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TECHNOLOGIES OF DIGITAL DIDACTICS

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ABSTRACT: - This article focuses on pedagogical didactics in the process of improving the technology of training pedagogical staff in a digitalized learning environment, based on the application of distance learning and blended learning technologies and models in the process of improving the effectiveness of distance learning.

KEYWORDS: Digital technology, didactics, distance learning, blended learning, model, method.

INTRODUCTION

The possibility of digital transformation of the educational process of vocational education and training is provided by various groups of technologies:

- firstly, information and communication technologies (ICT) for universal purposes, such as office programs, graphic editors, Internet browsers, telecommunications organization tools, augmented reality, etc.;
- secondly, pedagogical technologies (learning technologies), including those involving the use of ICT or based on their use;
- thirdly, specialized digital educational technologies (edtech), for example, virtual mentors; wearable trainers; educational game quests in augmented reality; game environments and "sensoriums"; "smart" teaching aids - "smart sandbox", "smart floor", "smart board", etc.
- fourthly, production technologies (including digital ones, as well as material and social, or humanitarian ones), which

ensure the formation of the necessary professional competencies, knowledge, skills and abilities in students.

METHODS

In turn, among pedagogical technologies it is possible to allocate:

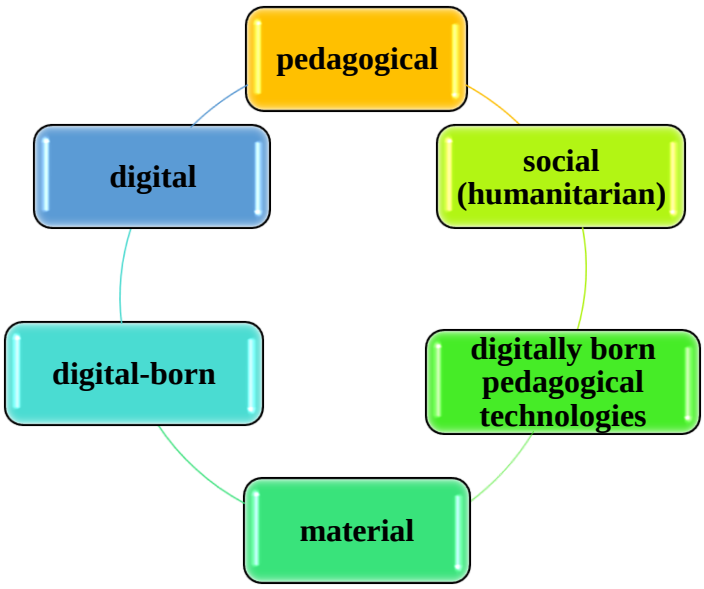
1) traditional (pre-digital) pedagogical technologies (for example, the organization of research activities of students, the "case study" technology, etc.), which may involve the use of ICT as an auxiliary pedagogical tool, which does not imply a significant modernization of these pedagogical technologies;

2) digital-born pedagogical technologies, which owe their appearance to the digitalization process and are based on the use of digital means (multimedia essay as a development of the idea of a traditional essay; virtual tour as a modernization of a traditional tour; multimedia lesson; online laboratory, etc.).

Digitally born pedagogical technologies provide new conditions for the activities of students and the formation of their competencies that are in demand by the digital society and digital economy.

Among digitally born technologies, in addition to pedagogical ones, other educationally significant digitally born technologies can be distinguished: managerial (for example, providing automation of workflow in an educational organization / network), neurobiological (for example, based on the use of sensors that allow determining the parameters of health and psychophysiological state of students), production (providing the formation of specified professional competencies).

The relationship between different groups of technologies that can be used in vocational education and training is shown in Fig. one.



Picture. 1. Technologies of vocational education and training.

The general principle of selecting pedagogical technologies for digital vocational education and training is that it is necessary to select such technological solutions that contain the conditions and algorithms for the formation of universal, general professional and professional competencies that are in demand by the digital economy.

The basic minimum of pedagogical technologies required to build a digital educational process for vocational education and training:

- network communication technology, which serves as a basis for the teacher to implement other pedagogical technologies of digital education;
– distance learning technology, including using adaptive learning systems and integrated case technology;
– blended learning technology, including flipped learning, mobile learning;
– Technology for organizing student project activities, including network projects.

Distance learning is a technology for building an educational process solely on the basis of online courses, access to which is provided via the Internet (including through mobile applications). In the process of distance learning, all relationships "teacher-student" and "student-student", within the framework of the implementation of educational programs or their parts, are carried out indirectly, through the Internet.

Distance learning does not require the personal presence of the student provides students with access to educational resources:

- Regardless of the location of the subjects of the educational process, including in case of illness or temporary relocation of the student;

- At a time convenient for these subjects, including without separation from work or from the main place of study. [1]

1.Distance learning can use a variety of digital media, including Massive Open Online Courses (MOOCs), video lectures, online conferences (for video demonstrations, discussion of learning situations and various materials), webinars and personal virtual lessons in real time, Internet home assignments, online testing, video recording of a remote demo exam, etc. An important element of distance learning is the communication of teachers and students, which provides a feedback loop that increases the pedagogical effectiveness of training.

Perception of information, the logic of building a program, the sequence of skills and abilities being formed, the optimal pace of mastering the course, the required number of repetitions and training consolidation, taking into account the student's self-esteem and his self-confidence, etc.). Analysis and reproduction of various learning models is provided through the use of artificial intelligence and digital technologies.

Complex case technology (case method) is considered as one of the basic methods for organizing distance learning. Case technology is based on providing students with information educational resources in the form of specialized sets of educational and methodological complexes intended for independent study (cases) using various types of information carriers. Delivery of materials to students is carried out by any means acceptable for the organization of the educational process. Network telecommunication means are used to ensure the interaction of students with the teacher and among themselves, as well as to provide them with additional information resources.

The use of case technology is also possible in combination with distance learning with classroom activities (consultations, presentations of solutions, discussions), i.e. in a blended learning situation.

2. “Blended learning” is a pedagogical technology that involves a combination of network (online) learning with face-to-face or offline learning. [2]

The technology of "blended learning" is based on a set of basic principles (personalization, full assimilation, environment of high achievements, personal responsibility). The use of "blended learning", although it is deprived of some organizational and technical advantages of distance learning, but allows to overcome its most serious pedagogical shortcomings: the lack of live contact between the teacher and the student, as well as students with each other, in the process of performing team forms of work; a drop in motivation among students who do not have high educational independence; difficulties in ensuring the full formation of many practical, including professional skills and abilities.

The standard methodological recommendation for the organization of blended learning suggests that the student should spend up to 40% of the time on distance learning, about 40% on full-time, and the remaining 20% should be allocated to self-education.

“Flipped learning” is a variant of “blended learning” based on the formula: “self-learning of new material (including online) + consolidation in the course of practice-oriented classroom work”. Currently, a number of varieties of “flipped learning” have been developed (standard, discussion-oriented, demonstration-oriented, “fake”, group, virtual, “flipped teacher”, etc.), the use of which allows building an effective process of mastering various types educational programs and with a different contingent of students.

Mobile learning is a variant of "blended learning", which involves the use of mobile devices and mobile applications of an educational orientation by students in the process of mastering the educational program.

3. The technology of organizing student project activities (“project method”) is a learning technology based on the implementation of various types of projects (educational, social, industrial and business projects; research, creative and practice-oriented; individual and team; interdisciplinary, meta-subject and over-subject and etc.). This technology is based on the setting of a socially significant goal and its practical achievement and can be used in working with almost any content. At the same time, any, even the simplest educational project is of an integrated nature.

The educational significance of the “project method” lies in the fact that the logic of the activity of students working on the project fully or partially corresponds to the logic of the modern production process, which is increasingly acquiring the character of a project, with the corresponding stages (problem / need identification - idea search - problem setting - design - approbation and correction of the product - presentation and promotion of the product - product management). By completing projects, students gain experience, on the basis of which a set of universal (“project”) competencies that are in demand by the digital economy is formed. Evaluation of the progress and results of the completed project allows the most complete and objective assessment of the degree of formation of students' universal competencies involved in project activities.

Particular attention is required to be paid to team projects, which can be implemented in various forms. For example:

- carrying out a complex of different production or business projects in one workspace (workshop), which ensures interaction and mutual learning of project teams (synergistic effect);

- organizing the implementation of projects within certain open network communities, as well as the inclusion of students in already established communities working on certain projects;
- implementation of projects “on a free topic” (the search for an idea, a socially significant problem and a customer is carried out by the project team itself);
- Involvement in the work of the project team of one or more mentors, mentors - persons with experience in working on similar projects (including senior students).

A network project is a special type of project carried out by a spatially distributed team using network telecommunications and other resources of the digital educational environment. The educational network project imitates the modern format of production activities and contributes to the development of universal competencies related to work in a distributed team (planning, coordination, communication, interaction, effective use of digital means of organizing communication and joint activities, etc.). Network projects carried out by international teams are the most effective tools for the formation of such competencies as foreign language proficiency, intercultural communication, tolerance, etc. In addition, students in vocational education and training programs can be involved in real (social, industrial, business, crowd sourcing) network projects, taking one or another meaningful part in them, depending on the profile of training and an individual set of knowledge, skills, and competencies. [3]

The above-mentioned pedagogical technologies at the present stage are the main tools that ensure the transition from pre-digital to digital educational process. This does not exclude the possibility and necessity of appropriate use in the digital educational process of many other well-known pedagogical technologies and teaching methods, primarily the case method.

Building a digital educational process is a complex task that requires scientific justification based on a new direction of pedagogical science - digital didactics.

Digital didactics is a branch of pedagogy, a scientific discipline on the organization of the learning process in a digital educational environment. Digital didactics successively uses the basic concepts and principles of traditional (pre-digital) didactics as a science of learning, supplementing and transforming them in relation to the conditions of the digital environment. Digital didactics can be considered as a transfer-integrative field of scientific knowledge. Digital didactics is the basis for designing activities and interaction between the student and the teacher in the process of mastering certain specialized areas, disciplines, and module courses. [4]

The subject of this Concept is the digital didactics of vocational education and training - one of the areas of digital didactics.

Building a digital educational process of vocational education and training based on new didactics makes it possible to overcome the problematic nature of the situation that has developed with the digitalization of education in the dynamic development of digital technologies and means is combined with the preservation of traditional ones. Building a digital educational process is a complex task that requires scientific justification based on new directions of pedagogical science - digital didactics. [5]

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traditional (pre-digital) didactics as a science of learning, supplementing and transforming them in relation to the conditions of the digital environment. Digital didactics can be considered as a transfer-integrative field of scientific knowledge4. Digital didactics is the basis for designing activities and interaction between the student and the teacher in the process of mastering certain specialized areas, disciplines, and module courses.

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CONCLUSION

Building a digital educational process of vocational education and training based on new didactics makes it possible to overcome the problematic nature of the situation that has developed with the digitalization of education in the country, when the dynamic development of digital technologies and means is combined with the preservation of traditional (pre-digital) forms of organizing the educational process and learning technologies, in some cases - using spontaneously emerging and spontaneously developing paradigms of digital education, as well as borrowed approaches that are not always perceived by the Uzbekistan pedagogical consciousness (for example, such as “pedagogical design”). At the same time, the focus on the outer contour of the digital educational process (formation of an online educational space, issues of educational partnership and building educational networks, the formation of individual curricula, new approaches to managing the educational process, promotion and provision of educational services in a digital educational environment, etc.) displaces the most important didactic and methodological problems of organizing the activities of students and teachers, teaching and learning in the digital educational process from the area of attention.

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