

ICEST 2021**II International Conference on Economic and Social Trends for Sustainability of Modern Society****EDUCATIONAL ACTIVITIES OF TEACHERS IN DISTANCE
LEARNING DURING A PANDEMIC**

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Abstract

The article examines the issues of organizing the educational activities of university teachers in the context of an emergency transition to the format of distance learning during a pandemic. The emergency transition created unique conditions for scaling classical forms of distance education, the experience gained requires description and analysis. Purpose of the study: to analyze the organization of educational activities of university teachers, to identify problems, advantages, positive and problematic educational practices. The study is based on theoretical approaches that describe changes in social practices under the influence of digital technologies, the impact of digital devices on the personality and the development of social relations. To identify positive and problematic practices of educational activity in the context of an emergency transition to the format of distance learning, a questionnaire survey method was used. The possibilities and limitations of digital educational technologies in the context of emergency scaling of distance learning, problem areas in the technical equipment of teachers, socio-psychological, methodological readiness of teachers to work in a digital environment were identified. It is shown that the development and preservation of the existing teaching corps require organized meaningful professional retraining associated with the formation of digital didactics skills. The scaling of the distance learning experience has launched the processes of qualitative changes in the education system. The groups of teachers and students were identified who consider the use of distance learning technologies as an opportunity to achieve well-being in education, implement an individualized and humanistic approach and equalize educational opportunities.

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Keywords: Educational activities, educational practices, distance learning, pandemic, university



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1. Introduction

The unique situation of an emergency transition of educational systems of different states to the distance learning format has already been called a "stress test". 95 % of students worldwide have switched to distance or mixed learning (Lessons of the "stress test", 2021), which amounted to more than 1.75 billion students, more than 200 million teachers around the world provided this process (Kondakov, 2020), and almost 1 billion children, according to UNESCO, on the contrary, were deprived of the opportunity to attend educational institutions (Education: From disruption to recovery, 2020).

The risks and uncertainties caused by the spread of a new viral infection became a challenge to the education system, determined the need to analyze the current situation, identify problem areas, growth points, and directions for the transformation of educational processes. The scaling up of traditional distance learning forms has created conditions for mass testing of distance education by various participants in the educational process, which means a potential increase in interest or resistance to the distance learning format, an expansion in the number of participants in the educational process who have realized the new opportunities and limitations of education in the digital world.

The increasing risks and uncertainties of the modern world, which cannot be leveled, make the property of antifragility (Taleb, 2014) of the educational system, the ability to respond flexibly to emerging situations of risks and uncertainties, to change and acquire the properties necessary in the changed conditions, in demand. This means that it is necessary to analyze the ongoing changes in the educational activities of teachers as key subjects of the educational process, the current state and their readiness for the transformation of educational processes, the acquisition of new properties and qualities that create conditions for the antifragility of the education system in conditions of high risks and uncertainties.

2. Problem Statement

2.1. Distance learning practices in a pandemic

The uniqueness of the current situation provoked a response from the general public and the scientific community. The number of publications related to the analysis of the development of the situation on the implementation of distance learning under the influence of the pandemic is significant in both Russian and Western literature. A wide range of issues is discussed. The issues of creating a digital educational environment are considered by a number of researchers, i.e. Dneprovskaya and Shevtsova (2020); Perevalov et al. (2020); Nabokova and Rogacheva (2020); Legan et al. (2020). The formation of a digital educational environment is actualized by the issues of digital competencies of participants in the educational process, these problems are considered by researchers, such as Chorosova et al. (2020); Karsenti et al. (2020); Glukhov, (2020), Krylova and Levashov, (2020). Problems, risks, and threats of the digital educational environment are analyzed by E. A. Butina (Butina, 2020); Volchik and Shiriaev, (2020). Assessments of the experience, educational activities of students and teachers are presented in the works of researchers, such as Kazak et al. (2020); Zhuravleva, (2020); Ivanova, (2020); Zaitsev et al. (2020). Success factors in Online Learning in the assessments of students from the Jack H. Brown College of Business and Public Administration (JHBC) of California State University, San Bernardino (CSUSB) (n =987) are

analyzed by Wart et.al., (2020). The research team noted the following success factors as significant: the presence of a basic online methodology, educational support, teacher training participation, cognitive tools to stimulate student learning, social comfort during online classes, interactivity and presence during classes. Fidalgo et al. (2020) conducted a study of the perception, attitude and motivation to learn using distance technologies, the survey involved undergraduate students in Portugal, the United Arab Emirates and Ukraine. Issues of working methods in an online environment, tools for stimulating students' interest in online classes are presented in the K. F. study. Hew et al. (2020) on the example of a large Asian university (The University of Hong Kong). Social networks as tools to support the educational process in the period of social distancing during the pandemic crisis are considered by Kara et al. (2020).

2.2. Digital competencies of teachers

The problems of the digital divide in the teaching environment are discussed in the work of Soomro et al. (2020). The authors examine the digital divide at the physical, motivational, skill, and teacher use levels. The authors were able to find statistically significant differences in access to ICTs depending on their socio-demographic, status characteristics. Trends in the use of ICT by teachers on the example of higher education institutions of the Department of Antioquia in Colombia are analyzed by Ricardo-Barreto et al. (2020). Digital competencies of teachers (n=634) were analyzed in the study of Liu et al. (2020).

2.3. The digital transformation of education

Together with the analysis of the current situation, its difficulties and contradictions, the search for solutions to current problems related to the need to solve the problems of organizing the educational process, the questions of philosophical understanding of the transformation of education under the influence of digitalization are raised. Murzina (2020) notes an ambiguous attitude to digitalization: it "... is perceived not so much as a technological modernization and the introduction of new media of educational information, but as a process of dehumanization that threatens man and society, the loss of a meaningful component of life in favor of mechanical (artificial, externally set) algorithms and standards" (p. 107). Pfanenstil and Panarin (2020) also note the ambiguity of the use of information technologies, the cult of technologies leads to the loss of human significance, the dehumanization of traditional interactions between the main subjects of the educational process. Chernykh (2020) considers the digitalization of education as a disruptive innovation, believing that the uncertainties and fears provoked by digitalization must be overcome for sustainable development. Kravchenko (2020) noting the ambivalent nature of digitalization, the non-linearity of development, raises the question of the risks of digital education, "based on pragmatic values". In the digital technology society, a humanistic-oriented education is needed, whose mission is to preserve the essence of the human (p. 3183).

2.4. Research focus

The emergency transition created unique conditions for scaling classical forms of distance education, the experience gained requires description and analysis. The problematic statement is due to a number of circumstances:

- rapid scaling of distance learning educational practices,
- the interests of all participants in the educational process (teachers, students and parents) were affected,
- insufficiently formed digital competencies of all subjects of education,
- technical and didactic issues demanded an urgent solution.

The emergency transition created unique conditions for scaling classical forms of distance education, the experience gained requires description and analysis to predict trends in the development of educational technologies, infrastructures, and control systems. In such a situation, the role of the teacher as an ideologist and driver of the educational process is very great.

3. Research Questions

The study addressed the following questions:

- What are teachers' perceptions of distance education?
- What technical equipment and soft do teachers use for conducting classes?
- What is the level of training and digital skills of the participants in the educational process?
- Are there differences in digital competencies in different groups of teachers?
- Do teachers want to develop and support distant learning?

4. Purpose of the Study

Purpose of the study: to analyze the organization of educational activities of university teachers, to identify problems, advantages, positive and problematic educational practices.

5. Research Methods

5.1. The theoretical framework of the research

The research is based on theoretical approaches describing changes in social practices under the influence of digital technologies (Nitsevich, 2018), the impact of digital devices on personality and social relations (Zhuravleva, 2020).

To identify positive and problematic practices of educational activity in the context of an emergency transition to the distance learning format, the questionnaire survey method was used. The survey was conducted among university teachers (N=118) and aimed at identifying assessments of the experience gained during the pandemic. Methods of statistical data processing, methods of data interpretation were used to interpret empirical data.

5.2. Structure and design of the questionnaire

The design of the questionnaire included the following questions: demographic questions about age, gender, taught subjects, technical and programmatic aspects of access to online classes, previous experience of distance learning in vocational training and retraining programs. The questionnaire also included questions about technologies/services that were used to conduct online classes, to organize independent work and certifications; self-assessment of skills and abilities that are in demand for remote work; situations that arose during the work period; as well as possible prospects for maintaining such a form of work in the post-crisis period. The respondents were asked closed questions, semi-closed questions, and multiple choice questions. The questionnaire consisted of 26 questions.

5.3. Data collection and analysis

The survey was conducted in June 2020, which allowed us to record the experience and assessments of teachers received during the emergency transition to distance learning and the mass use of various digital technologies in the educational process (electronic information environment of the university, video conferencing services, messengers, social networks, video hosting, etc.). Statistical analysis and comparison methods were used in the analysis of the results.

5.4. Study sample

The study sample is targeted and accessible. The survey was conducted among teachers who had training sessions in the period April-June 2020. There was held a continuous survey of teachers of a regional Russian university. The sample includes different groups of teachers by age, gender, academic degree, position, work experience, and previous experience with e-learning systems. The sample composition consists of men 45%, women 55%; teachers of STEM disciplines 70%, 7.6% teachers of socio-economic disciplines, 12% of humanities, and a small number of teachers of natural sciences and physical education. Other characteristics of the respondents are described in Table 1.

Table 1. Characteristics of respondents (job position, work experience)

		Working experience at the University					Total
		up to 3 years	3-5 years	from 5 to 10 years	from 10 to 15 years	over 15 years	
What position do you work in?	Professor	0	0	0	0	11	11
	Docent	0	1	4	12	36	53
	Senior Lecturer	0	5	12	5	22	44
	Teacher, assistant	3	1	3	0	3	10
	Total	3	7	19	17	72	118

6. Findings

One of the key conditions for the success of the educational process is the teacher, who acts as the ideologist and organizer of the educational process, creates conditions for successful educational practices in the classroom. The skills, technical capabilities and competencies of the teacher are also very important

when teaching online. Issues of teacher readiness have often been seen as a cornerstone in discussions about online learning, both in pre-pandemic publications and in studies evaluating the experience gained during the pandemic.

6.1. Technical equipment and soft

The choice of a device for preparing and conducting classes is determined by the capabilities and preferences of teachers. 8.5% of respondents noted that they used all of these types of devices, depending on the situation. The most popular device was a laptop (more than 70% of respondents), and mobile phones/smartphones were very actively used (42.4%). Based on the answers, we can talk about flexible practices for choosing technical devices for training and conducting classes. At the same time, experts note the expediency of using two / several monitors during classes in order to "simulate, as far as possible, the appearance of a full-time class – one monitor for viewing all participants in the "gallery view", and the other for viewing presentation materials" (Hew et al., 2020). The distribution of responses to the question about the used devices is shown in Table 2.

Table 2. Distribution of answers to the question: What devices do you use to prepare and conduct classes online (a multiple choice question, any number of answers can be selected)?

What devices do you use to prepare and conduct classes online?	N (respondents)	% (respondents)
Computer (decktop)	75	63.6
Laptop / Netbook/Macbook/ portable computer	84	71.2
Tablet	10	8.5
Mobile phone/ smartphone	50	42.4
Other	7	6.6
Total	118	100

Table 3 shows the services used by teachers during the pandemic.

Table 3. What technologies did you use to organize online educational work with students (a multiple choice question, it was allowed to select all the options that were used in educational activities during the pandemic)?

What technologies do you use to organize educational work with students online (check all the technologies you use)?	N (respondents)	% (respondents)
Electronic educational environment of the University	107	90.7
E-mail (corporate, personal)	88	74.6
Video conference (Big Blue Button, Googl Meet, Zoom, Discord, etc.)	73	61.9
Messengers (WhatsApp, Viber, Telegram, etc.)	47	39.8
Social networks (VKontakte, Odnoklassniki, Facebook)	36	30.5
Skype	24	20.3
Channel on the video hosting service You Tube	8	6.8
Trello Project Management System	1	0.8
Other	6	5.1
Total	390	

To assess the experience, the respondents were divided into two groups based on work experience: the first group included teachers with less than 15 years of experience, the second one - 15 or more years. The division of groups is rather arbitrary, but it is determined by a number of external factors: the technological renewal of the world as a whole and the education system, the spread of technological innovations (See Figure 1). In the generational model, these groups can be considered in the horizon of generations X and Y. Table 4 shows the detailed composition of the groups.

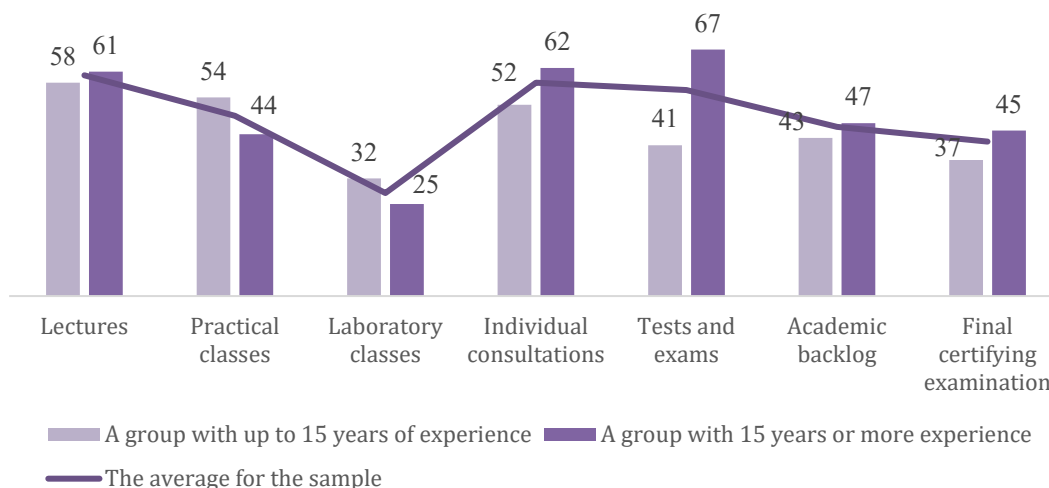


Figure 1. Conducting different types of classes using information and communication technologies during distance learning in connection with the pandemic situation by teachers with different socio-demographic characteristics (% respondents)

Table 4. Groups of teachers who differ in their work experience at the university

What position do you work in?		Experience of scientific and pedagogical work		Total (N respondents)
		less than 15 years	15 years or more	
Professor	Professor	0	11	11
	Docent	17	36	53
	Senior Lecturer	22	22	44
	Teacher, assistant	7	3	10
Total (respondents)		46	72	118

6.2. The level of training of participants in the educational process: digital competencies of teachers

Distance learning technologists rely on teachers having the necessary technical and pedagogical skills to integrate digital technologies into the learning process and use digital devices in educational practices (Agranovich, 2020).

The European model of digital competencies includes information literacy, communication and collaboration skills, security in terms of privacy, health and well-being, data and device security, and

problem solving, such as solving technical problems or using digital technologies creatively (Digital skills Training..., 2018).

Based on this model, teachers were asked to evaluate their skills and abilities in using the digital environment in such areas as protection against risks and threats, protection of personal data, ensuring confidentiality, protecting the health and well-being of the teacher and students, adjusting the digital environment to personal needs, solving technical tasks for installing, configuring and approving software and equipment, communicating with students using digital technologies, interaction and communication using digital technologies. In order to assess the skills needed to organize and conduct classes using remote technologies, respondents were asked to determine the level of their skills on a scale from "Very low" (1), "Fairly low" (2), "Medium" (3), "Fairly high" (4), to "Very high" (5). Figure 2 shows a comparison based on the average scores of groups with different university experience. The result of the comparison is shown in Figure 2. The scores in the groups do not differ significantly. Teachers with less than 15 years of experience are more confident in solving technical problems, installing and configuring software, and their grades are on average slightly higher than those of a group of more experienced colleagues. This can be explained as a really higher level of these skills, and subjectively more confident possession of them.

Finally, teachers were asked to choose the three most interesting areas for them to develop new skills for working in a digital educational environment. Preferences were distributed as follows: creation of digital educational materials (70.3%), digital didactics (43.2%), security in the digital environment (43.2%), etiquette and ethics in the digital environment (36.4%), data analysis skills (44.9%). In the free answers, the following topics were suggested: "conducting video lectures", "exploring the various possibilities of online platforms, advanced opportunities for group practical and seminar classes", "effective waste of time when conducting an online class", "exploring various online opportunities".

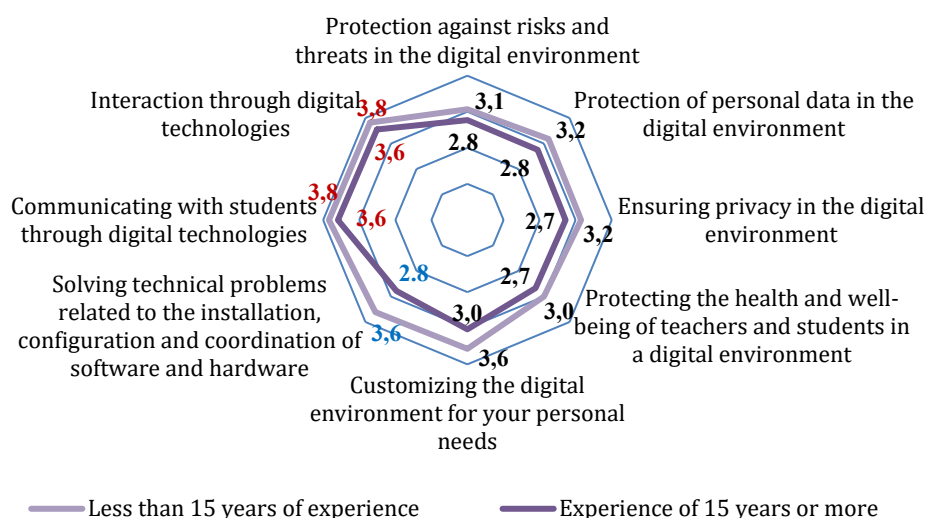


Figure 2. Distribution of answers to the question: "Evaluate your skills and abilities necessary for organizing and conducting classes using remote technologies" (comparison of median values)

6.3. Readiness assessments to support and develop distance learning practices

Assessment of readiness to work in the format of distance learning teachers were asked a semi-closed question "What do you feel about the fact that part of your classes will be held online?" with the opportunity to offer their own answer. Opinions on this issue are divided into groups that reflect the entire range of opinions from support to rejection. 27.7% defined their position "rather negatively", 22% "completely negatively". At the same time, 9.3% gave a completely positive answer, 17.3% "rather positive". 16.6% defined their position as "neutral". In the free answers, it is noted that it is possible "provided high-quality technical support", "for laboratory and practical work – neutral, for lectures-completely negative", "drawing up an adequate schedule if the administration wants to control the teacher, in my opinion, is impossible", " If necessary (example: pandemic)" (the spelling of the respondents is preserved).

Table 5. A comparative assessment of the attitude to the fact that part of your classes will be held online with the experience of teachers at the university

Matching table assessment of the possibilities of working remotely * Work experience				
Assessments of the possibility to continue		Working experience at the University		Total (pers.)
		less than 15 years	15 years or more	
I rather agree, totally agree	Quantity	15	17	32
	Adjusted balance	1.5	-1.5	
Rather disagree, totally disagree	Quantity	18	40	58
	Adjusted balance	-1.5	1.5	
Total	Quantity	33	57	90
	%	100.00%	100.00%	100.00%

The distribution of responses was analyzed by groups of teachers who differ in their work experience at the university. In order to compare the attitude of different groups of teachers to the continuation of online learning practices, the method of constructing conjugacy tables was used. The results of the comparison are presented in Table 5. The comparison excluded respondents who identified their position as neutral or found it difficult to answer the question (therefore, 90 responses were used for comparison). The comparison showed that the responses in different groups did not significantly differ. Both in the group of more experienced teachers, and in the second group, there are supporters and opponents of online education. Such estimates can be considered typical in comparison with similar studies conducted in other regions.

7. Conclusion

Scaling up the distance learning experience has triggered the processes of qualitative changes in the education system. The study showed that teachers are a professional environment that is prepared for inclusion in online educational practices and shows a willingness to network with students. There were identified the groups of teachers and students who consider the use of distance learning technologies as an opportunity to achieve well-being in education, implement an individualized and humanistic approach and

equalize educational opportunities. Improving distance learning practices should be associated with the development of digital didactics skills, the development of methods of teamwork with the class, motivating students to perform independent work that precedes discussion in the classroom and encourages student involvement. The remote model is in demand for the risk society, it is useful in certain situations (such as a pandemic), special localities and circumstances.

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