DISTANCE LEARNING AS AN IMPERATIVE FOR DIGITALIZATION OF EDUCATION

M. Beskhmelnov, N. Shmeleva, S. Shilkov, M. Lygarev
MIREA – Russian Technological University, Moscow, Russia

beskhmelnov@internet.ru

I. INTRODUCTION

The rapid development and penetration of information technologies into various spheres of human life lead to significant issues of improving the learning processes and their partial digitalization in higher educational institutions. Initially, the processes of education digitalization were focused on the creation of sites made for practicing and video content accompanying the discipline, teaching of which was carried out in the classical form of traditional classroom learning, in order to provide free access to materials with the goal of a deeper education and understanding of the studied sections. The introduction of online lectures and master classes with the involvement of experts from companies and organizations interested in graduates of higher educational institutions made it possible to expand the degree of interaction with the target audience, to motivate the study of additional aspects of professional disciplines.

However, the events of 2020 have radically changed the role and significance of education digitalization. The coronavirus COVID-19 arrived in Russia at the end of January 2020. In March, a period of forced self-isolation started, which required the prompt formation of online education systems in higher education institutions.

The main issue of education digitalization today is development and creation of high-quality technologies. For professor of higher institutions, it is relevant to introduce technologies for effective interaction with students both in traditional classroom learning and online, creating high-quality video content, the ability to quickly respond to external factors and combine different forms of educational technologies to achieve the appropriate level of knowledge dictated by the modern market labor.

II. MATERIALS AND METHODS

The main task of the Universities is to ensure the continuity of education processes both in traditional and online classes, regardless of the external negative factors that civilization has faced in recent years. In 2019, Russia identified national projects for the country's strategic development [1], which form a list of targets and key results up to 2025. One of the projects that is worth noting is " Human resources for the digital economy " of the national program "Digital Economy of the Russian Federation" [2], which defines the list of key competencies of the graduate: communication in the digital environment, self-development in conditions of uncertainty, creative thinking, information and data management. All of the above determines the need to modernize learning processes, including using online education technologies.

The implementation of distance learning is a complex task containing many requirements for higher education institutions and teachers. From the higher educational institution’s side, online learning bears significant additional financial costs for providing the necessary tools for interaction between teachers and students: creating or conclusion of contract with services for providing online lectures (webinars), developing personal accounts, designing additional hardware (servers) for processing and data storage, creation of support centers, training of lecturers and many others. It should be noted that the introduction of online learning entailed an additional burden on teachers: studying online platforms, preparing presentations, reviewing assignments, interacting with students, clarification of discipline material, commenting on works. For students, the difficulty is in adaptation to the requirements and the ability to perceive information in the absence of control provided by the teacher during the lesson. When studying disciplines online, self-motivation for learning and the ability to concentrate on important concepts of the lecture has a huge role for students. The positive aspects of online education for students is the availability at any time of educational and methodological complexes of disciplines, and for the teacher the ability to control the completion of assignments, exam answers, which entails an increase in the objectivity of the assessment of knowledge.

Online learning is gaining popularity nowadays and it is the most widespread for teaching programming. There are a number of online platforms offering both fee-based and free training courses, you’ll be rewarded with a certificate when you successfully complete your course. Large IT companies also organize such courses with the goal of training and attracting the best students for work. Let’s analyze the structure of online training courses more closely. Usually, the course contains video lectures, practical exercises, assignments for self-educating and tests to check the acquired knowledge. We would like to draw your attention to the fact that the lectures are short in duration (15-20 minutes) videos this is done in order to present the material in a form that is easy to understand and eliminate the loss of the student's attention. After watching the video lectures, practical lessons are given in an online format, which are also not too long and try to fit into a time interval of no more than 30 minutes. For independent work, the student himself

determines the time in accordance with the amount of basic knowledge and the deadlines. An important aspect in online learning is the self-motivation of the listener. Most of the students studying on online platforms do not reach the final certification, stopping training for various reasons, for example, associated with the emerging difficulties of independent study of the material and lack of time.

The main issue of successful implementation of online learning for Universities is maintaining self-motivation and students' pursuit of knowledge. In our opinion, the necessary conditions for the formation of the competencies required by the market and the support of students' desire to set a goal and achieve excellent results largely depends on the teacher and his skills and in using information technologies in the educational process. In the classical offline form of studying, it is much easier for the teacher to contact the audience and monitor the level of mastering the given material, to maintain interest in the discipline being studied. In an online format, interaction with the audience is difficult, and the teacher is uncomfortable faced with a lack of understanding the amount of perception the material by students, therefore, the question of what requirements should be met by online learning is relevant at the present time.

A special role in the digitalization of education with online technologies is assigned to the study of disciplines related to mathematical modeling, including areas of applied mathematics and programming technology. In the market of professions, graduates with the knowledge and skills of mathematical modeling for processing and analyzing information are most in demand. The technologies of artificial intelligence and machine learning used to solve applied problems from different fields of knowledge are a combination of mathematical methods, algorithms and programming languages and are most in demand on the labor market, which determines the need to train personnel corresponding to the trends in time using, among other things, online learning technologies. ... Free software, containing many libraries, the presence of open information source, gives the teacher an opportunity to use modern technologies in the educational process, while we note that it imposes an additional burden on preparing for classes. The creation of online courses in the field of mathematical modeling and machine learning will be most in demand. The fact that the University has an online education system and online courses in partially open access is one of the indicators of a modern digital university.

III. CONCLUSIONS

Online education technologies will develop rapidly in the upcoming years. For Universities, the creation of high-quality online courses and their partial placement in the open access will play a huge role in attracting applicants. We would like to note that in MIREA - the Russian Technological University, an online education platform successfully exists and is being modernized for emerging tasks, providing many opportunities for interaction between teachers and students. Of course, many issues of online learning remain open, but it should be noted that online learning also opens up many opportunities that are a huge part in the development of information technologies, digitalization of education processes, and training of in-demand personnel for the digital economy.

REFERENCES

[1] National projects: targets and main results [Electronic resource]: http://static.government.ru/media/files/p7nn2CS0pVhvQ98OOwAt2dzCIAietQih.pdf (date of access 05.10.2021).

[2] Personnel for the digital economy of the national program "Digital Economy of the Russian Federation" https://www.economy.gov.ru/material/file/bd31fe31b5135c35e402b702c346f304/41_24012020.pdf (accessed 05.10.2021).