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**MODERN INFORMATION TECHNOLOGIES: EFFECTIVE  
TEACHING ACTIVITIES IN THE CONTEXT OF UNCERTAINTY**

Vera Alekseevna Kurina (a)\*  
\*Corresponding author

(a) Samara State Institute of Culture, Samara, Russia, kurina06@mail.ru

**Abstract**

The paper reveals the context of uncertainty which is associated with the transformation of all spheres of human life nowadays. The education system is undergoing this process, especially the training of future specialists, as the implementation of digitalization is an ambiguous, unstable, unpredictable phenomenon for all humankind, which produces positive and negative effect. The 2020 pandemic and the active use of information technologies in education have generated the context of uncertainty, as the author indicates the degree of transformational influence on the entities of the educational process. The author also presents advantages of the use of modern information technologies, as well as the existing problems that deal with the management of educational activities in the higher education system. The research demonstrates the necessity of changing the attitude to the educational process on the part of the entities of the education system (teachers and students). The author emphasizes the use of modern teaching technologies that allows a teacher to carry out teaching practices, to form the readiness of students to master the disciplines in the context of uncertainty. It is noted that such approach to the organization of training influences the educational process management in a positive and productive way. In the context of uncertainty, it is important for a teacher to foresee the result of his or her teaching activity, and accordingly, to choose teaching technologies correctly in order to achieve high quality indicators in the training of future specialists.

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## 1. Introduction

The instability and vulnerability of modern social conditions of life have determined the position of a person in the context of uncertainty, unstable, unpredictable existence. We can say that uncertainty is a feature of modern social conditions.

The rapid development of various research areas, digitalization and innovative transformations have created the context of uncertainty that has produced a significant impact on all spheres of human life (Bolotova et al., 2007).

The arising panic in 2020 resulting from the pandemic around the world has transformed all foundations in human life and affected the industrial, socio-economic, cultural environment. This process significantly affected the education system, when most educational institutions (according to media reports, more than 90%) were closed and transferred to a distance learning format. "... distance learning can be considered as a form that complements and strengthens the socio-pedagogical, organizational, psychological and didactic potential of the traditional ("face to face") format of education" (Gafurov et al., 2020, p. 102). Under such condition all entities of the educational process – schoolchildren, students and teachers - urgently had to rebuild their consciousness in organizing educational communication and actively master the modern possibilities of educational platforms. There were problems related to the implementation of the educational process, which affected the quality of training of students. First, insufficient material and technical support of educational institutions and directly the entities of the educational process themselves with computer technology. Secondly, both parties of educational activities (students and teachers) were not sufficiently prepared to work under such conditions (the level of computer literacy was inappropriate to the situation).

Technical problems can also be associated with other factors that students point out: low-quality equipment (laptop, tablet, personal computer, etc.) that cannot support some applications, documents and presentations; problems with sound or video; unstable Internet or lack of access to the Internet in some localities of Russia (Gafurov et al., 2020).

However, in the new format of education, not only problems have emerged, but also a wide range of opportunities for improving the education system have appeared. In addition the author identifies the prospects for transformation of the learning process under critical conditions.

One of the options for the effective transformation of communication in an educational institution is the introduction of specific educational platforms into the educational process and, accordingly, identification of the influence of modern information technologies on communication between entities of educational process. Modern information technologies contribute to the "targeted consideration of the individual characteristics of each student and, accordingly, the autonomous learning management" (Kukul'ska-Hulme, 2010, p. 3).

In Russian education the current situation can be characterized by introduction of digital educational resources, on-line training in various areas and at different levels. In this regard, research is being carried out, representing the development trends of the modern education system in connection with digitalization and the use of information technologies (Gafurov et al., 2019; Kolesnikova, 2019; Menter et al., 2017; Shafranov-Kutsev, 2017; Tulchinsky, 2017; Verbitsky, 2019); reveals the role and significance of the

digital learning format, on-line learning in pedagogical activity (Danilyuk & Faktorovich, 2019; Galikhanov & Khasanova, 2019).

However, the new format of education revealed not only problems, but also stimulated a wide range of opportunities for improving the education system. In addition, we identify the prospects for transformation of the educational process under critical conditions.

One of the alternative for the effective transformation of communication in an educational institution is the introduction of specific educational platforms into the educational process and, accordingly, identifying the influence of modern information technologies on communication between entities of the educational process. Modern information technologies contribute to the “targeted consideration of the individual characteristics of each student and, accordingly, the organization of autonomous learning” (Kukul'ska-Hulme, 2010, p. 10).

In Russian education the implementation of digital educational resources, on-line training in various directions and levels is in process. Consequently, research is being carried out, representing the development trends of the modern education system in connection with digitalization and the use of information technologies (Gafurov et al., 2019; Kolesnikova, 2019; Menter et al., 2017; Shafranov-Kutsev, 2017; Tulchinsky, 2017). It reveals the role and significance of the digital learning format, on-line learning in the teaching process (Danilyuk & Faktorovich, 2019; Galikhanov & Khasanova, 2019; Kodzhaspirova, 2021).

## **2. Problem Statement**

The transferal of most educational institutions to a distance learning format can be viewed as an experiment in the intensive introduction of information technologies into the education system. The demand for distance learning has posed a number of tasks for educational institutions, teachers, students and their parents: distance learning involves the use of an individual computer or laptop; a prerequisite for such training is unlimited Internet access; the training of teachers for the implementation of the on-line format has become significant. However, “modern technologies help a learner to find the necessary information quickly, saving him from intellectual toil, develop the habit for searching prompt answers in the network; as a result, the ability to perceive large texts is lost” (Gafurov et al., 2020, p. 103). In this regard, it is possible to define the research problem: from a theoretical point of view, this is a theoretical and methodological proof of the effectiveness of the use of modern information technologies in the context of uncertainty, and from a practical point of view, it displays the professional pedagogical experience of mastering and using educational platforms in the university of culture in the educational process. ... The pandemic and the transferal of everyday life to a remote format revealed the necessity to solve the set problem.

## **3. Research Questions**

A number of factors influence the transformational processes in education: digitalization penetrating into our daily life; the Internet and information technologies, which are actively being introduced into the life of ordinary Russians. There is a need to create conditions corresponding to the needs

of society for the implementation of these processes. The organization of the communication process in the context of the uncertainty of digitalization of education required the following tasks to be solved:

- 3.1. To characterize the context of uncertainty, highlighting the means of pedagogical activity and to present practical experience of the use of information technologies and educational tools that ensure a sufficient level of high-quality training of future specialists.
- 3.2. To reveal the relevant information technologies and teaching tools that allow effective organization of teaching activities in the context of uncertainty.
- 3.3. On the basis of practical teaching in the higher education system, we will present the results of using information technologies in the process of organizing communication in the transferal of the content of an academic discipline and demonstrate the attitude of educational entities to digitalization and informatization of education.

#### **4. Purpose of the Study**

The set problem allows us to determine the purpose of the study: theoretical and methodological rationale of using modern information technologies as a means of effective teaching activity in the context of the uncertainty of digitalization of the education system.

#### **5. Research Methods**

During this research, we used a set of methods. These are theoretical analysis for clarification of basic concepts; generalization of the accumulated practical experience of teaching activity; systematization of teaching technologies and educational information tools corresponding to the conditions of uncertainty in digital format. They also include testing entities of the educational process concerning the attitude to digital learning and the use of educational platforms in teaching and educational activities.

#### **6. Findings**

Changes in any system, including the education system, are a continuous process. In the 21st century, education has undergone transformations connected with the introduction of new principles and approaches: technologization, computerization, the principle of continuity, competence-based approach, etc. The modern period is characterized by deep and large-scale modifications of the education system. The pandemic demanded a prompt change in the approach to the organization of the educational process in institutions and organizations. The significant changes have led to uncertainty in education.

An analytical review of the research papers on the topic showed that the concept of "uncertainty" is not fully observed in the available research.

Faber (2004) reveals uncertainty as a category that reflects lack of order.

The phenomenon of uncertainty forces an individual to think about and solve existing problems. The 2020 pandemic has identified the importance of transferring our lives to a remote, distance format. Thus, the security of communication has been ensured for several years by the remote format of interaction in

state services, and at present, in on-line mode, while sending application to medical and educational institutions and other organizations.

The media notes that by 2030 Russian families will have not only wide-format access to the Internet, but they will be connected to the educational institutions network (Alpatova, 2020). Digital platforms are being actively developed and implemented into management processes in various socio-economic and research areas. The sphere of education did not stand aside either.

The analysis of the population's readiness to use information technologies actively in their life, carried out by a single state information portal, showed that 17% of the population experience difficulties in working with equipment; 17% of respondents are puzzled by the unpredictability of processes; 16% of respondents are worried about replacing real human communication; 12% of survey participants are concerned about misappropriation of personal data; violation of personal space is noted by 9% of the respondents; 8% of respondents note the possibility of equipment getting out of control; 6% - emphasize that human communication is more reliable (Alpatova, 2020).

It should be emphasized that the uncertainty of modern teaching activity is characterized by the absence of external goal-oriented guidelines in the educational environment, a variety of forms, methods and means of organizing communication between the entities of the educational process, as well as the unpredictability of the results.

In the context of uncertainty, the further development of the education system, the success of training in a particular educational institution decisively depends on the ability to constantly keep in touch with the teacher in the context of uncertainty. Such a need for constant interaction is caused in most cases by the reluctance to think critically and independently and the insufficient level of formation of analytical and research skills and abilities.

The digitalization of the education system has established new requirements for teaching staff, for their information literacy and readiness to manage the education process effectively in the context of uncertainty. In this regard, the teacher needs to determine the most effective technologies that ensure not only the process of transferal educational information, communication, but also the quality of training of future specialists.

We conducted the students' survey to clarify their attitude towards the use of information technologies in the educational process.

The experimental study involved full-time and part-time students (2-4 years) of Samara State University of Culture. Survey on digital format of education among students showed that about 90% of students note the importance of using electronic educational and teaching materials; 60% of respondents emphasize the importance of the digital library; extra-mural students do not accept the distance form of education; most of the test takers noted the constant availability of educational information and assignments as a positive factor in digitalization. However, during the survey on the effectiveness of the digital format more than 50% of students noted a decrease in the quality of communication with a teacher as a result of communication failures at different educational platforms; not all students could master the information tools on schedule. A third of the respondents expressed the importance of studying in the blended learning format (traditional and digital).

The students had question "how do the conditions of uncertainty in the digital learning format affect the student?": 40% of the respondents answered that the lack of real communication affects the process of understanding and cognitive process, and 38% noted that they were stressed in case of educational process. In the context of uncertainty, almost 90% of students believe that it is impossible to guarantee a high level of quality in training future specialists. Thus, we can say that the problem of sufficient contact work is not solved even with good technical support and sufficient number of developed on-line courses and electronic methodological tools, which allow maintaining a high level of future professionals training.

Various educational platforms have been used to organize the educational process at Samara State University of Culture in a digital format during the past and current academic years: Zoom, Pruffme.com, Microsoft Teams. The Microsoft Teams platform allows you to conduct remote seminars, round tables, conferences via video communication, from anywhere (Gafurov et al., 2020). To increase the effectiveness of pedagogical activity, teachers of our university attended courses to improve the organization of the digital format of education at Innopolis University. Distance classes were used to conduct lectures, and notes were made that are available to students at any time. Practical, creative and project tasks were the basis on educational platforms, the teacher explained the implementation process and provided a lay-out on the technological stages, structures and guidelines for the development of a specific educational product. At practical classes students made oral presentations, and also analyzed the created projects, events, programs. A tool such as Miro (a virtual analogue of a blackboard) was used for the presentation, and Mentimeter (a voting tool that provides quick feedback) for voting and expressing opinions. Using Miro allows you to organize teamwork. This is useful when students are developing a group project. In addition, in the process of structuring specific studied materials (for example, in the form of mind maps) it is convenient to carry out interactive work. The Mentimeter is used to test the knowledge. Questionnaires can include different types of questions. In addition, such polls can be organized on mobile devices, i.e. wherever a student is.

The use of modern information technology tools in the distance learning process makes it possible to increase the efficiency and quality of training of future specialists.

However, most of the teachers of our university note an increase in the responsibilities for the preparation of educational and methodological materials in e-form, a greater workload due to the development of educational platforms and the transition to different information educational content, difficulties arose in designing the educational process from setting goals to developing funds for evaluation means in electronic form even with the skillful use of information technology and tools.

## **7. Conclusion**

There is an atmosphere of uncertainty in any sphere of human life. Uncertainty is a condition for the sustainable improvement of work performance and a factor that transforms teaching activity.

Nowadays higher education is the most dynamically changing system. The reformation in the educational process, connected with digitalization, has led to a change in the attitude of the entities of the education system and to the transferal and formation of the knowledge system, teacher-student communication, and to the learning outcomes.

The context of uncertainty enables university teachers to use a variety of resources in order to provide high-quality training of future specialists. Information technology makes it possible to organize the

educational process effectively in a digital format, “create a mobile interactive learning environment and provide instant feedback, lead to the emergence of new forms of presentation of educational material” (Driver, 2012).

The test results showed that the context of uncertainty in the implementation of digital learning causes tension and stress among students. In this regard, the teacher needs to monitor constantly the positive and negative consequences of the ongoing pedagogical actions.

In the context of the uncertainty in the area of digital learning, the teachers' workload has increased, although the majority of teachers have mastered the possibilities of modern information technologies and tools.

The uncertainty in the area of educational digitalization enables every teacher to improve their qualifications and information literacy constantly.

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