Problems of transition from traditional forms of educational process to the distance, digital format in the context of the COVID-19 pandemic: a regional aspect

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Abstract. This article outlines the results of a study of transition of educational organizations training specialists at the higher education level from traditional contact methods of direct interaction with students (classroom lectures, practical (laboratory) classes, etc.) to distance, contactless forms of educational process in the context of the COVID-19 pandemic. The study considers specific problems that higher education institutions faced during the spread of the COVID-19 virus and proposes ways to address emerging ones. In addition, the article reflects the results of the educational process of one of the higher education institutions in the Krasnoyarsk region (the Institute of Land Surveying, Cadaster and Nature Management of the Krasnoyarsk State Agrarian University), on the basis of which the impact of the identified problems on the educational process is assessed. Positive aspects of "digitalization" of educational institutions, which allowed ensuring the continuity and accessibility of the educational process, are also indicated. The benefits of the distance mode of knowledge transfer and the prospects for the development of distance learning considering the threats of the COVID-19 virus have been identified and noted. Establishing problems of transition to a distance form of conducting the educational process allowed to determine the factors and conditions that should be taken into account to ensure that both teachers and students are as effective and efficient as possible.

1. Introduction
The relevance of the topic of this study is determined by the current situation, calling for compliance with the self-isolation requirements in the light of the recent COVID-19 pandemic. Considering this, and taking into account the recommendations of the Federal Service for Surveillance on Consumer Rights Protection and Human Wellbeing of the Russian Federation and other state bodies, it was vital to restructure the current Russian educational process as quick as humanly possible.

In fact, any educational organization already employs digital education to some degree, but the extent of its use varies and is determined by both the level of education and the location of the educational institution.

Even so, the "digitalization" of any element of the educational process at any level of education fulfills modern needs, preparing a participant for public relations of a new format, ready to master significant amounts of knowledge swiftly and continuously throughout the lifetime, as well as creating and generating innovative approaches in professional activities [1]. Meanwhile, multiple scientists...
differently interpret the process of "digitalization" and its impact on the development of the modern society [2]. A number of researchers believe that the essence of this process is to translate existing information into the digital format, defining a new type of communication, thought and, in general, interaction between individuals in society. Other scientists regard this new process as marking the shift to the higher quality of life for all the people. Another group of researchers has no doubt that "digitalization" performs as a tool for improving all the economic structures, modernizing infrastructure, management systems, and the sociocultural aspect of people's lives [3].

In addition, most modern scientists focusing on the problem of "digitalization" agree that cloud and cognitive technologies will only increase their influence on society and entire public life [4].

Considering this, it is vital to explore the problem of shifting the educational process from using traditional forms of knowledge transfer to using the distance, digital format, accounting for the fact that the educational process has to be simultaneously continuous, accessible, and as contactless as possible in the state of the impossibility of using traditional contact forms of transferring knowledge.

2. Problem statement
The main objective of this research is to assess the scope of problems universities, organizations that train specialists at the higher education level, face during the accelerated transition from traditional forms of teaching to distance, digital ones dealing with the pandemic caused by the COVID-19 virus.

3. Research Questions
The study will provide answers to the following questions:

- What are the biggest problems universities have to solve during the transition to teaching in a distance, digital, format exclusively?
- Which key features of the digital technologies allowed to ensure the continuity and mass character of the educational process in universities?
- How should these factors and conditions be taken into account when implementing the educational process purely in a distance, digital format?
- What are the prospects for distance learning in universities and how the experience of distance, digital education can be used in the context of the COVID-19 pandemic?

4. Purpose of research
The main purpose of this study is to address the problems arising during the implementation of the distance, digital learning process in universities facing the COVID-19 pandemic and to analyze the results of this transition.

5. Methods of research
During this research, we have used the following methods:

- theoretical (analysis of scientific literature, analysis and comparison of the grades of students passing their winter and summer exam sessions);
- empirical (questioning, testing, observation, etc.).

6. Results and discussion
At the start of the study, we should mention that the process of switching methods used in the educational process from traditional forms of presentation of material to digital ones began in Russia quite long ago. However, digital learning space affects not only the materials presented during the educational process, but also its organization.

We need to note here that regional universities lag significantly behind the degree of "digitalization" of universities in the cities of federal importance, Moscow and St. Petersburg. In our case, we will mainly consider the situation at the level of regional higher education, because we are interested in the
experience of such universities. Even so, the common goal in training specialists at the university level in modern conditions calls for having students develop the ability to learn independently, to acquire their own abilities and independently develop the appropriate skills. The increasing volume and variability of knowledge now requires a modern skilled worker in any professional sphere to be ready to master functional tasks mainly independently, to continuously improve own competencies, and to utilize digital technologies for interacting with society and obtaining new knowledge [5].

Consequently, during their education, students must learn to interact with the digital environment and gain through it wide access to the necessary knowledge. Accordingly, the educational organizations implementing HE programs must facilitate this process [6].

Russian regional universities, in the Krasnoyarsk Territory in particular, have been using digital educational environments, unique in any university in their own way. For example, the Krasnoyarsk State Agrarian University (Krasnoyarsk SAU) uses a digital environment created using the Moodle Open-source learning platform, which is filled with electronic courses of disciplines, contains portfolios of students and other information.

Moodle electronic courses include electronic lecture material, electronic hands-on (laboratory) tasks, electronic tests and rating tasks, and training materials for mastering disciplines.

Even before the COVID-19 pandemic commenced, the staff of the Krasnoyarsk SAU repeatedly used these electronic courses in the educational process. For instance, a student who, for objective reasons, could not attend a particular lecture, could independently study it in the electronic course and assess the results of independent learning of this material by performing the corresponding tasks, answering tests, and submitting answers to control questions.

In addition, when using an electronic course, the teacher does not need to dictate assignments for practical (laboratory) classes, as all of them are placed in the appropriate section of the electronic course in the Moodle system.

However, the electronic courses existing in the Moodle system were only an addition to routine contact work (lectures, hands-on training, laboratory classes), while the main method for knowledge transfer was traditional contact forms of interaction between teachers and students.

Ministry of Science and Higher Education of the Russian Federation on March 14, 2020 signed the Order No 397 "On the organization of educational activities in organizations implementing higher education programs and related additional professional programs in the conditions of preventing the spread of new coronavirus infection in the Russian Federation," all universities, Krasnoyarsk SAU included, have started to switch to the distance learning process, using digital educational technologies facilitating remote studies, outside the premises of the university.

The transition of the educational process to the fully distance format in the Krasnoyarsk SAU occurred on 17.03.2020. Distance learning in all majors was implemented using the Moodle digital platform.

At the same time, both teachers and students faced a number of problems, which we believe have arisen in other regional universities of the Russian Federation as well.

For example, the biggest problem in the implementation of the distance learning process was certain students lacking devices (personal computers, laptops, or tablets) for studying in this format. In addition, even the availability of appropriate digital gadgets was not enough, as a stable connection to the Internet was mandatory for accessing the Moodle system.

It should be noted that due to the COVID-19 pandemic, students living in the Krasnoyarsk Territory chose to return home. Thus, they could not always engage in distance learning due to the lack of stable internet connection in the remote areas of our region.

Initially, students used mobile devices such as phones with an Internet connection, and then, thanks to the coordinated interaction of all participants in the educational process, it was possible to solve the issues of technical support of students, especially students living in dormitories of the Krasnoyarsk SAU.

Another difficulty was the sharp increase in the Moodle load, as more than two thousand users began visiting the resource at the same time, which in the beginning caused interruptions in the service and
long loading times. Accordingly, in the shortest possible time, the technical support service of the Krasnoyarsk State Agrarian University resolved the issues of uninterrupted and high-quality performance of content in the context of a significant increase in the number of simultaneous users.

Of course, it should be noted that the difficulties were due to the COVID-19 pandemic, as the logistical problems of the educational process had to be resolved in large volumes and in a very short time.

Thus, distance learning requires from any educational organization, including universities, a quite developed and modern from the point of view of digital technologies material and technical base. The same high requirements are imposed on the material support of students receiving higher education.

It should be noted, however, that the situation with the COVID-19 pandemic has only further revealed the existing disparity between learners who are able to creatively use digital systems and equipment for education and research, and those students who can only view and perform simple actions through electronic and digital gadgets.

These problems, as well as the experience of overcoming them, make it possible to formulate the task facing all, and primarily regional, universities of Russia, defined as the need to increase the pace and qualitative and quantitative indicators of the development of the material and technical base, including the use of new channels of communication and modern digital devices in the educational process.

Another difficulty arose because of the psychological unpreparedness of many students to work independently in a distance format, as such learning requires a fairly high level of self-discipline.

On the one hand, the lack of need to attend classes created within some students a feeling of a vacation period (rest time), as well as a false sense of the opportunity to pass disciplines at their discretion at night, hopping on a case-by-case basis, haphazardly and not intermittently. This psychological state was accompanied by a general reluctance to interact because of fear of contracting COVID-19.

The third problem, which arose as a result of the rapid transition to the purely distance format of work, was that the Moodle electronic courses were used by faculty as an additional means of interaction and knowledge transfer, rather than the basic one.

It should be noted here that training in a fully remote format changes the content of educational disciplines and the form of presentation of the material [7]. In this format, lecture texts, presentations and even videos are not enough; for better acquisition of knowledge, on-line connection to databases, news forums, platforms of dialogue and discussion, webinars, video conferences, etc. is required [8, 9].

Thus, many electronic courses were redesigned as soon as possible. Moreover, many teachers have started to use social networks to communicate with students, such as Vkontakte or Instagram, as well as the Zoom, Skype and other software products, which allowed to transmit lectures, answer student questions, conduct practical classes and even the final certification process of students in the 4th year of their studies by defending graduate theses through video conferencing.

The fourth problem, quite closely related to the previous one, was the need for improving the digital literacy of the faculty by familiarizing with new programs and resources, such as Zoom, etc.

In addition, it should be noted that the process of distance learning using electronic and digital technologies requires university teachers to acquire competence in the digitization of educational and methodical material, the capacity to develop electronic courses using interactive ways of transmitting information, the ability to work online using various programs and electronic resources [10].

The experience of teachers gained during distance learning leads to the conclusion that in the new conditions of the COVID-19 pandemic, the need for continuous professional development of faculty has been further identified, taking into account the requirements of the modern electronic and digital organization of society.

In the development of our study, we consider it necessary to cite the analysis of the results of winter and summer exam sessions (intermediate certifications) passed by students of full-time form of education of the Institute of Land Surveying, Cadaster and Nature Management of the Krasnoyarsk SAU. The winter session was passed after the traditional contact learning format (full-time lectures,
practical and laboratory classes, etc.), and the summer session was passed by students in a distance format after the transfer to distance learning on 17.03.2020.

We believe that this data will allow us to draw conclusions about how well students have learned the material in a distance format.

Table 1. Results of the exams during winter session at the Institute of Land Surveying, Cadaster and Nature Management of the Krasnoyarsk SAU (full-time form of education).

| Degree | Year | Taking exams, ppl | passed all subjects, ppl | academic performance, % | graded "excellent" in all subjects ppl % | graded "good" and "excellent" in all subjects ppl % | mixed grades, unsatisfactory in one or more subjects ppl % |
|--------|------|-------------------|--------------------------|--------------------------|----------------------------------------|------------------------------------------------|-------------------------------------------------
| Under-graduate | 1    | 307               | 246                      | 80.1                     | 59                                     | 19.2                                                | 131                                                | 42.7                                               | 56                                    | 18.2                                                | 61                                    | 19.9                                               |
|     | 2    | 68               | 49                      | 72.1                     | 11                                    | 16.2                                                | 22                                                | 34.7                                               | 2                                    | 3                                                  | 15                                    | 22.4                                               |
|     | 3    | 74               | 66                      | 89.2                     | 11                                    | 14.9                                                | 43                                                | 58.1                                               | 12                                    | 16.2                                               | 8                                    | 10.8                                               |
|     | 4    | 98               | 79                      | 80.6                     | 19                                    | 19.4                                                | 34                                                | 34.7                                               | 26                                    | 26.5                                               | 19                                    | 19.4                                               |
| Graduate | 1    | 38               | 32                      | 84.2                     | 14                                    | 36.8                                                | 18                                                | 47.4                                               | 0                                    | 0                                                  | 6                                    | 15.8                                               |
|     | 2    | 19               | 16                      | 84.6                     | 8                                     | 42.1                                                | 8                                                 | 42.1                                               | 0                                    | 0                                                  | 3                                    | 15.8                                               |
| Total |      | 345              | 278                     | 80.6                     | 73                                    | 21.2                                                | 149                                                | 43.2                                               | 56                                    | 16.2                                               | 67                                    | 19.4                                               |

Table 2. Results of the exams during summer session at the Institute of Land Surveying, Cadaster and Nature Management of the Krasnoyarsk SAU (full-time form of education).

| Degree | Year | Taking exams, ppl | passed all subjects, ppl | academic performance, % | graded "excellent" in all subjects ppl % | graded "good" and "excellent" in all subjects ppl % | mixed grades, unsatisfactory in one or more subjects ppl % |
|--------|------|-------------------|--------------------------|--------------------------|----------------------------------------|------------------------------------------------|-------------------------------------------------
| Under-graduate | 1    | 294               | 216                      | 74.2                     | 64                                    | 21.8                                                | 96                                                | 32.7                                               | 56                                    | 19                                                | 78                                    | 26.5                                               |
|     | 2    | 67               | 51                      | 54.5                     | 13                                    | 19.7                                                | 18                                                | 27.3                                               | 5                                    | 7.5                                                | 30                                    | 45.5                                               |
|     | 3    | 70               | 50                      | 71.4                     | 9                                     | 12.8                                                | 28                                                | 30.7                                               | 9                                    | 13.4                                               | 16                                    | 23.9                                               |
|     | 4    | 91               | 79                      | 86.8                     | 2                                     | 24.2                                                | 28                                                | 30.7                                               | 29                                    | 31.9                                               | 12                                    | 13.2                                               |
| Graduate | 1    | 36               | 30                      | 83.3                     | 15                                    | 41.7                                                | 12                                                | 33.3                                               | 3                                    | 8.3                                                | 6                                    | 16.7                                               |
|     | 2    | 18               | 14                      | 77.8                     | 8                                     | 44.5                                                | 6                                                 | 33.3                                               | 0                                    | 0                                                  | 4                                    | 22.2                                               |
| Total |      | 330              | 246                     | 74.5                     | 79                                    | 23.9                                                | 108                                                | 32.7                                               | 59                                    | 17.9                                               | 84                                    | 25.5                                               |

Comparing the results of the two exam sessions listed in the tables 1 and 2, we can make the following conclusions:

- Academic performance of students at the institute decreased from 80.6% to 74.5% (by 6.1%). Particularly serious problems in academic performance are observed among first-year undergraduate students (academic performance has decreased from 77.6% to 54.5%). This testifies to the unformed competence in the distance learning format and even the unpreparedness of the 1st year students to receive higher education using distance learning technologies. There is also a decline from 84.6% to 77.8% (by 6.8%) among the first-year graduate studies, although it is not as significant as in a similar undergraduate course;
- It should be noted that in general, the number of students (undergraduate and graduate) who passed the summer session scoring "excellent" in all subjects has increased from 21.2% to
23.9% (by 2.7%). This suggests that some students have improved their educational competencies even while learning in difficult conditions of a quick transition to the distance format;

- A characteristic change is the decrease in the number of both undergraduate and graduate students who passed the summer session scoring only "good" and "excellent" from 43.2% to 32.7 (by 10.25%), and an increase due to this in the number of students who passed the summer exam session with mixed grades, including "satisfactory", from 16.2% to 17.9% (by 1.7%).
- Thus, we can state that the problems we have identified above, arising due to the instantaneous transition to the distance learning format as a result of the COVID-19 pandemic, are undoubtedly present and have affected the student performance.

7. Conclusions

The main problems of the instant transition from traditional contact forms of learning due to the COVID-19 pandemic to the distance format were:

- logistical problems, manifesting in some students lacking the necessary electronic and digital technology at home, a sustainable Internet connection, as well as the unpreparedness of networks and software of universities to a sharply increased load of users;
- students being psychologically unprepared to a completely remote format of interaction, to which the depression caused by the COVID-19 pandemic was added;
- the need to rework existing electronic courses as soon as possible to improve them and to fill them with the necessary forms of teaching material;
- the need for university professors to improve their digital literacy in the shortest possible time by familiarizing with new software products and digital platforms.

The presence of electronic and digital platforms containing electronic courses in universities allowed to carry out a rapid and very efficient process of transition to the distance format of learning, as well as ensured the continuity and accessibility of the educational process.

The experience of distance work with students in the educational process in the context of the COVID-19 pandemic allows us to talk about the following prospects and goals of distance education in universities.

We believe that the COVID-19 pandemic has revealed the need to increase the rate of "digitalization" of universities, which should ensure that teachers and students work in a continuous format (both online and offline), facilitate the formation and systematic updating of the profile of each student, their curriculum, and allow timely adjustment of this information, guaranteeing access to information about the educational process, and to encourage continuous professional development of the teaching staff, including in the field of digital technologies.

Ultimately, we believe that the "digitalization" of universities should ensure:

- operation of the digital management system of the university;
- online interaction between students and faculty in courses and disciplines;
- accounting for the individual characteristics of chosen major and individual schedule of the educational process of each student.

Thus, we can state that the COVID-19 pandemic demonstrated the need to "digitalize" universities and redefine the existing traditional contact way of organizing the learning process, as well as the role of the teacher in this process.

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