RES MILITARIS
REVUE EUROPEENNE D ETUDES EUROPEAN JOURNAL OF MILITARY STUDIES
Social Science Journal

Digitalization Of Education: Trends and Problems in University Environment (Based on Empirical Studies in Kazan Federal University)

By

Ilsia Ildusovna Shamsutdinova
Kazan Federal University
Email: 89173914070@mail.ru

Yulduz Rakibovna Khayrullina
Kazan Federal University, Center of Advanced Economic Research in the Academy of Sciences of the Republic of Tatarstan
Email: jrhajrullina@kpfu.ru

Regina Rafisovna Garipova
Kazan Federal University
Email: ReginRGaripova@kpfu.ru

Abstract

In this article we will explore the transformations of educational process that occur on account of the introduction of digital technologies. We will also analyze the beneficial aspects of digitalization of education, the difficulties and hindrances faced by those involved in the educational process, as well as the attitude of faculty members to the introduction of digital technology in higher education.

The article presents the author's empirical case study (Republic of Tatarstan, 2022): 15 semi-formalized interviews with representatives of the administrative-management and professorial-teaching staff of Kazan (Volga) Federal University that address the problems and features of functioning of digital education process.

Conclusions are that a shift to digital education within the Kazan University is associated with a number of problems. This encompasses technical support for classrooms, and building new skills by teachers and students, as well as low digital literacy rates of all participants of education. Nevertheless, digitalization offers a great deal of new opportunities, resulting in realization of priority directions of education.

Keywords: digitalization of education, digital technology, higher education, distance learning, information society

Introduction

At present, in the context of the formation of digital economy, digital technological enhancement has reached many areas of our life, such as education, and in particular higher education. Education as a social institution experience almost all the changes taking place in society. For the time being, modern Russian is undergoing a fundamental qualitative transformation. Political, economic, social reforms associated with the democratization of its society have affected the social institution of education in general and the institution of higher education in particular [1].

Digitalization of education in a narrow sense is considered as a process of specific technological changes across the education, "its informatization based on the replacement of analog technologies for working with information with disruptive digital technologies" [2, p. 19]. V. N. Minina singles out four areas of digitalization of education [3]:

– adoption of digital tools and technologies in traditional learning programs and educational disciplines;
– development of online education;
– creation of a virtual (digital) educational environment;
– a change of attitude toward managing educational organizations. The author's approach includes four elements of digitalization of the education system which describe this process substantively.

Today, the world is witnessing a digital transformation. It means revolutionary changes in business models based on the use of digital platforms that have drastically increased market volume and the competitiveness of companies. The task of digital transformation (digitization) of education – adaptation of the education system to suit the tasks, challenges and opportunities of the information society and digital economy is the order of the day currently [4]. That concerns the changes in the goals and content of education, the upgrading of educational process and immersing it in a digital environment that is of current importance for all population groups [5].

Today in Russia, when implementing policy in the field of science and education, it is necessary to rely on national development strategies. They embrace the "Strategy for the Scientific and Technological Development of the Russian Federation" in the field of science [6] and the "Strategy for the Development of the Information Society in the Russian Federation" in the field of education [7]. The first strategy does not contain norms for ensuring the development of technological forms of the educational process. The second, on the contrary, aims to develop digital technologies in the education sector. The Strategy for the Development of the Information Society in the Russian Federation was adopted in accordance with the Decree of the President of Russia in 2017. It is supposed to have been implemented by 2030. In it, one of the 5 global goals is the formation of an innovative space that includes the use of new educational technologies, distance and e-learning. Another goal consists in the formation of a new technological environment and implies the creation of innovative platforms for distance learning. The strategy encourages educational organizations to create motivating factors for teachers to use distance technologies. Organizations should develop such motivating factors on their own.

Equally important is the order of the Ministry of Science and Higher Education "On Approval of the Procedure for the Application of Organizations Carrying out Educational Activities, E-learning, Distance Educational Technologies in the Implementation of Educational Programs" [8], passed in August 2017, three months after the adoption of The Strategy for the Development of the Information Society in the Russian Federation. This normative act has gone through four historical stages and is the result of the transformation of legislation in the field of remote learning by the main regulatory body (Figure 1).

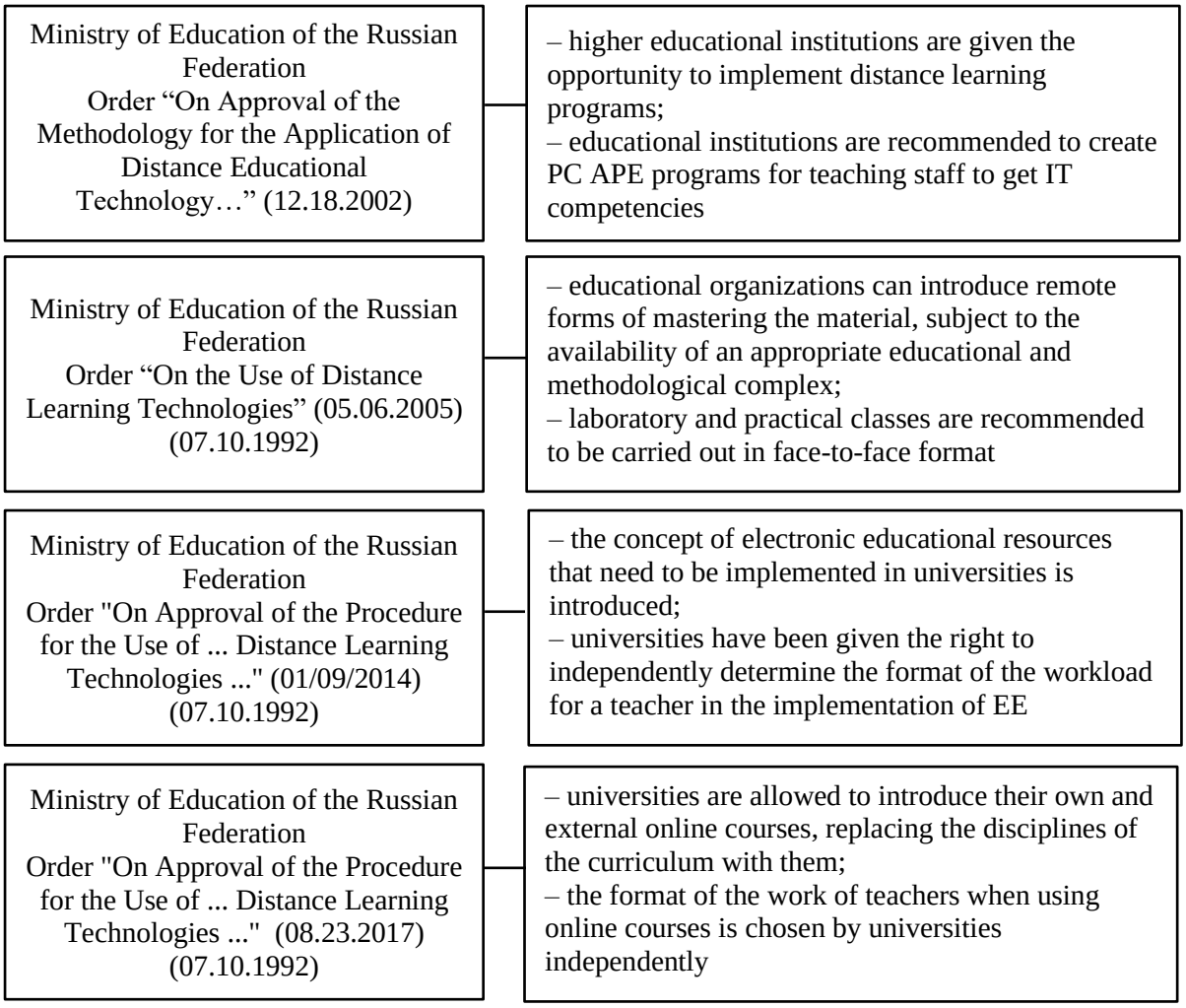

Figure 1. Regulation of legislation in the field of distance learning by the main regulatory body.

Methods

The authors conducted a sociological study on the case of Kazan (Volga) Federal University with the view of exploring the introduction of digital educational technologies in the educational process. A survey in the form of an interview was applied as the method of sociological information gathering. The interview was attended by 15 employees of the administrative and managerial staff of KFU, whose activities are directly related to the organization of educational process in a digital environment. These are deputy directors of institutes for scientific and educational activities, employees of the Department of Education and the Institute of Advanced Educational Technologies of KFU. The survey took place during the month of April 2022.

The analysis of expert interviews gives further consideration to the features of integration of information technologies into the functioning of the university, more clearly defines the concept of digitalization of education, suggests the problems that the university and its employees encounter, and also identifies possible ways to resolve them. In addition, the interviews with experts reveal the reasons for the prevailing negative reaction of teachers to changes in the existing educational practices, and also establish the main elements in the activities and image of a modern teacher, transforming their status and role.

Results And Discussion

Considering the process of digitalization of education, it is worth noting that the concept can be interpreted, on the one hand, solely in terms of forms of conducting classes, that is, the development of platforms that allow the classical educational process to be implemented. On the other hand, the digitalization of education is defined not just as the transfer of an identical educational process, but as a complete change in the format of both teaching and learning, the conversion of teachers' knowledge, methodological developments and other material into a digital resource. The last definition owing to versatility and difficulty in its implementation raises numerous questions, the response to which is necessary for the further effective functioning of such an educational institution as university.

Switching to a completely different training format raises a wide range of logical questions about the necessity of introduction one or another mechanism since they often contradict already established practices. The scale of Kazan University does not allow to introduce elements of the digital environment thoughtlessly and without testing. On the one hand, it must be admitted that this slows down an inevitable process of digitalization, on the other hand, this allows to insure the university against unexpected results and fatal errors *(Expert 6: "this tactic is justified: first try it as an experiment, then expand it or give it to the field; those who are interested in mature will start to apply this practice").*

Other favorable aspects of the digitalization of education also merit attention. The implementation of an inclusive education strategy in which those who want to get a higher education have more opportunities to master the material without attending the class in person is among these aspects (*Expert 4: "This is the inclusiveness of education, that is, we are convenient for students who do not have the opportunity to study, being physically close to the university"*). So, the university covers not only people with disabilities, offers individual trajectories for those who cannot or do not want to study in a standard manner. Finally, distance learning technologies expand the geographic scope of university influence. Spatial expansion also allows for the involvement of experts not from the university staff, but directly from their workplace, employees of other universities, researchers who are able to contribute to the educational process at the lowest cost for themselves.

The process of introducing digital technologies into educational environment, according to Expert 6, began in 2012 and has been going up to this day. A stagnation in the development of digital education had been observed for some time, but the process accelerated against the backdrop of the events of 2020, when, due to the pandemic, educational institutions had to provide the educational process through distance technologies. The failure to end the process of digitalization was, among other things, the difficulty to be overcome by the university and other social institutions related to education. According to experts, the main problem that arises even at the initial stage of introducing digital technologies has still remained unresolved: the university is not technically fitted out when it comes to appropriate process of introducing digitalization into education (*Expert 2: "this should be present by default"; Expert 5: "the technical aspect is also a problem"*). Eliminating this problem will not only speed up the process of digitalization, but also facilitate its flow for all participants in the educational process. It is important to take into account that not all students are provided with technical equipment, for whom the learning process is partly transferred to the online environment.

According to several experts, starting up high-quality e-education is restricted by lack of all teachers' proficiency in necessary software while they are faced with the task of creating

electronic educational resources on the basis of which students are to be trained. Of course, increasing the level of knowledge of information and communication technologies requires certain labor costs. Insufficient digital literacy directly affects the classes converted into an electronic version since it is often difficult, especially in the case of the humanities, to change training from face-to-face into remote learning without loss. Expert 1 offers the following remarks on this matter: *"... the competencies that humanitarian disciplines should develop, and these are, first of all, communication skills, project activities, discussions, etc. very difficult to implement through e-learning."* Expert 5 also supports the idea that the difference in directions in general and in specific subject study in particular should be taken into account. The elaborated methodological material on the discipline for teaching in person may not be suitable for online learning, and an assistance by competent specialists in the field of methodological support of a digital educational resource is required in matter. Thus, in order to maintain a leading position in the current conditions, the university needs its own online courses that would match the quality of educational products produced by other universities. At the moment, according to the same expert, Kazan University has to buy finished courses, as teachers do not have enough knowledge on digital resources, and the university cannot provide the proper equipment and personnel reserve to create a unique educational product.

The waste of time and labor resources on creating completely new content is closely related to the latter. Even if the content is built on the basis of the teacher's knowledge, the creation of an online product takes a lot of multi-tasking, learning technologies for the presentation and implementation of the curriculum in electronic form with all stages: from broadcasting the material, consolidating it to the stage of control and assessment. The problem of labor costs is manifested in the fact that a teacher does not have enough free time to master the software on the basis of which it is required to create an electronic educational product. There is a need for personnel reserves that would not only free up time for the content design in electronic form, but would also demonstrate all features of the platform, would be responsible for some moderator duties for keeping track of students' activities on the platform, their progress within the training course, etc. *("There is a need in boosting staffing levels of appropriate workers."*). Expert 5 also shares experience in recording an online course. It took a lot of time due to insufficient support by specialists in studio workers who could largely contribute to the process due to their technical competence in the matter.

Here it is worth drawing attention to the control stage that is quite painful for experts and teachers in general from the point of view of organization, associated with many unresolved questions: how to control the presence of students and their engagement in the class? What can guarantee that students will not cheat during testing? Expert 6 recognizes that the problem of cheating is not a new one, but it is being upgraded in modern conditions: "*Cheating is a traditional problem, but here it represents a whole new level, because you don't see a person at all, and if you see, you don't see what is around."* According to Expert 9, monitoring should not be the teachers' responsibility not only at the stage of control, but also at other stages of training. (*Expert 12: "this should be delegated to the managers who analyze the activity in the class, check if the students have a connection, if they are exactly on site"*). When a teacher needs to constantly monitor the involvement of students in the learning process, which becomes difficult to do in a remote mode, he/she is influenced by this perception: students will not take part in the class if this can be avoided. Such an attitude can negatively affect both the psychological well-being of a teacher and his/her attitude to professional activities.

A problematic moment on the way to digital technology pushing in education can be the negative attitude of teachers who resist the current process. It is impossible to say

unequivocally, according to experts, that the attitude of teachers is directly connected with age indicators. Despite the fact that it is easier for young professionals to become familiar with information technologies due to their initial immersion in this environment, and they are more open to change; the use and familiarization of new digital tools in the classroom depend primarily on the motivation and personal interest of a teacher *(Expert 11: "Teachers who are really passionate about their work and try and know how to teach well, actively master these opportunities and use them even without prodding from outside").* However, most often a negative reaction to the ongoing changes in the system of teaching is translated. It depends, firstly, on the increase in unpaid labor costs of the teacher, and here the experts argue the need of creation of new jobs to perform teacher's nonspecialized work related to the maintenance of electronic resource (*Expert 13: "There should be a manager or someone in this position, the one who will pay attention to everything that happens at online lectures"*). Secondly, a negative reaction is provoked by a situation of uncertainty, starting with ignorance and inability to create digital educational resources required by the university, and ending with the unpredictability of further professional development, naturally arising questions concerning redundancies due to the replacement of employees' professional activities with the less expensive operation of electronic platforms. Here one cannot but notice that there is another advantage of information technologies behind it: an educational product created owing to intellectual work of a teacher can later be serviced without his/her participation *(Expert 13: conversion of the material that is reproduced in the same variant into a form once recorded, then simply broadcast")*

A very painful moment for teachers, according to the same expert, is the documentation of teaching workload, which now involves the tasks of creating online courses, moderating and monitoring. The lack of clear definitions in regulatory documents at the state level plunges teachers into uncertainty, misunderstanding of the requirements of the governing party and their own rights. Expert 2 holds a similar position on the need to include the hours of converting educational content into electronic format into the calculation of teaching load since the creation of a new intellectual product is an intellectual work, including time costs.

Nevertheless, a gradual, albeit slow, mastering of new technologies is still taking place: teachers can turn platforms on for broadcasting, create presentations, conduct tests in an online format, because it is, first of all, convenient and saves some organizational time (*Expert 15: "My colleagues react positively that these opportunities exist"*). Expert 2 is sure that even with difficulties in mastering information technologies by age teachers, it is possible and necessary to make exceptions for talented, competent teachers, to help convert their content into digital format, which once again encourages new personnel positions at the university (*Expert 2: "If this is a talented scientist, specialist, then, probably, we should not force, but create conditions so that he/she can apply digital methods in his/her educational opportunities"*). Expert 6 also sees the task of the university when implementing digital technologies not in ignoring the opposing attitude towards e-education but asking employees questions about their fears, concerns, reasons for disapproving the digitalization of education. This approach will allow you to smoothly, non-violently modify their professional activities, reduce emotional tension and make predictions, based on their answers, possible difficulties, mistakes, shortcomings.

A controversial moment for a teacher is the feedback from students interested in a subject. Expert 3 shares a similar case when students who know their rights and are ready to apply to the administration or even to the prosecutor's office turn out to be more influential, masterful participants in the educational process. Nevertheless, here the above-mentioned attitudes of students to avoidance of additional expenses on the way to higher education are manifested, which makes the cases of applying to administrative bodies rather an exception. Digitalization allows you to keep track of the activities of teachers, imposing more obligations

on them, requirements for material and teaching, helps to control how well an employee's work is done and whether it is done at all *(Expert 6: "E-learning is transparent. We can assess the quality of teaching content, we can check how students master it. When a teacher comes to the classroom, unfortunately, he/she has no obligations").*

The analysis of expert interviews makes it possible to determine approximate trajectories of the development of digital environment in the educational process, despite the difficulties of forecasting connected with uncertainty and unpredictability of the modern world. Despite the fact that this process has been going on for ten years, the digitalization of education every day faces new challenges that the institution of education has to accept in order to maintain its own position. Therefore, Expert 6 acquainted us with the ideas of future trajectories of development not only of digitalization in education, but also of teaching roles, by having accepted them, university staff could successfully adapt to new environment.

It is almost impossible to avoid an inevitable trend of digitalization of education, for the risks of abandoning e-learning within the framework of university education are really negligible. Thus, Expert 6 identifies the following trajectories: full-time elite, full-time communicative and campus. One of the vectors for the development of teaching profession is the intensive familiarization with rapidly developing technologies, the use of which realizes all the merits of digital education and, as a result, will improve the quality of education. However, this is not the only way out for a teacher: he/she can also gamble on communicative competence, thanks to which the training course will be so student-oriented and contact that the students will gain those skills and abilities from a discipline that the digital environment cannot give them. Such a teaching strategy will also help retain the meaning and relevance of this professional position. The third direction of development affects not so much the teaching activity as the institutional level: the university will be able to adapt and function effectively if it creates a unique educational environment within which the direct physical presence inside a university building will be of value. The implementation of this direction which relates to the formation of a dense innovative space is associated with a lot of expenses and calls for additional efforts, but in the future, according to the expert, it amply justifies the labor intensiveness of the transitional period.

Summary

The transition to digital education within Kazan University is associated with a number of outstanding issues: technical support for classrooms, lack of full coverage of documentation, activities of teachers and students, low digital literacy of participants in the educational process, lack of appropriate personnel reserves and positions that would reduce the workload of teachers, as well as many corresponding non-core teaching tasks that specialists are better equipped for and ensure higher quality.

In direct connection with these problems there is a prevailing negative attitude towards the ongoing changes that also obstructs digitalization of education. Resistance to the trend, despite its inevitability, is unavoidable owing to emerging contradictions in the already established teaching practices. Age teachers face difficulties in deploying new technologies, however, the successful functioning in the digital educational space, according to experts, depends primarily on the desire to grow in teaching and on the personal motivation of each employee. Building a new educational environment immerses scientific and pedagogical workers in formidable situation of uncertainty, raising fears about their future career prospects, and also requiring new skills that are different from the image of a teacher of the past. In

addition to digital literacy, one of the dominating skills is the ability to communicate with participants in the educational process. The ability to establish contact with students transforms a traditional teacher into a mentor, a consultant who not only possesses valuable knowledge but also knows how to extrapolate from it for students, how to guide students in a space full of information. In addition, feedback can stimulate the development of both sides: both the student and the teacher.

It is worth noting that close interaction with students in the context of digitalization gives rise to new ethical questions: how to assess students' knowledge? how to interpret the data provided by electronic platforms regarding the educational and personal characteristics of students? how to perceive students remotely when they don't have to listen to the teacher with impunity? how to control students' involvement and conscientiousness? And is that the teacher's task? So far, these questions remain debatable and unanswered.

Conclusions

Thus, digitalization creates many new opportunities, thanks to which the university is able to implement the priority directions of education, including inclusiveness, individualization and adaptive education. The inability of a classical university to meet the needs of social customers leads to the search for effective development trajectories. The main trajectories are the active development of information technology, the emphasis on contact with students and interaction in the activity environment, as well as the creation of an innovative campus environment in the walls of the university.

Acknowledgements

The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

References

Khayrullina Yu. R., Khayrullin R. R. Identification Portrait of the Population of the Republic of Tatarstan: The Role of Social Institutes and Peculiarities of Socialization of Individuals in Post-Soviet Russia (Based on the Case Study of KFU of the Years 1990 – 2014. Monography – Kazan: Limited Liability Company Offset Service, 2015. – 152 p.

Yuzhakov V. N., Yefremov A. A. Legal and Organizational Barriers for Education Digitalization in Russian Federation // Russian Law. Education. Practice. Science. 2018. – № 6 (108). – P. 18–24.

Minina V. N. Digitalization of Higher Education and Its Social Results // ВестникHerald of the Saint-Petersburg University. Sociology. 2020. V. 13. № 1. P. 84–101. DOI: 10.21638/spbu12.2020.106]

Shchelkunov M.D., Nikolaeva E.M., Eflova M.Yu., Kotlyar P.S. Media education in higher school: features, perspectives, risks // Bulletin of Economics, Law and Sociology. – 2018. – Issue 2. – Pp. 208–213.

Galieva, E.R., Eflova, M.Y. The institutionalization of social exclusion in the structuration of modern society (on example of drug addicts) // Journal of Organizational Culture, Communications and Conflict. – 2016. – Volume 20. – Special Issue 2. – Pp. 186–191.

Decree of the President of the Russian Federation of December 1, 2016 № 642 "On the Strategy for the Scientific and Technological Development of the Russian Federation" // URL: http://kremlin.ru/acts/bank/41449 (date of access: 05/29/2022)

Decree of the President of the Russian Federation of May 9, 2017 № 203 "On the Strategy for the Development of the Information Society in the Russian Federation for 2017–2030" // URL: http://kremlin.ru/acts/bank/41919 (date of access: 05/29/2022)

Order of the Ministry of Education and Science of Russia of August 23, 2017 № 816 "On Approval of the Procedure for the Application of Organizations Carrying out Educational Activities, E-learning, Distance Educational Technologies in the Implementation of Educational Programs" // URL: https://docs.cntd.ru/document /436767209 (date of access: 05/29/2022)

Shamsutdinova Ilsiya Ildusovna – Master Teacher of General and Ethnic Sociology. In 2005 she graduated from the Department of Sociology of the Faculty of Journalism and Sociology of Kazan State University. She has been working at the Department of General and Ethnic Sociology of the Institute of Social Philosophical Sciences and Mass Communications of KFU from 2011 to the present. The range of scientific interests is connected with general sociology, sociology of education, social psychology and sociology of state and municipal administration. Author of a number of scientific publications, including: 4 articles in journals peer-reviewed by HAC, 3 articles in journals peer-reviewed in Scopus and WoS; 2 monographs.

Khayrullina Yulduz Rakibovna graduated from the Faculty of History of Kazan State University named after V.I. Ulyanov-Lenin (KSU). In 1989 she defended her Ph.D. thesis at Kazan State University, and in 1999 she defended her doctoral dissertation in sociology at Saratov State University named after Chernyshevsky. The academic title of professor was awarded in 2002. Research interests: sociology of personality, sociology of age, economic sociology and sociology of labor. Author and co-author of more than 215 scientific publications, including: 31 articles in journals peer-reviewed by the Higher Attestation Commission; 12 articles in peer-reviewed journals in Scopus and WoS; 10 monographs.

Garipova Regina Rafisovna graduated from Kazan State University named after V.I. Ulyanov-Lenin (KSU) in 1996 with a degree in Sociology. In 2000 she defended her Ph.D. thesis in the specialty - 22.00.03 "Economic Sociology" at the Saratov State University named after Chernyshevsky. In 2010 she was awarded the academic title of Associate Professor. She is the author of scientific papers concerning the problems of quality of life of population, the formation and development of human capital, the sociology of education and youth.