YEARBOOK OF UNWE (2022), PUBLISHING HOUSE – UNWE
ISSN (print): 1312-5486; ISSN (online): 2534-8949; http://unwe-yearbook.org/en/
DOI: https://doi.org/10.37075/YB.2022.2.05

DIGITALIZATION IN FINANCIAL EDUCATION IN THE UNIVERSITIES

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Abstract

The process of digitalization in the education sphere is the new paradigm and model of high technologies development. The importance of the digital delivery of financial education is growing in parallel with the digitalisation of our societies and economies. Digitalization of education assumes to include two inseparable components – a) classroom learning concepts and b) online learning methods. It is now more important than ever to make sure that the innovative use of digital technologies in the field of financial education effectively contributes to increasing financial resilience and well-being, and that governments design and implement effective digital financial education initiatives.

The purpose of this article is to present the impact of digitalization on higher financial education, the challenges facing students and teachers in these process and to analyse the level of digital financial culture. Emphasis is placed on the practical application of the digitalization process in the teaching of financial disciplines in universities.

Keywords: digitalization, students, financial education, higher education

JEL: A23, I23, M21

Introduction

Digitalization of the global economic processes has had a great impact on the digitalization of higher education. The idea of developing this area of educational activity is supported by many researchers who speak about the possibilities of expanding 24/7 learning technologies for the digital generation, thereby increasing the competitiveness of the university (Popova et al., 2020).

Modern digital technologies influence the management activities of the organization (Alexandrov, 2019; Popova et al., 2020). Digital transformation is a long process to create a "digital organization" in which most processes are performed without human involvement. The specifics of a university's functioning in the context of digital transformation are as follows:

- ✓ Creating special units related to digital technologies within the management structure.

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- ✓ Increased possibilities of using mobile digital devices to access the electronic databases of university employees, students and teachers.
- ✓ Decision to use the digital resource to carry out, regulate and control the educational activity.
- ✓ Increased speed of interaction between suppliers and consumers of educational services as a result of using digital technologies.
- ✓ Creating new options of organizational and social interaction between the staff of the organization and the actors in the educational process.
- ✓ Knowledge of modern digital devices and the software, ability to apply digital technologies in management practice becoming mandatory competences for all the participants of the educational process (Popova et al., 2020).

Digital technologies are used today in almost all sectors of the economy, education is a priority. An important point that creates competitive advantages for universities is the integration of science and education. Within the last decade, education sphere cardinally had changed. A smart education system involves providing access to content around the world, building learning in an interactive environment. It has been established that the digitalization of education identifies risks and problems that require solutions. Education processes as the aspect of the digitalized technologies – are the specific new sphere for promoting and developing the economy of the Republic, in achieving high results of improvement and attracting investment from the outside. Digital technologies in the education sphere means that they are will be the new approach in artificial intelligence (AI), that's why AI is a mathematical code based on certain algorithms which influence people's minds. The main examples of AI in the education sphere are special platforms that provide an easier way of using and getting the new knowledge especially as we know that in developed countries the robot plays the role of teacher (Dinis Sousa et al., 2020).

Methodology

The methodology used is based on general scientific methods of scientific knowledge – analysis, synthesis, induction and deduction, as well as on specific methods, specifically applying the systematic approach, the historical approach, the method of comparison and the abstract-logical method. The information base of this study is the results of large studies of international professional organizations on the development of education and the impact of digitalization on financial education in universities.

The digitalization process

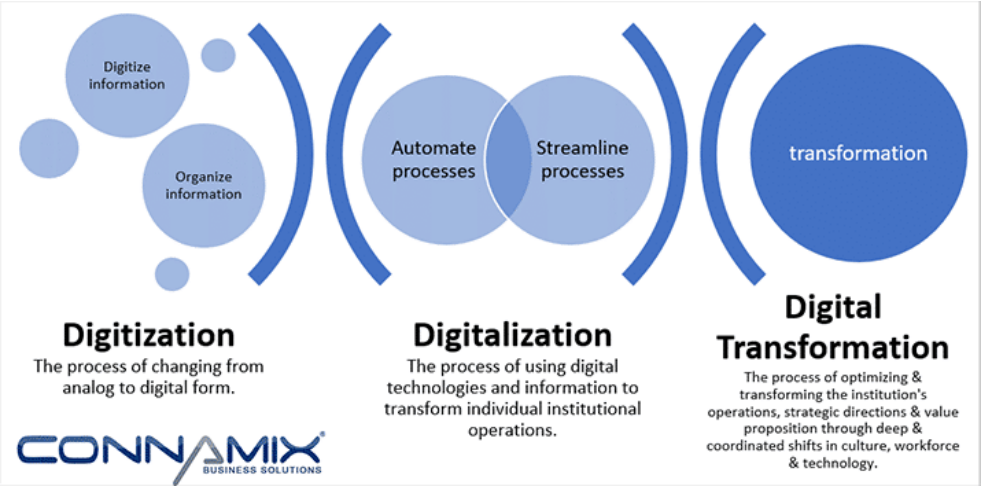
The upfront effort required to digitize objects and assets positions businesses and industries to carry out digitalization. Data from throughout the organization and its assets is processed through advanced digital technologies, which leads to fundamental changes in business processes that can result in new business models and social change.

Digitalizing processes means that some digital technologies are used in the processes and managing data digitally (digitized data and digitally native data), in order to convert processes (not simply digitization) into processes more efficient, more productive, more profitable and with greater customer satisfaction in their digital and physical experience with the company. Therefore, digitalization allows the use of digital information to optimize business results and create new revenue, optimize costs, new customer experience ... offering so much value when applying digital technologies (Robledo, 2022).

Attention must be directed to the development of the processing and testing of teaching and learning complexes, training simulators, and simulators, virtual laboratories for an in-depth teaching of mathematics, computer science, financial mathematics and digital economics. The development of digital higher education reference must be accompanied with account of the needs of the modern production market, the introduction and the digitalization of educational programs of all levels in accordance with the requirements for key digitalization competences for each level of education, ensuring their continuity. Speaking of digitalization of higher education institutions, we mean not only IT universities. Digitalization should fundamentally touch all universities: economic, legal, natural, scientific (Dinis Sousa et al., 2020; Ziyadin et al., 2020).

The modern world is actively changing due to the rapid development of technology. In the 21st century, digitalization has become a global phenomenon and a factor of the development of all spheres of human activity. Under the conditions of the formation of the information society, radical changes are also taking place in the field of education (see figure 1).

Digital technologies are part of a new knowledge infrastructure that is now steadily integrated into everyday life. This knowledge infrastructure is “a reliable network of people, artefacts, and institutions that generate and maintain the informational resources necessary for humans”. For the new generation of “digital natives”, the Internet is becoming not just a source of information, but also a sphere of entertainment, a field for acquiring new skills, improving one’s skills, and building a career (Frolova et al., 2020; D’yakova, Sechkareva, 2019).



Source: Walter (2021).

Figure 1: Digitization, Digitalization or Digital Transformation

Digitalization in financial education

Education is a major factor for the development of society, as well as the whole country. A perfect 21st century education model is a combination of skills and knowledge with using platform technologies. Students should be eager to study and learn more. It is necessary to combine new technologies with teaching content so that the student could master the material, as well as practice in some useful things, like preparing projects using gaming techniques - virtual, mixed and augmented reality, animation. The development of information technology makes it useful and common to use digital tools in various fields of life. Digitalization also affects the educational process. New technologies, especially mobile technologies, become more widely used in teaching. The generation of school and university students is much more likely to use digital tools to solve their everyday issues. There are a number of information systems which are directly or indirectly used in the educational process (Andriushchenko et al., 2021).

According to the UNESCO report (The Digital Transformation of Education, 2020) UNESCO's e-schools Initiative is a global effort aimed at articulating connectivity with inclusive and quality teaching and learning, better learning outcomes and employability for learners. It is based on UNESCO's model for technology-enabled schools, which provides a comprehensive framework that incorporates: policy and resources enablers; technology, content, and human infrastructure; teaching, learning, and assessment into school finance connectiv-

ity programs. The model advocates for leveraging any technologies available to enable an open form of school systems that can ensure continuity and quality of learning during crises, and a continuous access to school finance education programs outside physical school spaces. The model of the Open School has also provided training in the development of digital resources and in teachers' pedagogical use of ICT in teaching, including:

- ✓ Access to distance learning content and coach anytime and anywhere (mobile learning connection).
- ✓ School based blended learning (Human directed use of technology).
- ✓ Home based distance learning (Technology based human interaction).
- ✓ Curricular courses and supporting resources (Design, production and management of content).
- ✓ Teacher and human facilitators (Human designed and facilitated pedagogical activities).
- ✓ Delivery technology (Platforms, delivery media and individual tools) (UNESCO, 2020).

Digital Transformation in financial education involves improving the core business processes of a company to effectively fulfil customer expectations through data and technology leveraging. In the educational sector, students, faculty, staff and graduates can be the target consumer and both students and professors can benefit from digital transformation in universities. Digital transformation to enhance student experience may include:

- ✓ Enabling students to enter through the mobile app or web application.
- ✓ Providing a broad range of choices for online learning.
- ✓ Using technology to track the progress of students and enforce intervention protocols.
- ✓ Enabling online class organization faculties (Le Pham, 2021).

A proper analysis of a school's and a university's digital transformation in teaching financial disciplines requirements must consider the needs of teachers, learners, administrators and parents alike. The analysis methodology is structured around the following tiers:

1. Reviewing the already existing options for digital transformation.
2. Selecting affordable, financially viable and sustainable solutions.
3. Implementing interventions.

Digital transformation in higher education has its effect on 2 main business parts:

First, Services transformation focuses on creating new education products and transforming existing products into digital ones. This usually means converting offline lectures into video ones, creating digital texts and quizzes. Moreover,

it includes providing digital means for communication between students and teachers.

Second, Operations transformation would basically require a digitalization of all the common operations educational institutions have such as students' admission, registration for programs and courses, examination, program development, and their quality assurance. In addition, supporting services as study planning, facility management, teacher allocation, scheduling, etc. (Fedirco, 2019).

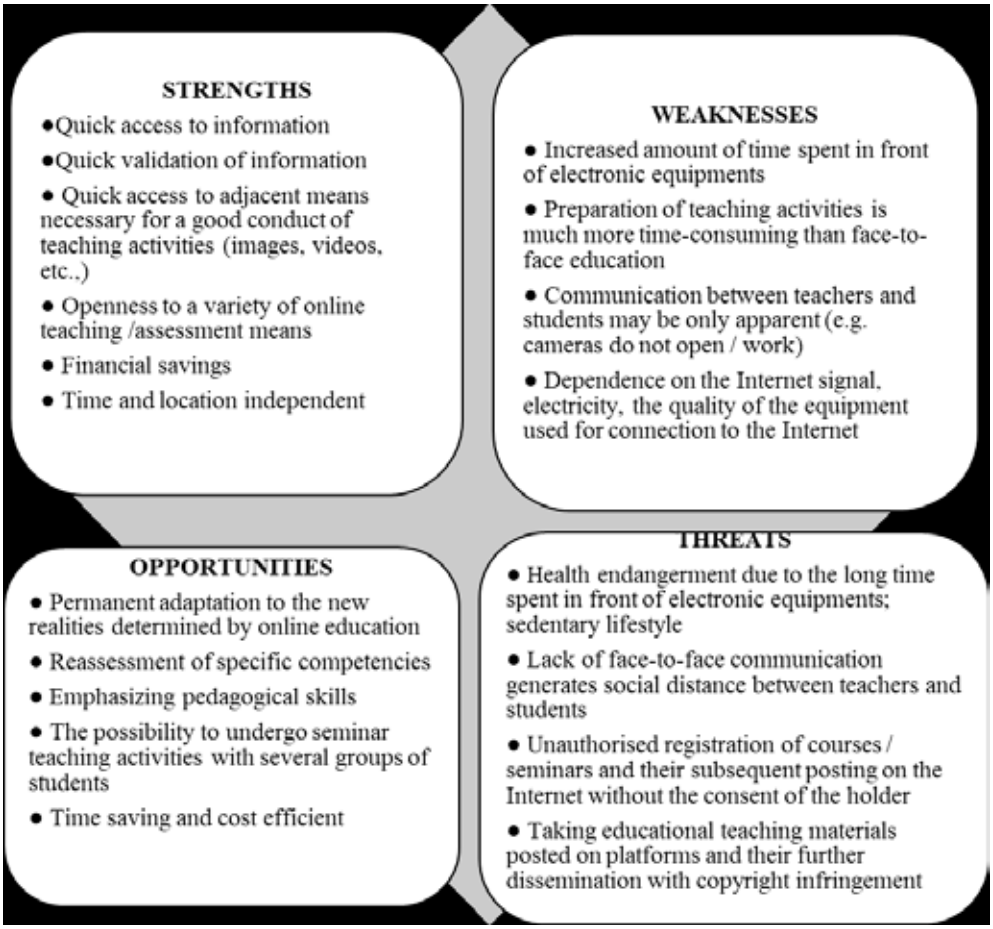
Although Digitalization has changed the education sector dramatically, the traditional way as a teaching method of imparting knowledge is irreplaceable. It cannot diminish the importance of old education system. It is a misconception that digitization in universities will lead to a gradual reduction of the role of the teacher in the era of e-learning. The key observations for the traditional or old education system are presented on Table 1 (Marathe, 2018).

Table 1: Advantages and Disadvantages of Traditional Education

ADVANTAGES	DISADVANTAGES
Direct interaction between teacher and student	Lack of dynamism
Stress on important part of the syllabus	Learning limited to syllabus, teacher and student
Reading on related areas which are not part of the syllabus	It makes student exam oriented
Extra preparation for the student with low understanding level	It does not equip the student for the practical application of knowledge
	It is not cost effective. Traditional education has become very costly
	Resources like books/teachers have limitations. If books/teachers are inadequate learning will stop.

Source: Marathe (2018).

Given all of the above we prepared a SWOT analysis of digital university education (Figure 2).



Source: Prepared by Author on the base of Toader et al. (2021).

Figure 2: SWOT analysis on the continuation of online teaching activities and digital transformation in economy universities

Although digital technologies in higher education have the potential to introduce new and more compound learning activities, they may alienate teachers and students from the learning process. A recent review found that teachers' conceptions of teaching, lack of digital competence, and added workload are among the barriers to the implementation of technology-supported education in general. A survey in the Norwegian economy higher education found that teachers were generally rather positive about digital education but still sceptical of its benefits for their own disciplines (Røe et al., 2022).

With respect to the focus of this study on the challenges that teachers face, the following ranking refers to the five most relevant barriers to teaching fi-

nance and accounting in the Faculty of Economics and Business Administration at Sofia University: (1) Increased time commitment; (2) Faculty compensation, incentives, etc.; (3) Lack of shared vision for distance education in organization; (4) Lack of strategic planning for distance education and training the teachers (5) Difficulty keeping up with technological changes.

The barriers to the implementation of technology-supported education are: established teaching cultures; lack of digital incentives and legislation for teachers; unequal status of education and research; inflexible physical learning environment. Acknowledging these barriers, we suggest a list of steps that need to be taken:

- ✓ Support student-centred teaching cultures.
- ✓ Introduce personalised digital incentive structures.
- ✓ Equate the status of research and teaching.
- ✓ Redesign the physical infrastructure.

Some authors have suggested classifications for the typology of barriers or obstacles to the integration of digital technologies – individual or personal barriers and institutional or organizational ones. Individual barriers refer to traits specific to individual people, such as the lack of time or lack of training; meanwhile, institutional barriers are associated with a responsibility pertaining to the organization itself, such as the lack of benefits or resistance to change. Therefore, a continued analysis on current barriers remains justified; it is also pertinent if we bear in mind how fast technology evolves and the increase in the use of digital technologies, which can decrease operational capacity (such as the reach of Wi-Fi in classrooms when teachers want to promote interactive exercises). Similarly, what used to be an obstacle might now cease to be such (such as the lack of computers for teachers as a work tool) (Mercader and Gairín, 2020).

The practical implementation of digital transformation in financial education is to be found in the West University of Timisoara (WUT), Romania. With digital transformation, WUT is facing a great paradigm shift to be implemented at an organizational, cultural and technological level. The university provides complex digital services to its staff and students, to educational stakeholders and visitors, through several departments (IT, Continuing Education and Distance Learning, Communication, Image and Institutional Marketing). Thus, in order to keep its relevance and remain competitive in today's digital era, WUT makes efforts connected to investments in information technology infrastructure and advanced infrastructure systems, the digitalization of operations, the implementation of smart campus infrastructure, the increase and constant improvement of digital literacy amongst its academics, students and administrative staff, the change of the current working style while concurrently adding new techniques, tools and capabilities, the reshaping of its digital culture, strengthening trust in new technologies

like cloud computing, artificial intelligence or blockchain, investments in its social media presence, etc. (Grosseck et al., 2020).

Most educational systems surveyed in Great Britain, Germany, Austria, the Netherlands and France are modern and provide high-quality education. Despite that in certain areas, they have proved to be inefficient. Poland is by far the most active Member State in Eastern Europe in terms of financial education activities. Bulgaria, Latvia, Luxemburg, Slovenia, Slovakia and Romania seem to be active but only in the areas related to the EU multinational programs. An example of financial education in the Czech Republic is its integration into the school curriculum. The main target groups for financial education are now children and young adults. One of the most critical tools of financial education is both the Internet and private providers of financial services who operate every sixth system of financial education. According to them, there was carried out training of financial education in individual countries. It categorizes Financial Literacy as both internal financial literacy and external financial literacy. Internal financial literacy assists top managers to optimize the use of scarce resources by a competent and efficient management system (Mihalcova et al., 2020).

The Priority National Project "Education" (2019 – 2024) plays a special role in the process of digital transformation of education in the Russian Federation. The new strategies of education in the Russian Federation for the 21st century are tightly connected with the perspectives of: (a) virtual and digital schools and universities; (b) virtual and digital educational environment; (c) new ways of educational and pedagogical interaction that determine quite new technologies, methods and tools of teaching and learning on the bases of the individualized educational process with individual teaching and learning trajectories (Akimova et al., 2021).

New teaching methods

In the process of digitalization, the content and structure of training, the approaches to the organization of the educational process are radically changing (Frolova et al, 2020; Safuanov et al., 2019). Digitalization of education leads to dramatic changes in the labor market, in educational standards, focuses on the reorganization of the educational process, rethinking the role of the teacher. A modern teacher is obliged to learn how to apply new technological tools and practically unlimited information resources in the professional activity. Virtual reality technologies create a unique opportunity to use a variety of simulator programs that do not refer to a single workplace. Mobile learning technologies makes it possible to study anytime, anywhere. At the same time, the digital environment requires from teachers and the academic community a different mentality, the formation of a new view of the world, completely different ways and

forms of work with students (Griban et al., 2019). Particular attention in modern studies of the digitalization of education is given to virtual reality technologies. E. McGovern considers their role in shaping the soft skills of students, in particular, such as participating in public speaking, business negotiations and communication, and preparing presentations. In addition, virtual reality technologies allow students to self-evaluate their skills, to see the direction of their development, and to adjust training programs (Frolova et al, 2020; McGovern et al., 2019). New educational practices have been identified that show the direction of modernization of education in the context of digitalization. Summarizing the scientific literature on this issue, we can distinguish the following elements of digitalization:

- Online teaching;
- Tutor's support in the process of mastering knowledge;
- Use of electronic educational content;
- Interactive methods for the development of students' competencies and the formation of their skills;
- Digital technologies for knowledge assessment;
- Digital technologies for monitoring and managing an educational organization (learning management systems, network organizers, testing systems, etc.).
- Network horizontal communications, both between subjects of the educational space, and between organizations;
- Virtual learning environments and social networks, and also robotization;
- Digital learning games (Frolova et al., 2020).

Considering informal digital practices of students, S. Timmis and B. Munoz-Chereau argue that digital technologies enrich collective activity, contribute to the development and strengthening of the social, cultural and educational capital (Timmis, Munoz-Chereau, 2019). According to a number of researchers, the boundaries of leadership are expanding for teachers in the context of digitalization; the basis for the development of their authority in the process of school management is being formed (Frolova et al., 2020; Berry, 2019).

An analysis of the current state of the teaching staff training system allows us to identify a number of problems that adversely affect both the process of introducing modern technologies into the educational environment in the field of finance and the creation of a digital economy in Bulgaria. The main problems observed in universities in the digitization of the finance teaching process can be summarized as follows:

- ✓ Quite high variety of modern technical means and educational technologies does not always correspond to the level of information competence of modern teachers.

- ✓ The lack of a developed methodology for introducing information technologies into the pedagogical process in economy universities in Bulgaria.
- ✓ The digital transformation in the education system is hindered by the psychological unreadiness of many teachers to accept innovations and to abandon traditional forms and methods of education.
- ✓ The lack of interest, low level of confidence in the use of modern information technologies relate to the conservative attitude of teachers.
- ✓ The real technical capabilities of pedagogical universities that train future teachers often lag far behind the technical equipment of a modern school, and teacher training.
- ✓ Insufficient involvement of future teachers in the work with specialized electronic educational resources that correspond to pedagogical, ergonomic, technological requirements.
- ✓ Lack of universal authorial teaching methods using the resources of the digital educational environment.

Higher education managers are already making serious investments in the Internet of Things (IoT). The blockchain is a modern technology that is used to store and transmit information in a distributed, secure and effective way. Educational facilities may use blockchain to store student data such as personal data and learning performance. With the growing implementation of IT technologies and IoT devices, the need to secure the network from cyber threats emerged. Higher education institutions must implement new tools that enhance cybersecurity, such as user and entity behavior analytics (Fedirko, 2019). Other emerging technologies in education are Augmented and Virtual Reality. They are already being used in classrooms to create lessons more informative as these technologies can bring animals into classrooms or move the whole class to the moon. In the modern world where everything is digitalized, we can use Big Data for better Data Management, analysis, and usage. Big Data in education is mostly information about the performance and abilities of each individual student which can improve their learning experience by personalizing it. Moreover, it is used for better program analysis and is a base for machine learning and AI. Artificial Intelligence can be used in content and Learning Management Systems to create more AI-enabled learning tools that not only generate an answer to students but provide them with a clear explanation and step-by-step guide. Such learning approach will increase students' efficiency as they can learn anywhere and anytime. Universities try to make education accessible to people with disabilities in order to reach ADA compliance. Universities are implementing modern technology like speech recognition and transcription for students who are deaf or hard of hearing (Fedirko, 2019).

Machine learning, artificial intelligence and blockchain technology have gone on to trigger a revolution that currently has a major impact on the asset management and banking professions as well as on the financial operations carried out by businesses, governments and communities. This change is both an opportunity and a challenge for the traditional players, who need to incorporate this digital transformation into their business models, and for entrepreneurs and start-ups, who are compelled to develop new practices. We have seen the emergence of crowd funding, peer-to-peer lending, cryptocurrencies, digital wallets, robot-advisors, machine trading, etc.

Conclusion

Digital technologies in the region will be successful due to: multi-purpose sharing of production capacities, lower costs, due to the rational, as well as the concentration of distribution networks, formation of channels of information, knowledge, technology and managerial expertise. Digitalization of education is a process of systemic modernization of the educational space based on the use of digital technologies. New trends in the digitalization of education include online teaching, interactive teaching methods, including digital gamification technologies, virtual learning environments, artificial intelligence, horizontal network communications, etc. (Sousa et al., 2020). Any transformation is a challenge, it is quite hard to ruin well-known, comfortable approaches and replace them with something new and unknown. But the digital transformation is rather a need than an option.

Digitalization management is possible with the help of unified databases, learning efficiency criteria, in other words, an integrated approach that would determine the goals, structures and content of the educational process. Digitalization management in the educational environment is carried out using digital marketing aimed at organizing interaction with educational support personnel, scientific and pedagogical workers, alumni, students, applicants using a range of digital communication channels; monitoring changes to form a positive image of the university; stimulating the creation of new digital communities and innovations; development of personalized marketing materials for target audiences (Andriushchenko, 2021).

To solve the current problems in the field of education, the system of training personnel of high digital competence must undergo decisive changes, namely:

- Combining various teaching technologies, teaching formats and technical innovations into a single educational system. In here, the balance between regular face-to-face learning expansion and mobile technologies, augmented

reality and other digital educational tools is very important. Distributing the functions and activities between teachers and digital tools is being crucial.

- Improving the quality of digital education through the better data analysis and forecasting, developing and launching advanced educational products using artificial intelligence, improving predictive tools for understanding the connection between digital transformations in various departments and ensuring their interaction.
- Solving the problems may bring us not just to a new level of education and highly developed skills of the new generation, but a more efficient education process in the nearest future digital education gets a student well-acknowledged of modern tools (Andriushchenko et al., 2021).

Interactivity, immediacy, accessibility and participation are one of the qualities of the digitalization process in higher education. The main advantages of digitalization of education are the following: an individual approach to students through the use of artificial intelligence, the formation of personal learning paths, increasing the intensification of the educational process and students‘ interest in it, increasing academic performance, differentiating forms of teaching material and knowledge control, developing the social and cultural capital of an individual. The transition to a digital university involves the introduction of more flexible forms of training, change of corporate culture, communication optimization processes and administrative work, etc. The successful implementation of digital higher education requires very specific prerequisites – budget, execution time, dedication to the teaching staff.

A modern teacher is forced to live in the conditions of an emerging and transforming digital environment, regardless of their own interests, desires and needs. The study and analysis of the scientific, methodological and educational literature, conceptual and regulatory documents as well as the results of dissertation research suggests that there is a contradiction between the growing needs of an individual, society and state in the priority innovative development of education in terms of its digitalization and the ability of the educational system to fully meet these needs.

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