

Digital Transformation and Its Risks in Higher Education: Students' and Teachers' Attitude

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Abstract The article analyzes the actual problem of the risks of digitalization of higher education. The goal of the study was to determine the level of using of digital tools and technologies by students and teachers in the educational process to identify the main problems and risks of digitalization of higher education. The key problem of digitalization of higher education in Russia is the approval of a technocratic model for its implementation, based on the reduction of this process to "digitization". The real goal of digitalization in universities should give emphasis on improving the creative nature of education. In order to analyze the current situation with the digitalization of higher education, an online survey of students and teachers of the Kazan (Volga) Federal District was used. The research results show that both students and teachers use a limited number of digital educational resources. Students prefer the passive forms of using information and communication technologies (webinars, online courses). Teachers use digital tools primarily for planning and downloading their taught courses. They also use them as an organizing mechanism for their classes, rather than to promote improved learning technologies. The most important conclusion of our study is that the risks of digitalization of education at universities are directly related to the incompetence of teachers in the using of digital educational technologies. Therefore, improving the mechanism of teachers' professional

adaptation to digital reality is crucial in improving the quality of education at universities.

Keywords Digitalization of Higher Education, Risks in Digital Transformation of Education, A Technocratic Model of Digitalization of Education, Digital Administration, Digital Learning Technologies, Students' and Teachers' Attitude to Digitalization of Education

1. Introduction

The prospects for higher education today are directly linked to the processes of its digitalization, which is in line with the global trend of transition to a digital society and a digital economy. This has become a priority of state policy in the Russian Federation, realizing the strategic goals of the transition to the information society and the digital economy [1-4]. The results of this process largely depend on our ability to realize the meaning and profound consequences of the fourth revolution taking place before our eyes, to give a timely assessment of the social risks that accompany it [5].

The problem of digitalization of higher education in Russia is solved on the basis of at least four methodological approaches to its study. The first of them is defined as

technocratic, since it is characterized by the reduction of this process to "digitization", to technical innovation. Within the framework of this approach, the attention of the researchers is focused on the problem of digitalizing of all teaching materials and on the creation of public knowledge bases. They see the goal of digitalization in the maximum transfer of the educational process to the global network, in the using of mobile and cloud technologies for organizing training [6-9]. The technocratic approach, unfortunately, underlies the policy of digitalization of higher education in Russia, and this is a consequence of the orientation towards the reproductive model of education. In our opinion, this is the key problem of its implementation in Russia. It's important to understand that digital learning should be provided not only by technical innovations, but also by academic, organizational and structural changes. "Digitization" cannot become the goal of a new model of education, it is only a means in its implementation.

The second approach can be defined as institutional, since the researchers focus on the problem of transforming of the social institution of learning. For them, it is important to analyze the transforming norms and values that determine the rules for the interaction of key actors, as well as the social consequences of the introduction of digital technologies into the system of interaction in higher education [10, 11].

The third approach to the study of the problem of digitalization of education is the riskological analysis, within the framework of which this article was carried out. It focuses on the analyses of the social risks of that process [12-16]. The fourth approach is sociocultural, and its specificity lies in the interpretation of digitalization as a tool for personal development – that is, the ability for analytical, critical, creative, flexible thinking, the ability to work in teams, including international, interprofessional, etc. It emphasizes the need to teach a student the skills of self-training, self-organization, self-control, that is, the skills of independent search for the necessary information, for its analysis; it is the ability to exchange ideas that arise in the process of studying it [17-22]. Thus, the sociocultural approach focuses on the idea of changing the education's paradigm, on reassessment of the entire system of its values, content, and it emphasis on the personal component of the education. The priority goals of digitalization of education should be the flexibility of educational standards, their individualization, emphasis on improving its creative nature. Digitalization of education should also become a new paradigm of communication and interaction of all participants in the educational process.

Digitalization causes far-reaching social and cultural consequences for the entire education system. Some of them are perceived by experts as risks that can lead to the dehumanization of education as a social institution. Perhaps it's even difficult for us to imagine the whole complex of these problems and risks, so it is important to forecast them.

The first expert assessments of the potential risks of digitalization of education are already presented in some Russian [11-18] and foreign publications [23, 24]. Despite the local nature of most of these studies, their results deserve close attention and should be the subject of analysis by the scientific and educational community.

In the framework of this article, attention will be paid to those risks that no longer have the status of a potential threat, but already declare themselves as consequences of the implemented management decision.

According to expert in the field of IT security [14], the list of probable risks in education as a result of its digitalization is quite wide. It includes the following: the transformation of a specialists' model that prepares universities, the loss of basic cognitive competencies (writing, calculation, reading, logic), the changing qualification requirements, the moving away from fundamental training, because the economy is less and less forming an order for an "intellectual" specialist; a change in the teacher's model (an increase in the requirements for his psychological qualities, since his role becomes "public" in nature), in general, a decrease in his number; the redistribution of the functions between the universities' administration and teachers. The expert's forecast is disappointing: all this leads to a decrease in quality training, to escaping of talented youth and teachers abroad.

You need to agree with the general expert's conclusion about the negative impact of all identified risks on the quality of education. At the same time, the expert's forecast about the escaping risk of talented youth and teachers abroad looks dubious. This conclusion can be extended, perhaps, only to teachers involved in the training of specialists in high-tech sectors of the economy. In our opinion, it is not the risk of "brain drain" abroad that threatens the education system, but the risk of internal emigration – transfer of the teaching class to other areas of employment, that is due to a decrease in the attractiveness of this type of activity. And as a result, the proportion of young teachers is reducing and the proportion of older university employees is increasing. According to research by Russian author [25] for all job groups in universities, including professors and assistants, there is an increase in the proportion of people over 65 years old. One third of university teachers today are represented by a group under the age of 39 years, and the remaining two thirds are over 40 years old, while the proportion of teachers over 65 is 17.7%.

The last of the problems identified by the expert [14] received detailed specification in the work of another Russian researcher [16], who pointed out a number of risks of administrative control strengthening. Firstly, these are the risks associated with the reorganization of the educational process, which has turned into a more streamlined, more transparent for the administration, on the one hand, and more time-consuming for the teachers themselves. Secondly, which is even more dangerous for

teachers, they are expressed in the fact that digital technologies are considered by the university administration as a tool for saving on academic hours, a tool for saving on full-time teachers. And such a situation, according to the expert [16], is fraught with the transformation of a university teacher into a precariate, in the terminology of G. Standing [26], representing a new class, which, on the one hand, plays an extremely important role in production of both tangible and intangible values, and on the other hand, it is deprived of most social and political rights and guarantees.

Digitized administration is still the most important result of digitalization of higher education. This trend is also indicated by the results of Western studies devoted to the analysis of this problem. They show that the learning management system (LMS) in the vast majority of cases is focused on supporting not the training itself, but its management [23].

These are the costs of the bureaucratic agenda, focused on solving specific problems of creating new content for academic disciplines, on new teaching aids, and on the using of new equipment and technologies [27]. A much more urgent task should be to change the stereotypes of teachers' and students' perceptions, their attitude to usage of digital technologies for learning.

2. Literature Review

A number of international empirical studies have revealed that there is no direct relationship between the level of digital technology students and teachers use and their using in the learning process [28].

According to the report of the British digital education organization Jisc [29], based on a survey of more than 22,000 students from 74 British and 10 international organizations, it was found that "all the advantages of digital technologies to support learning have yet to be realized, and that digital technologies are most often used for the convenience of communication, and not for the promotion of more effective pedagogy" [29]. In a study based on a survey of 941 teachers from one of the Spanish universities, it was found that 44.4% of them rarely use digital technology in the educational process. They mainly boil down to multimedia presentations, email, and Learning Management Systems (LMS) [30, 31]. The same emphasis on the using of digital technologies in the form of presentations, collections of text and video documents for students was also revealed by teachers from other Spanish universities [32].

This problem was the subject of research by Russian authors [12, 15-17, 33, 34], the list of such studies could be continued.

Let us cite as an example a rigorous analysis of the problem we are interested in. It is a study performed by the team of authors "Digital transformation in German higher

education: the perception of students and teachers and their use of digital media [35].

The University of Oldenburg was chosen as the object of that study; two datasets were examined regarding the perceptions of students (n = 200) and teachers (n = 381) on the usage of digital tools. It was revealed, that both teachers and students use a limited number of digital technologies for predominantly assimilative tasks, with the Learning Management System being perceived as the most useful tool. At the same time, students mainly use search engines (94% of respondents daily or several times a day), computers (84% of students) outside the university, and email accounts. And such tools as express messaging, lecture notes, link management software, etc. were extremely rare. At the same time, university students would like more online courses with the prospect of moving from full-time to part-time education (39%).

It was found that students were especially poorly prepared to work together in a digital educational environment, which is reflected in the irregular or extremely rare using of self-regulatory learning technologies such as express information, virtual seminars and professional educational networks, despite their widespread use of social networks in everyday informal living. According to the study, students preferred passive forms of digital technology rather than tools for collaboration or creativity, in particular, blogs and microblogs, which were rated low on the "utility" column.

To determine the Russian teachers' and students' attitude to the using of digital technologies and to compare the results with similar European studies, the authors of this article conducted their own sociological study, the results of which are presented below.

3. Methodology

In February 2020, an online survey of students and teachers of the Kazan (Volga) Federal University was conducted using the Google form. The purpose of the study: to identify the teachers' and students' attitude towards digitalization of education. Tasks: 1. Determine the type of digital technologies using by students and teachers in the educational environment. 2. Identify the problems and risks of digitalization that impede the development of digital technology skills.

Random selection was made – a total of 432 persons (n = 360 students, n = 72 teachers).

For each selected group was singled out a quantitative methodology of sociological research and their own questionnaires were developed, which contained a general range of questions on the subject of authors' research.

The main method of data collection was the self-filling survey at the current place of work (teachers) and study (students). The survey sample was constructed using the quota method, where gender, position, discipline taught

(for teachers), and gender, course, and direction of study (for students) were used as quota characteristics.

The sample set of research is constructed taking into account the methodological requirements, the specifics of the object and subject of research.

To obtain information from teachers, a 15-question survey was developed using Google Forms in Russian "Teachers' attitude to digitalization of education".

All teachers who participated in the survey were full-time employees of the university.

The specialization of teachers leading classes for students is social and economic disciplines.

Among the respondents, 6% - professors, 76% - associate professors, 12% - senior teachers, 6% - assistants; 89% of respondents have a scientific degree, without a degree - 11%; 58, 8% of them were female, 42, 2% - male. The age of respondents was from 27 to 52 years old, the largest group among them consists of teachers aged 30 to 35 years (17.6%), from 25 to 30 -17%, from 31 to 35 - 22%, from 36 to 40 - 17%, from 41 to 45 -17%, from 46 to 50 -17% and from 51 to 55-10%.

To get information from students, the authors performed a survey "Students' attitude to digitalization of education", the survey was conducted using the author's questionnaire in Russian, consisting of 15 questions.

The sociological research was performed among students of Kazan (Volga region) Federal University of 1 and 4 undergraduate courses (t=300): "personnel management" - 40%," management "-20%," Economics "-20%," service "-20% and 1 and 2 master's courses (n=60):" personnel management "- 60% and" economics " - 40%. 15 questions using Google Forms.

The survey involved respondents of the age group of 18 to 25 years old, the majority of them - 85.5% - were female, 15.5% - male.

The statistical tools (questionnaires) developed for the research of teachers and students included different blocks of questions with closed questions (questions with a fully formalized response scale) and semi-closed questions (the respondent used an incomplete "other" scale).

The question blocks concerned, in particular, the availability of digital tools in higher education, the frequency and variety of their application in the educational process, the willingness of the transition to digital learning, etc.

4. Empirical Results

The results of the study demonstrate a general positive perception of the digitalization of education – this is the position of 91% of respondents. At the same time, their position is characterized by a focus on the passive forms of

using innovative technologies - these are mainly webinars - 54% and online courses 51% (Figure 1).

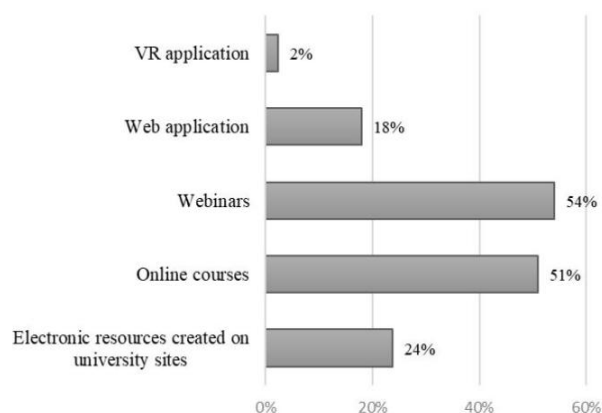


Figure 1. Applied electronic and Internet tools: students` survey

As for communicative teaching tools, for example, such as VR and Veb applications, electronic resources created on the university's sites, it was revealed, that they are used extremely rarely. For example, such an important educational resource as VR was practically not used at all (2.40%). The infrequent using of these tools testifies to such problems as the underdevelopment of the educational digital environment at Kazan (Volga) University, and the academic and administrative workload of teachers. All this does not give them the opportunity to develop their digital competencies.

In this study, we asked students to sort out changes during the transition to digital education. The results are presented in Table 1.

Table 1. Rating of changes during the transition to digital education on a scale from 1 (the most easily implemented) to 6 (the most difficult-implemented): a survey of students

№	Measure	Rank from 1 (the most easily implemented) to 6 (the most difficult-implemented)
1.	Replacing traditional paper textbooks	1
2.	Introduction of personal tablets, smartphones in the classroom	2
3.	Distance lessons in universities and schools	3
4.	Replacing school grades in subjects with "personality assessment" and ratings	4
5.	Retraining of teachers	5
6.	Material and technical equipment for each audience	6

According to the table, it can be concluded that it is difficult to implement the retraining of teachers and material and technical equipment of classrooms (rank 6).

Next, we look at the assessment that students gave to digitalization of education. For them, first of all, it means a simplification of the learning process - this is the position of 69.9%. 44.6% of students identified it with the development of self-organization in the learning process; almost half of the respondents believe that training is becoming more saturated (45.8%), and that it improves the teacher's communication with the students (38.6%). As negative aspects of digitalization, students noted students' relaxation (passive reading of information -37.3%), lack of feedback - 26.5%).

The results of the survey of teachers show that they have not yet mastered all the advantages provided by digital technologies, and many of them overreach new teaching strategies with great difficulties. It was found that despite the fact that the majority of respondents (64.7%) are positive about the transition to digital education, they are not yet ready to use innovative technologies on a regular basis (only 35.3% often use digital tools). The training technologies used were mainly limited to presentations (82.4%) and video lessons (29.4%). Information technologies for knowledge control were represented mainly by computer tests (47%) or MOODLE (29.4%) (Table 2).

Table 2. Used training technologies: a survey of teachers, in %

Information about the technologies used in assessing students'	Value
Presentations	82,4 %
Video lesson	29,4%
Video courses	10, 5%
Conferences	5,3 %

These data are quite correlated with the teachers' assessment of their readiness to switch to digital learning - 41.2% of respondents rated it "excellent", "good" - 17.6%, and "satisfactory" - 35.3%.

As for students' readiness for using digital technologies in education, teachers rated it much lower - 29.4% defined it as "satisfactory", 23.5% as "good" and "excellent".

Our teachers, having free access to the Internet (64.7% of respondents use various gadgets for an average of 60-120 minutes), spend less than half of their time for exchanging information with students via email or WhatsApp (41.2% of respondents). This suggests that communicative teaching tools are gradually becoming commonplace.

The results of the study show that despite the fact that the generally positive attitude towards the using of digital teaching technologies prevails among teachers, in reality they see their advantages so far only in a more flexible organization of the educational process, as well as in the convenience of using information and its greater accessibility - this is the position of 58.8% of respondents.

Both beginner and more experienced teachers noted the following problems of using digital technologies. These are

difficulties associated with the material and technical equipment of classrooms (50%); this is also their congestion for hours, lack of time for the development and application of innovative technologies (44%). In addition to the above problems, teachers noted the difficulty of adapting a number of disciplines to the digital format, the lack of software (22%), as well as the low awareness of teachers about the university's ability to provide material and technical support for the courses taught (11%) (Figure 2).

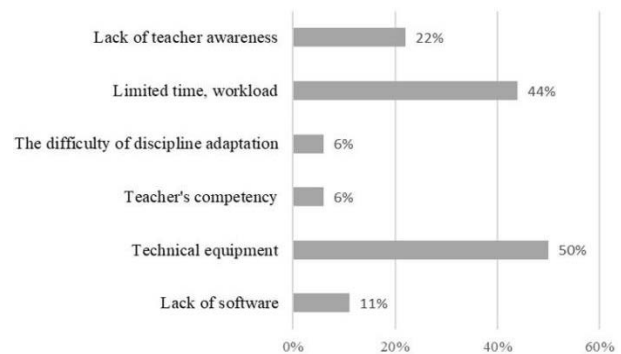


Figure 2. Key Challenges to Digital Development: Teacher Survey

According to a survey of teachers, the risks of transition to digital education for the "digital generation" are the loss of writing skills, the loss of the ability to perceive large amounts of information, the screen dependence, functional illiteracy, etc. Maybe that's why 60% of the students we surveyed are now ready to replace the teacher with a robot!

5. Conclusion

The development of students' ability to use various tools, including digital media for academic education, depends to a less extent on administration policies, to a greater extent on teachers, their ability to introduce digital technologies into the educational process. But the results of a survey of Russian teachers show that they use digital learning management tools mainly as an organizational mechanism for their classes, and not to promote advanced student-centered learning technologies.

What is the reason for teachers' restrained attitude towards digital technologies? As the results of various studies showed, these reasons are common for several European universities: many teachers have developed negative experience in their using (they did not give the expected result); other teachers are still generally poorly informed about the possibilities of their application or do not even want to get acquainted with new technologies at all.

The most important conclusion of our study, which confirms the research results of our European colleagues, is that the risks of digitalization of university education are directly related to the incompetence of teachers in the using of digital educational technologies, and to the difficulties

of their professional adaptation to digital reality. Therefore, the digital competence of the teaching staff is crucial in improving the quality of education. This should be considered by university management as a strategic task requiring its own implementation mechanism. It is necessary to make the transition to the sociocultural dimension of the digitalization of education, to change the stereotypes of consciousness of teachers and students themselves, their attitude to the using of digital technologies.

Establishing constant feedback, analyzing the information coming from below – from teachers and students about the problems of mastering and using digital technologies in teaching should become an important element of the risk management system for digitalization of education. An effective system of internal control through key indicators of such risks should become the foundation of the educational management system at the university and the basis for ensuring the security and sustainability of its digitalization process.

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