Digital Learning Environment in Modern Conditions

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Abstract

Relevance. The COVID-19 pandemic caused the whirlwind development and search for new ways of introducing and organizing a digital learning environment in educational institutions. At present, this trend is primarily associated with the needs of the educational process participants, it allows the use of modern technical means and technologies, thus significantly enhancing and modernizing information and communication processes in society as well as the level of intellectualization of individuals and all humanity in general; besides it increases competition among educational institutions. The contradiction that arises in connection with the understanding of the positive impact of digital learning environment on improving the quality of teaching, on the one hand, and significant drawbacks on the part of methodological support and scarce experimental data, on the other hand, covers the research problem. The relevance and perspectives of the study of distance learning at various levels of education have not been perceived and investigated fully. The purpose of the paper is to determine and describe the momentous components of distance learning organization considered by Russian and foreign scientists. Analysis of these studies can help update and specify recommendations entitled to create and improve the evolving digital learning environment. Method. A theoretical review of research papers over the past five years (2015–2020) devoted to the study of the impact and organization of digital learning environment at all levels of education. Results. The paper covers the analysis of participants' interviews about their attitude to online learning format. The obtained experience of using digital learning environment and interaction with pupils, learners and students is analyzed; application features, advantages and disadvantages of using such an educational opportunity are determined. Conclusions. The survey showed that most authors emphasize a major role of digitalization of the educational space in educational institutions of all levels of education in difficult modern conditions. Interviews with participants of educational relationships brought out both negative and positive aspects of online learning..

Keywords [1]

digital learning environment, online learning, university teacher**,** pupil, learner, student, educator.

1. Introduction

The evolution of the modern education system, caused by a rapidly changing socio-economic landscape of our society and reinforced by the reaction of education authorities to COVID-19, has led to a really massive use of digital learning environment, which we understand as a set of opportunities

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available to both the teacher and students through the development of modern telecommunication technologies.

2. The purpose of the paper

The purpose of this paper is to determine and describe the momentous components of distance learning organization considered by Russian and other scientists. Analysis of these studies can help update and specify recommendations entitled to create and improve the evolving digital learning environment.

3. Literature review

Many scientists-practitioners, both in Russia and other countries, are now sharing their limited experience of work and training in a distance mode.

Thus, Dyakova E.A. (2019) considers that the digitalization of education involves the digitalization of all educational and methodological materials and creation of available knowledge bases on their ground, the maximum transfer of educational process to the global network and application of mobile and cloud technologies for training, the involvement of web 3.0 technologies and intelligent systems in managing the educational process, widespread use of massive open educational courses. Nikulina T.V. (2018) notes that the digitalization of education will allow students to build an efficient individual educational trajectory and manage their own learning outcomes, to overcome the barriers of traditional learning (the pace of mastering the program, choice of learning forms and methods).

In 2015, educators and psychologists issued The Manifesto for educational environment. They stated: "Success in the creation and use of new techniques, however, depends on understanding the educational paradigm: the goal of education is not the assimilation of knowledge, but rather the development of an independent, curious, and collaborative personality" (Kushnir, 2015).

Until quite recently, it was believed that Russian universities were still in the early stages of the digitalization of education, just at the stage of a pilot project, though most of them are striving to introduce digital technologies into their educational process. First of all, online courses are being intensively mastered as new formats for transferring knowledge (Maslennikova, 2019).

The preservation and development of students' health is not forgotten either. "Along with the transition from a traditional physical learning environment to a virtual one and the formation of a digital educational environment, the environment for the preservation and development of students' health is changing. At the same time, it is even more important to regulate external access to this environment, since it is not just personal data, but elements of building a person's physical, mental and social well-being. " (Mukhametzyanov, 2019).

"The relationship between teachers and their students is being increasingly mediated via educational technologies. This increased use of technologies has implications for all levels of education, perhaps most evident in a higher education context where students are spending less time on campus and more time online than they did in the past" (Lodge, Jason & Kennedy, Gregor & Lockyer, L., 2020).

In light of this, it is necessary to define new approaches to the content of education, which consists in training teachers of new generation, effectively working in the conditions of digitalization of economy and society.

4. Methodology

The leading research methods are methods of analysis, synthesis, and comparison. Research papers published between 2015 and September 2020 which studied the impact of digital learning environment on pupils and students, as well as educators and teachers were identified in the electronic databases Scopus, Web of Science, and E-library. Key search terms included the following words: preschool age, pupil, student, educator, teacher, digital learning environment. Papers published in English in peer-reviewed journals, as well as an overview of social networks and forums discussing

educational problems during the COVID-19 pandemic were considered by us if they provided data on the experience of using distance learning at all levels of education.

5. Results

We interviewed students and university teachers of the Institute of Psychology and Education of Kazan Federal University and Kazan National Technical University named after A.N. Tupolev about their attitude to the digitalization of the educational process.

Though students of the Institute of Psychology and Education study at the Faculty of the Humanities, and students of KNTU named after A.N. Tupolev study at faculties of technical specialties, their answers were similar. In total 300 students (full-time and part-time) and university teachers of the Institute of Psychology and Education of Kazan Federal University (hereinafter KFU) and Kazan National Technical University named after A.N. Tupolev. The study was conducted from April to October 2020.

The majority of students have a positive attitude towards the fact that some disciplines and modules were transferred to the digital space: “It is convenient for me when, for some reason, without attending a lecture or seminar, I can use my personal office in my free time and read the content of the lecture, complete the assignment", "It is more convenient for me to clarify some unclear things at home once again after the lecture", "It’s better for me to study online", "In the "Discussion" tab, I can ask those questions that I would hesitate to ask personally", "I work, so I can't always attend lectures, and I like the opportunity to listen to them distantly."

As for the teachers, they also (overwhelmingly) have a positive attitude to innovations: “Of course, we take into account that this is an additional loading, but it is paid”, “It is convenient for me that some questions that we did not have time (not enough hours for the discipline, in my opinion) to discuss in the classroom, you can ask students to prepare as additional material; at the same time, I can track the degree of views of the assignment and their implementation "," I can send video material for students’ independent viewing", "Ailing students do not lag behind the group as they study independently the material that the group analyzed at the lecture. "

This form of educational process organization for the Master’s degree significantly changes the nature of a university teacher; in particular, the university teacher needs to create a new methodological support of the educational process using electronic and computer technologies, taking into account the crucial role of independent work of master students (Buntova, 2019).

Thus, digitalization in higher education and digital technologies can be used not only as a control over the assimilation of transmitted knowledge, but also helps teachers to use a personality-oriented approach to each student in this process.

6. Discussion

At the moment, no one - neither the government, nor the Ministry of Education or the Ministry of Science and Higher Education, nor local governments - can guarantee that they will not have to switch to distance learning again. But those who, in the spring of 2020, experienced the possibilities of distance learning and teaching in this format, have already accumulated some experience in distance learning.

Since the transition to the distance learning mode turned out to be very rapid, some teachers who were not prepared for this activity, as well as pupils and students, along with their parents found themselves in a stressful situation.

Our survey involved yet teachers from preschool educational institutions, secondary and higher schools, students and parents. Addressing students, in our opinion, gave us an opportunity to analyze the participants of educational process, as being yesterday's schoolchildren, they are able to analyze more systematically advantages and disadvantages of distance learning.

A teacher of a preschool educational institution shared her experience of organizing classes with preschoolers: “We were not ready for distance and home learning. When preschool educational institutions (PEI) closed, parents began to ask to help children learn at home, but then we faced a new

problem - the limited level of education and resources of about one third of parents, lack of access to technologies, a good Internet connection.

We analyzed the situation and discussed it with our colleagues, and then the administration of our MBPEI decided to conduct educational activities using the WhatsApp messaging network. It took a lot of effort for the staff of the preschool educational institution and preschoolers' parents to organize the work efficiently in the pandemic.

To begin with, educators and specialists of the preschool educational institution revised, analyzed and corrected all the teaching material that was available; they worked out a set of video lessons that made the material more accessible and interesting both for children and their parents.

The educator records a video lesson according to the calendar plan, and sends it to the WhatsApp chat of the PEI group. Also, references to the literature on this video are sent to the WhatsApp chat to help parents and pupils. After watching the material, pupils with their parents do some creative work. We were lucky as all parents agreed with the suggested learning mode during self-isolation. To some extent, self-isolation was good for the parents: they paid more attention to their children while implementing joint work. In addition, all this had a positive effect on the status of a preschool educator; we increasingly hear "thank you" addressed to us. At this stage, it was the most alternative measure to ensure access to distance learning for everyone, including people with a low income, because most of them do not have digital devices. "

In turn, school teachers were unanimous when assessing the introduction of distance technologies in the educational process of secondary schools: "The pandemic launched the active development of online education; it definitely will be in demand in the future." Less than half of interviewed teachers answered that they were able to independently master distance learning tools. They highly valued their own level of digital literacy. A third of respondents rated their level of digital literacy as average - they had to turn to training at webinars or ask for help from colleagues. However, there are those who admit that they still experience difficulties in using services and programs for distance learning. In order to compensate for the gaps in their knowledge regarding online learning, teachers are taking or are going to take refresher courses in the near future.

We analyzed the obtained experience of using such an environment and interaction with students, interviewed students of two leading universities in the Republic of Tatarstan, and tried to specify application features, advantages and disadvantages of using such an educational opportunity.

The use of an electronic system, specialized programs for organizing and conducting video conferencing (MS Teems, Meet, Zoom), specialized software platforms for creating and maintaining training courses, registration and enrollment of students, their notification and automatic testing (LMS Blackboard, IAS KFU), and reliable high-speed communication lines of Internet providers for all educational process participants brings, at first glance, a unique opportunity for the teacher's instant response to the learning process of a particular student in a cyclical mode: a didactic task - monitoring the progress of its implementation - hint or explanation of logical and factual errors - monitoring and evaluating the result; but each teacher has from a couple of dozen to a couple of hundred such students in the course.

However, a teacher, like any other person, due to the peculiarities of human perception and thinking, can remember in detail no more than a dozen of such communication chains. Attempts to simplify the process of communication during educational process by specifying typical errors do not give the expected result, since the whole process of learning process automation is, in principle, designed for "an ideally motivated, disciplined, responsible, having necessary theoretical basis student with a stable psyche". In fact, students, like ordinary people, are often lazy, worried, forget to follow teacher's instructions, they have reasons that are more important (from their point of view) than the process of planned educational work. They may not know something from the necessary theoretical basis or be distracted due to other reasons. As a result, during discrete communication with a specific student in such an environment (otherwise, it simply does not work out), the teacher either unwittingly misses something, or constantly returns to the chain of records of his/her communication with the student.

Analysis of students' learning success depending on their temperament and type of nervous system showed that students with a strong type of nervous system and a high rate of inhibition (phlegmatic and sanguine types) had the least problems when learning in a digital learning environment, while choleric people have a little more problems. The melancholic people feel most uncomfortable at this

mode of learning. Such educational process organization creates the largest number of problems for them, and that is absolutely not taken into account by the training system, though the share of such students is quite large [8, 9].

The proctoring system has also proven itself well: assessment of students' knowledge in an exam or test includes the control of examinees' answers independence.

Thus, to present the information landscape of online learning in our republic, we also interviewed parents of children studying in the format of distance learning: "It turns out that I do not know my child enough and his/her abilities in educational activities", "It is a hard time for modern teachers and educators", "I do not have enough knowledge of psychology and pedagogy of a modern child", "Something needs to be done with the existing educational program".

Summarizing interviewees' answers, we can accentuate advantages and disadvantages of this system of work with preschoolers, pupils, students and parents of pupils and students.

The advantages include the following:

- teachers, despite the new format of work with pupils and students, have found resources and opportunities to organize the educational process in difficult conditions;
- the opportunity to transfer part of the educational material to self-study mode; thorough preparation for lessons;
- the convenience of planning students' own academic work, the opportunity to plan time and place of work for teachers;
- the use of proctoring in exams eliminates subjective assessment of students.

The disadvantages are as follows:

- negligent schoolchildren disrupted lessons; hooligan behaviour of some students was registered;
- the lack of approved and time-tested methodological developments for online education, as well as low digital literacy of older teachers;
- a low level of students' knowledge assimilation; time-consuming process for teachers;
- available methods and means of students' educational work monitoring (teachers' record books to register students' learning results) and registration methods.

7. Conclusion

The conducted research allows us to conclude that:

1. The digital learning environment meets the peculiarities of one-to-one training or consultation. It is less suitable for the formation of theoretical knowledge, but it is poorly adapted for the formation of practical skills, and does not take into account motivational and psychophysiological characteristics of a particular student.

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