked with?* *What digital services of the Scientific Library do you use?* *What new digital services, in your opinion, should be implemented in the Scientific Library of the SibFU?*

question: «Which information resources are the most convenient for you?» the vast majority of library users (93 %) chose electronic resources. To prepare to classes, most users more often use various search engines (34.9 %), educational portals and sites (27 %), to a lesser extent – digital educational resources and electronic libraries (7.9 %), open electronic scientific resources (Open Access – 7.9 %), resources of the Scientific Library of the SibFU (6.3 %).

The educational and scientific activities of the modern user of the library can not be imagined without the use of modern means of communication: e-mail, messengers and social networks. Today social networks are the most convenient platform for informing about library's resources, services and events, a way of interaction between the librarian and the user, and a means of promoting library services. The vast majority of users surveyed are subscribed to the online communities of the Scientific Library on social networks (63 % on Vkontakte and 37 % on Instagram and Facebook).

The results of this response block revealed a low demand among students for library information resources compared to open sources on the Internet, setting for librarians the task of more active promotion of their electronic collections, for example, through social networks, since students are active users of these communication sites.

The next block of questions is devoted to the analysis of the overall level of digital literacy of users and the use of digital technologies in educational and scientific activities.

The question «What digital services and/or computer programs do you use in training the most?» showed that 82.5 % of respondents use office applications and programs the most to prepare and demonstrate presentations and video materials (76.2 %), as well as specialized software (MathCAD, AutoCAD, ANSYS, etc.) – 20.6 %, since ownership of these software products is necessary for successful completion of educational disciplines.

One of the key issues was the most preferred services among library users in distance learning (see Figure 1).

The results showed that the services of the SFU: My SFU, E-courses, Webinar SFU – are actively used by students, which means they will be effective for integrating library resources into the university's information environment.

To determine how to interact with users, the question was asked: «Which forms of training when working with digital resources

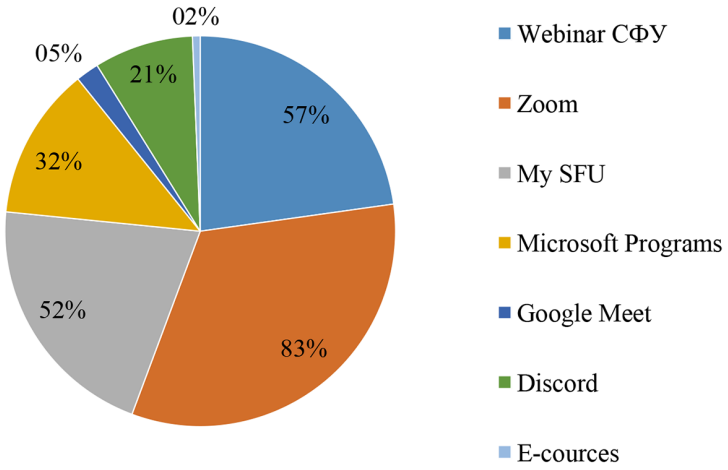

Fig. 1. The most convenient services for users in digital learning

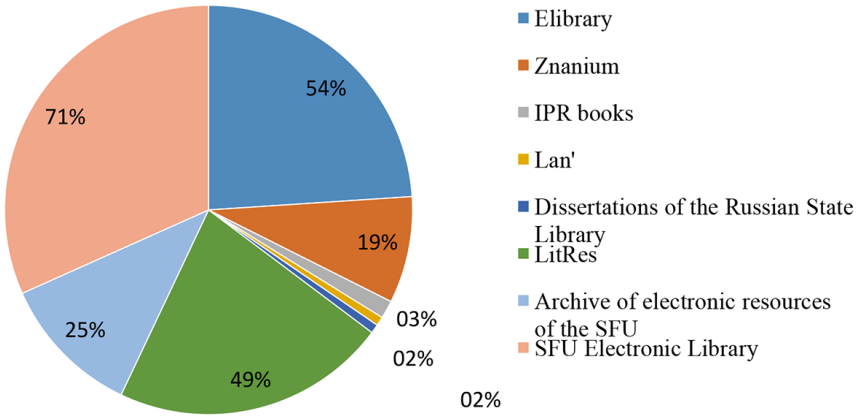

Fig. 2. Use of Russian electronic resources

are the most effective?». The vast majority of respondents (82.5 %) expressed a desire to take part in e-learning courses, 34.9 % noted individual online consultations and 30.2 % – individual offline consultations, 14.9 % would like to undergo training in working with information resources and only 7.9 % of students voted for inclusion in the curriculum of the discipline «Fundamentals of information culture».

The active use of Russian information resources is shown in Figure 2. The most popular among students is the electronic library of the SFU (71.4 %). Among Russian databases, students prefer eLIBRARY.RU, the largest Russian information portal containing more than 13 million abstracts and complete texts of publications. This resource is used by 54 % of respondents; 49,2 % of respondents in their activities include the Litres.ru resource, containing popular scientific literature and fiction. A low percentage (about 4 % or less) of turns was noted to the dissertation database of the Russian State Library and electronic library systems.

An analysis of the use of foreign electronic resources showed that less than 20 % of respondents turn to these resources. The main reasons for the low use of foreign databases are the lack of knowledge of the foreign language and the inactive participation of students in research activities.

To the question: «What digital services of the Scientific Library do you use?» respondents answered as follows: online registration in the library (38,1 %), viewing the electronic form (27 %), booking publications (7.9 %), replacing of lost books (1.6 %), determination indices (6.3 %), inter-library subscription (3.2 %), book security (4.8 %), text checking for borrowing (76.2 %), room booking (3.2 %), online-registration to return books (6,3 %), Directory assistance (7,9 %). The answers showed that possessing digital competencies, students are inactive in using the resources and services offered by the SL SibFU.

It can be assumed that students do not have enough information (what resources are available in libraries) and skills to work with library resources. Therefore, librarians need to review the needs of users and plan activities to improve performance. However, while answering the question «What new digital services need to be implemented in the Scientific Library of the SibFU?» most readers (78 %) answered that the library is fine as it is. Only a quarter of respondents offered their options: 22 % indicated that they wanted to receive video consultations and to have access to advanced training courses with a certificate for its completion, as well as access to the Coursera platform and a reading app for mobile devices.

Analyzing the results, it can be noted that the hypothesis about the high level of digital competencies of library users has been confirmed. Most users confidently use basic Internet technologies, students prefer open sources in the Internet to the information resources of the Scientific Library, they have developed stable communication skills for work in a digital environment.

As a result of the study, the objectives of the Scientific Library were clearly identified:

1. Creating digital products in various formats about the resources and services of the Scientific Library.

2. Formation of competencies among students on qualified search of information in library resources, assessment of quality of received information, competent use of it, compliance with academic ethics standards in digital environment.

3. Integration into the university's information environment through the use of digital services of the SibFU for the promotion and conduct of training events.

4. Use library and university online communities as a communication platform.

5. Further development of its own digital user consulting services.

Conclusion

Digital technologies radically change the content of taught disciplines and the form of their submission. The reform of higher professional education on the basis of a competent approach and its use in assessing the quality of training of future specialists made the study of problems related to the definition of ways to form digital competencies that ensure the solution of information problems a relevant issue.

The challenges of the university library from the digital environment, while maintaining the invariability of its main traditional functional purpose, radically change many technologies and forms of its work. New technological tasks are emerging, access to information resources is changing, ways of working with users are being transformed, digital library and information services are being implemented.

One of the key tasks for the university library is the task of forming users' digital competencies using digital forms and means of communication. Libraries can be encouraged to actively interact with the educational divisions of the university, faculty to be included in the information and educational environment of the university.

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