Digital forest pedagogy in context of distance learning

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Abstract. The article tells of the actual problems of the introduction of digital technologies in the higher education system. The development of digital technologies in all spheres of life is supported at the state level and by the general public. Digitalization is a new social situation. The article describes the current problems of digitalization of education. A wide range of possibilities of digital technologies in the educational process of the St. Petersburg State Forest Technical University named after S. M. Kirov (SPbFTU) is considered. It is concluded that the digitalization of education changes the content of the courses taught, as well as the presentation of information, it is not only presentations or videos, it is already direct connections to information networks, databases, forums.

1. Introduction

As the world is becoming more digital every day, I would like to demonstrate how this change has affected my work as a teacher at the University. The development of digital technologies in all spheres of life is supported at the state level and by the general public. Digitalization is a new social situation.

The article describes the current problems of digitalization of education. A wide range of possibilities of digital technologies in the educational process of the St. Petersburg State Forest Technical University named after S. M. Kirov (SPbFTU) is considered. Digitalization involves complete automation of processes and stages of production, starting with the design of the product and ending with its delivery to the final consumer, as well as subsequent maintenance of the product. During the rapid development of science, many corporations require employees who are ready to work with the latest technologies at all levels of their production. The solution to these problems, of course, must come from the reorganization of the education process.

The Federal Law "On Education in the Russian Federation" defines education as a socially significant benefit that is carried out in the interests of the individual, the family, society and the state. The ongoing modernization processes define new conditions that make it possible to ensure the effective functioning of various social institutions, including in the field of education.

2. Methods and Materials

Getting an education is one of the most important stages of a person's life, which helps a student not only to develop comprehensively, but also to choose a certain narrow specialization, the most appropriate to his or her liking. This allows a student in the future to gain experience, professional fulfillment, and earn a good living.
Digitalization involves complete automation of processes and stages of production, starting with the design of the product and ending with its delivery to the final consumer, as well as subsequent maintenance of the product [1]. During the rapid development of science, many corporations require employees who are ready to work with the latest technologies at all levels of their production. The solution to these problems, of course, must come from the reorganization of the education process.

First of all, the reform of digitalization of education is to equip educational institutions with high-quality software. For example, information systems that allow access to educational resources, the results of modern research and development, electronic scientific libraries in various languages of the world.

Digitalization of higher education is not just the introduction of new digital tools or platforms aimed at dramatically increasing the credibility of an educational institution. The most important thing in digital transformation is fundamental changes in the patterns of thinking, working methods and management of the educational process [2].

Digital forest pedagogy involves independent study of the material [3]. The teacher acts as an assistant, a curator, to whom you will have to turn only if necessary [4]. The transition to the distance learning format is a significant stage of digital pedagogy and the widespread use of Internet technologies in the higher education system.

Now science is developing at a great speed, new structures appear every day. Each student, both at the St. Petersburg State University of Architecture and Civil Engineering (SPbGASU) and at the St. Petersburg State Forest Technical University named after S. M. Kirov (SPbFTU), is assigned an individual user name (login) and password to access the information services of the University [5, 6].

Digital services have long been used in universities and allow you to track changes in the number of students and teachers, determine their rating, and organize joint work of participants in the educational process. There are quite a lot of services and tools for creating a DSP, and their saturation in the DSP (digital signal processing, DSP) depends on the technical and financial capabilities of the educational organization (figure 1). Specialists use data engineering to process the digital footprint of both students and teachers, also they make suggestions on improving digital educational content [7].

The information and educational environment of digital education includes:
- technical resources: computers, tablets, mobile devices, networks, video systems, interactive screens;
- educational resources: software, electronic educational resources, information and educational portals, distance learning systems, electronic libraries, cloud resources, webinars, teleconferences;
- process management: distance learning, email, social networks, personal account in the cloud, form of training.

Digitalization of education changes the content of courses taught, as well as the presentation of information, it is not only presentations or videos, it is already direct connections to information networks, databases, forums. For practical training and case studies, it is possible to use social networks, gaming platforms, such as: Bitrix24, ZOOM, Microsoft Teams (MsTeams), VK, WhatsApp, DISCORD, MIRO, Slack, Trello [8]. Online educational are becoming relevant in teaching, so many publishers specializing in the publication of educational literature are switching to electronic versions of textbooks (figure 2).
Each student at the University is assigned an individual username (login) and password to access the information services of the University. Using this data, the student can access the following information services:

- Moodle – distance learning system, training courses and materials in electronic format [9, 10];
- Personal account – access to portfolio and learning information for undergraduates, graduate students, and faculty [11, 12];
- Portal Office 365, portal.office.com – access to Microsoft services by student subscription;
- Student email – corporate mail that entitles you to receive student benefits and subscriptions (<student number.ticket's>@ [9, 10]);
- Applications Office 365 – set of web services Microsoft Office (OneDrive, Word, Excel, etc);
- Schematic map, – interactive map of University buildings with search for audiences [13];
- Disk space – cloud storage for educational materials. Access: on a PC at the University – network drive «Z:/»;
- at the address – authorization using EUZS [14];
- Wi-Fi – access to the Internet on the territory of SPbGASU and FTU network ID: After connecting, enter your login details on the authorization page that opens. EUZS.

Other information resources, rules of network etiquette, instructions and useful articles can be found on the official website of both universities SPbGASU and on the website of the Electronic information and educational environment (EIOS) of SPbGASU [15, 16].
3. Results and Discussion

Digital technologies are rapidly developing and updating (high-speed Internet, smartphones, tablets, etc.). Web 2.0 tools, blogs, wikis, social networks; Google cloud services, Office 365, etc. All of this provides unlimited access to digital tools [17].

Online learning in a digital educational environment involves the already well-known synchronous and asynchronous learning. A synchronous online lesson involves electronic interaction between the student and the teacher at a specific time [18]. Asynchronous courses are distinguished by the fact that the teacher puts theoretical materials and various tasks on the course on the Internet, and students work with the information at any time convenient for them.

Digital forest pedagogy is concerned with the learning tools that digital technologies are open up to universities and schools that were not previously available. Forest pedagogy and training in creative and forest specialties has its own specifics [19-21]. The most prominent of them can be considered online training, in a mixed form, consisting of online lecture videos, seminars at the university (figure 3).

Under the supervision of our qualified teachers, students not only master the main disciplines according to the curriculum, but also participate and win prizes at international competitions [22]. An excellent example is the victory at the Russian assembly stage of the international competition "Multi-comfort House ISOVER" from the company Saint-Gobain, or the entire line of prizes in the competition "ARCHPROJECT" from the group of companies CDS and SPbGASU. Within the framework of such projects, not only new space-planning solutions for buildings are developed, but also research is carried out, technical calculations for energy-efficient sustainable construction are made with the help of special programs (figure 4) [23].
Figure 3. The mixed form of training: (a) – lecture online lesson platform ZOOM, with placement training materials in the LMS Moodle; (b) – workshop about "The Basics of color", SPbGFTU, Saint-Petersburg, 2020. Photo by Yu A Zhuk.

Figure 4. Example of productive participation in an international competition (a mixed form of interaction) «Restoring the urban environment of a neighborhood in Madrid» architect O A Pastukh, engineer V N Elistratov, SPbGASU, 2017 [24].

Students-designers of the 4th year of the Department of KM and KG of the Institute of Landscape Architecture, Construction AND Wood Processing of FTU took part in the competition "Development of the project of standard navigation of objects of LLC "Setl Group". The subject of the competition was an architectural and design concept, which includes the creation of an open typology of navigation elements at the Developer's facilities (the development of a convenient navigation system for a comfortable living environment for residents). The student project, carried out under the experienced guidance of teachers, was recognized and awarded by the specialists of the professional competition (figure 5).
Figure 5. Example of productive participation in an international competition (a mixed form of interaction) «Design concept for navigation elements for use in residential complexes», design-students Astachova A, Gorskaia A, Ignatencov A, Karpova A, Komolina N, Nefedova E, Pavlova A, supervisor A G Vedernikov, FTU, 2020.

Participation in such events is equally interesting and useful for both architecture students and future engineers, because they learn to work in a team and interact with each other at different levels.

Young professionals need to acquire skills in working with BIM software already in the process of studying at a University. Annually held by the St. Petersburg state University of architecture and construction BIM-championship is aimed at this task – during its conduct, students can test their competence in conditions as close to real as possible. A vivid example of the practical implementation of the acquired knowledge is the implementation of the creative ideas of students and teachers, embodied with the help of 3-d printing on 3-d printers. Art objects of subject design based on students’ sketches become not only decoration of the interiors of FTU premises, but also have a wide implementation in St. Petersburg.
4. Conclusion
Digitalization of higher education will make changes in the qualification requirements for the teaching staff and other employees of the University and affects the delivery of their traditional role. Innovations in digital learning are not so much technical innovations as changes in the content and organization of educational content, in the structure and organizational principles of the University.

Being an integral part of the state's educational policy, the modern educational system for training students of architects, builders at SPbGASU, its infrastructure, educational and material base are actively being modernized, which increases the efficiency of training highly qualified and competent specialists.

The use of web quest technology allows teachers to solve the following tasks: to increase motivation, improve educational achievements; to use graphic visualization methods in training; to form an information culture; to solve creative tasks; to optimize educational activities. When implementing educational programs in the digital educational environment, which involves inclusive education with the possibility of each student's access to modern technical means of training, a sufficient number of computer classes equipped with modern machines with licensed software are provided.

Based on the above, it is concluded that digital forest pedagogy, through the global digitalization of education, changes the content of courses taught, as well as the presentation of information, not only at the level of presentations or video lessons, but also through direct connection to information networks, databases, and educational forums. The implementation of an integrated approach to solving educational and educational tasks is helped by the digital interaction of teachers and students right now, when the world is moving towards the digitalization of all spheres of life, including Higher Education.

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