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**DIGITAL TRANSFORMATION OF THE DIDACTIC SPACE OF
PROFESSIONAL TRAINING OF TEACHERS**

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Abstract

The article substantiates the relevance of socio-cultural transformations in determining the strategy of education digitalization. The need for a digital educational space for professional training of teachers on the basis of digital transformation of the didactic process is revealed. Using the results of theoretical research, the factors and patterns of the digital educational process are identified: requirements of the digital economy to teachers, the didactic potential of modern digital technologies, the need for the pedagogical management of network generation Z socialization and instrumental approaches. The leading ideas of the approaches made it possible to present the features and main provisions of the subject-oriented digital educational environment for professional training of teachers and formulate its main components. Considering the content of the didactic space in the professional training of teachers, it is advisable to correlate it with methods, tools and digital technologies that create new opportunities for the educational process and a wide range of educational tasks. The organizational, methodological and substantive aspects of digital transformation of the didactic space are discussed. The methodological tools for professional training of teachers based on flexible transformation depending on professional and personal interests, as well as the saturation of the digital educational environment, are described. Digital transformation involves qualitative changes in the content and organization of the educational process, methods, forms, technologies, the role of the teacher in accordance with the conditions, capabilities, resources of the digital environment for self-realization and personal and professional development of educational subjects.

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1. Introduction

Global transformations in the Russian society in the context of its socio-cultural transformation set the directions for the strategy of education modernization. Discussion issues are also focused on the digitalization of the professional educational process and adaptation of the vocational education system to the needs of the digital economy and digital society (Magomedov, 2019; Starichenko, 2020; Yudina, 2019). The digitalization of education causes discussions of a number of pedagogical tasks facing the domestic higher education, requiring access to a new conceptual level of vocational and pedagogical training (Belogash & Melnichuk, 2020; Semenov & Kuznetsova, 2020). In the context of globalization, the modern socio-cultural situation in education becomes innovative. There is no doubt that the important scientific and pedagogical task is to develop a didactic model of digitalization of the educational process that meets the needs of the digital economy and ensures the use of the didactic potential of digital technologies.

2. Problem Statement

Numerous studies and personal experience convince of the existence of a digital educational space for professional training of teachers based on new didactics, when the digital technologies are combined with the traditional forms of the educational process and teaching technologies (Bashirova, 2020; Kaptsov & Kolesnikova, 2019). Currently, there is a transition from the centralized learning model to the flexible educational environment and individual educational trajectories (Shilova, 2020). Digital technologies have a great pedagogical potential, ensure the personalization of the educational process and assimilation of educational results, expand the possibilities for using various forms of educational activities, support the sustainable learning motivation in various groups of students (Shapovalov, 2019; Ustyuzhanina & Evsyukov, 2018). However, it is necessary to focus on the external formats of the digital educational process and didactic and methodological problems. Analysis of current trends and global transformations identified the need for the digital transformation of the didactic space of professional training of teachers.

3. Research Questions

The subject is the educational process of professional training of teachers on the basis of its digitalization and strategies for the digital transformation of the didactic space that are used to implement the process and improve the quality of educational services.

4. Purpose of the Study

The article aims to discuss the subject-oriented digital educational environment for professional training of teachers and identify methodological tools based on digital transformations of the didactic environment.

5. Research Methods

The theoretical and methodological analysis of scientific literature allowed us to understand the category of education digitalization, to study the foreign and Russian experience in building the digital educational environment. A significant contribution to the development of this problem was made by Gnatyshina et al. (2019), Ivanova (2020), Kleimenova (2019), Sergeeva and Sokolova (2020) others. Having studied the theoretical works and existing practice, we came to the conclusion that in the context of global transformations, the digital transformation of the educational process requires a special and purposeful structure. It is necessary to identify the fundamental orientation of the research, which is expressed in the combination of the following approaches: socio-cultural, competence-based, process-technological and instrumental.

The sociocultural approach allowed us to identify factors and patterns of the digital educational environment that give rise to the need for transformations of the didactic space of professional training of teachers. The socio-cultural balance of the educational digital environment and its components, which determine the effectiveness of the processes are crucial (Gnatyshina, 2018). There is no doubt that the requirements of digital society to the professional training of a teacher should be taken into account.

From the perspective of the competence-based approach, the digital transformation of the didactic space acts as an analytical platform, due to which the process of technological optimization of work with information will contribute to the development of digital culture, academic, social and professional mobility, self-education, advanced and professional training.

Considering the content of the didactic space in the professional training of a teacher, it is advisable to correlate it with methods, tools and digital technologies that create new opportunities for the educational process and a wide range of educational tasks. Therefore, the process-technological and instrumental approaches will make it possible to specify the digital educational environment and educational results associated with the general and functional readiness for life in digital society and professional activities in the digital economy.

6. Findings

The digital transformation of the didactic space of professional training of teachers is caused by a number of factors and patterns of the digital educational process.

1. Requirements of the digital economy to teaching staff are the main source of educational goal-setting. The readiness to use digital technologies forms the core of modern functional literacy; under the influence of digitalization, professional competencies are being transformed.

2. The didactic potential of modern digital technologies stimulates the emergence of electronic learning platforms, provides network interaction, personality, interactivity, subculturality of educational subjects, creates new opportunities for building the educational process.

3. There is a need for the pedagogical management of network socialization of the individual as a factor of identity development. Representatives of the digital generation are free to navigate in modern digital technologies, have positive educational characteristics: the ability to be new, creativity, independence, focus on self-education. These features determine the psychological and pedagogical

specifics of goal-setting, principles, approaches to the content formation, forms and methods of the digital didactic space.

Based on the principles of variability, openness, multifunctionality and factors presented above, we consider it necessary to formulate the main provisions for designing the subject-oriented digital educational environment for professional training of teachers.

1. *Educational independence in the digital didactic space saturated with educational resources.* There is no doubt that the digital educational environment is a set of resources, conditions, opportunities for learning and development. The extent to which the pedagogical potential of this environment will be in demand and used depends on the subject's activity, the educational request, and an individual educational route. Activities of a tutor will create conditions for joint analytical activities to develop an individual educational trajectory, study the resource field and event-resource mapping of the digital educational space.

2. *Differentiation of technologies and teaching methods in terms of their didactic potential in the digital educational environment.* In the context of digitalization, the role of active and interactive educational technologies with a complex structure, such as project activities, gaming technologies, case problems, teamwork, group and individual reflection, is increasing. A transition from frontal and individual forms to command, search, and project forms and teaching methods is underway.

3. *Intensification of educational activities by expanding innovative forms of training in the digital professional pedagogical information environment.* The logic of educational activities is based on the need to approximate the conditions of teacher's activities, taking into account the value orientations of the digitalization of modern education. This is facilitated by online, blended, hybrid, and combined forms of traditional and e-learning. A variety of educational activities is implemented through a set of new forms: webinars, video conferencing, video lectures, virtual consultations, virtual tutorials.

4. *Modeling of professional activities of teachers through the network interaction, virtual reality tools, digital simulators, which allow the development of professional competencies.* The system-forming component of this process is an open digital educational environment, which allows for creating conditions for the reproduction of future professional activities.

5. *Transformation of teacher's activities and roles.* In the digital didactic space, the teacher uses the technologies of individual consulting, the activities are situational and aimed at the resource support of student's independence. They are of an individual targeted nature, which means they should be flexible, variable, adequate to the conditions of interaction with the digital educational environment. Such functions of a teacher as a tutor for the development of individual educational trajectories, a network teacher-curator, an organizer of project activities, a moderator of educational networks, an instructor in network navigation, an architect of digital teaching aids are being updated.

Having summarized the results of theoretical research and empirical experience, we came to the conclusion that the didactic space for professional training of teachers is composed of the following components:

- normative-target: it includes targets and regulations for the interaction of subjects of the didactic process in a single digital educational space;

- content-procedural: it presents the content of online courses, video lectures, webinars, electronic resources for training teachers;
- technological: it determines the pedagogical tools for developing professional and digital competencies, as well as the system of interactions in the digital educational environment;
- effective: it is determined by the level of readiness for the implementation of digital technologies in educational institutions.

In the new digital educational environment, the professional training of teachers should be aimed at understanding the structure of professional activities in the information and educational environment, at developing the readiness to digital learning, knowledge about the methodological support of the educational process in the context of digitalization, learning technologies using the means of the educational environment (Table 01).

The methodological tools based on digital transformations of the didactic environment deserve special attention. They require the search for new approaches to the digital educational process, providing interactive educational interactions in all activities and taking into account the high level of subjectivity of the future teacher.

Table 1. Digital transformation of methodological tools for professional training of a teacher

Methodological tools	Description and features of the digital educational space
Creation of a redundant digital educational environment	Virtual and augmented reality, digital platforms, events, workshops, master classes, startups, practical and design workshops that create a system of professional guidelines and demonstrate a general map of digital professional competencies
Creation of individual educational trajectories	Individual support in developing an educational route in the professional pedagogical digital educational environment (learning goals in the context of digital transformation, resources, reflection of movement in the training program)
Gamification of educational courses and local parts of the educational process	Creation of a digital gaming educational space, including educational game tasks that stimulate subjective activity and motivation. While keeping the content of educational activity unchanged, gamification radically transforms the way it is organized and accompanies the entire educational cycle.
Organization and maintenance of digital networking	Provides the opportunity for active and remote involvement in real production processes, participation in the discussion and analysis of emerging professional situations, development of team decisions, implementation of collective projects.
Blended learning technologies	The combination of traditional forms of classroom education with elements of the electronic educational environment: webinars, "augmented reality" technologies, "inverted classroom", etc.
Organization of project activities and network projects	It is carried out by a spatially distributed team using network tools and resources of the digital educational environment.
Interactive mapping (personality-resource, event-resource)	It allows you to summarize the directions of the individual educational route, the space of self-determination and goals, educational resources and the digital environment.
Educational navigation	The system of methods and means of movement of the subject from one point of the digital educational space to another along the trajectories, due to the nature of cognitive tasks and the conditions for its implementation.
Moderation technologies	Aimed at managing various types of interaction in a digital educational environment in the course of solving an educational problem
Information visualization techniques: timeline, Intellect map, scribing, infographics	They are aimed at presenting information in a convenient and systematic form, ensuring the solution of problem situations in the digital educational space

An important condition is the possibility of modifying didactic tools based on the flexible transformation, depending on professional and personal interests of future teachers, as well as saturation of the digital educational environment.

The didactic tools and technologies should take into account features of the subject-oriented digital educational environment:

- individualization of the educational route, subjectivity, educational independence in the digital environment;
- navigation in the digital educational space, development of the ability to develop educational strategies based on the assessment of resources of the digital educational environment;
- systemic management of the digital educational trajectory;
- the maximum use of digital technologies and their adaptation to the solution of pedagogical problems;
- alternation of individual and team activities aimed at mastering professional competencies using digital technologies;
- solution of reflexive problems and development of a motivational and semantic position at various stages of the digital educational process.

7. Conclusion

The analysis of current trends and global transformations allowed us to identify the influence of socio-cultural factors on the transformation of the education system in the context of digitalization of society and economies.

In the professional training of teachers, the digital transformation of the didactic space has the following features:

- it functions under the influence of the social order and demand of the digital economy and digital society;
- it is implemented in the open system that responds to changes in the external socio-cultural and informational environment;
- it is aimed at the optimal alternation of digital means and real didactic processes;
- it involves the intensification of educational activities through the use of innovative forms, teaching methods and the digital educational space;
- it contributes to the subjective activity, independence, professional mobility, the development of digital culture of future teachers in order to support readiness to solve complex educational and professional tasks

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