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INNOVATIVE APPROACHES TO THE CREATION AND IMPLEMENTATION OF A SYSTEM OF REMOTE NETWORK SUPPORT FOR THE PEDAGOGICAL PRACTICE OF STUDENTS OF HIGHER EDUCATION

ENFOQUES INNOVADORES PARA LA CREACIÓN E IMPLEMENTACIÓN DE UN SISTEMA DE APOYO EN RED REMOTA A LA PRÁCTICA PEDAGÓGICA DE ESTUDIANTES DE EDUCACIÓN SUPERIOR

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ABSTRACT

The article substantiates the necessity and possibility of developing and using network distance support for students' pedagogical practice. The concept of "network distance support for students' pedagogical practice" is defined. A model of network distance support for students' pedagogical practice based on an Internet resource is developed and the criteria for the effectiveness of this model are determined. The experimental inclusion of the developed network distance support for students' pedagogical practice in the educational process of the university is analyzed. The conditions for the effectiveness of network distance support for students' pedagogical practice are identified. The problems and difficulties of organizing and conducting pedagogical practice of students of pedagogical universities, associated with the information and communication disunity of the subjects of practice during its implementation, are systematized. The positive impact of the use of Internet technologies on the content and organization of the educational process in the practice of teacher training is analyzed; the impact of the Internet technologies used on the content, forms of activity of subjects of the educational process, on their role and functions.

Keywords:

Pedagogical practice, educational process, distance support, university.

RESUMEN

El artículo fundamenta la necesidad y posibilidad de desarrollar y utilizar el soporte remoto en red para la práctica docente de los estudiantes. Se define el concepto de "apoyo remoto en red a la práctica docente de los estudiantes". Se ha desarrollado un modelo de soporte remoto en red para la práctica docente de los estudiantes a partir de un recurso de Internet y se han determinado criterios para la efectividad de este modelo. Se analiza la inclusión experimental de la red desarrollada de soporte remoto a la práctica docente de los estudiantes en el proceso educativo de la universidad. Se han identificado las condiciones para la efectividad del soporte remoto en red para la

práctica docente de los estudiantes. Se sistematizan los problemas y dificultades de organización y realización de la práctica docente de los estudiantes de las universidades pedagógicas, asociados a la desunión informativa y comunicativa de los sujetos de práctica durante su implementación. Se analiza el impacto positivo del uso de las tecnologías de Internet en el contenido y organización del proceso educativo en la práctica de la formación docente; el impacto de las tecnologías de Internet utilizadas en el contenido, las formas de actividad de los sujetos del proceso educativo, en su rol y funciones.

Palabras clave:

Práctica pedagógica, proceso educativo, apoyo a distancia, universidad.

Introduction

The modern world is witnessing a huge and rapid technological advancement and development in various aspects, which was not seen before, which has made us unable to do without modern technology in our daily life, regardless of the circumstances. Technologies are causing large-scale changes in all sectors of the economy. These changes are felt in healthcare, the financial world, entertainment, and even government. Technological progress and development is a new paradigm shift in human life, in which lies the challenge, as well as creativity and the desire for something new, as it includes many technologies, material and non-material means that contribute to the support and development of all spheres of life, in particular, the educational sector (Menter et al., 2010; Haleem et al. 2022; Hennessy et al., 2022; Mhlongo et al., 2023; Liu et al., 2024).

Technological innovations have a significant impact on educational systems at all levels.

Understanding the impact of technological innovations on learners, teachers and educational institutions is crucial for the development of strategies and methods of management and use of technology in the educational sphere. Research in this area provides education leaders with an understanding of how technological innovations are being used and how effective they are in improving student learning outcomes.

Among the most important problems facing the educational process is the ability to develop new methods of learning and education based on the curriculum and method learning organized according to learning theories and the ability to prepare and develop appropriate creative learning environments that facilitate and improving learning and teaching processes, providing them with an interactive side and the right investment in their use and presentation.

Therefore, technology can facilitate access to knowledge and information for researchers, teachers and learners in all areas of life. Because the possession of knowledge and information is the main path to progress and prosperity of any nation in the world.

Modern society and the state make new and higher demands on the professionalism of a teacher than before. A modern teacher must have a new pedagogical thinking, implement the pedagogical process in the context of a system-activity, competence-based approach, master innovative teaching technologies, and develop the creative abilities of students. There is a need to improve the entire system of professional and pedagogical training of a future teacher, the most important component of which is his practical training.

Given that the concept of “technology” comes from the Greek word technologies and means “techne” - art, skill, skill, process, “logos” - word, thought. In literally translated from the Greek language, technology is the art of words, a certain process.

Its main purpose is to get a guaranteed result. The work of a teacher is a specific process, the main goal of which is to prepare an educated and competent specialist for society. And this is possible only if the process is competently and creatively organized (Darling-Hammond & Lieberman, 2012). In the literature, there are various classifications of learning technologies, which differ from each other by different reasons for their systematization. The most complete concept of “learning technology” conveys the following definition:

learning technology is a way of implementing the content of learning provided by educational programs, which represents a system of forms, methods and means of learning that provides

the most effective achievement of the set goals. So, in the technology of education, the content, methods and means of education are interconnected and interdependent.

According to the findings, the key characteristics of learning technologies are:

1. Conceptuality. Each technology must be based on a certain scientific concept.

2. Systematicity. The technology should have such characteristics of the system as the logic of the process, the interconnection of all its elements, integrity.

3. Manageability, which involves the possibility of goal setting, planning, designing the learning process, step-by-step diagnostics, varying means and methods with the goal adjustment of results.

4. Efficiency. The technology should be effective in terms of results and optimal in terms of costs, should guarantee the full achievement of the learning outcome.

5. Reproducibility. We mean the possibility of application (repetition, reproduction) of technology by other teachers in other educational institutions.

6. Adjustability, which involves not only correcting errors, but also creative search for optimal ways to solve tasks and preparation for further application of technology.

Therefore, modern learning technologies represent a synthesis of the achievements of pedagogical science and practice, a combination of traditional elements of past experience and innovations that generated by social progress, processes of humanization and democratization of society.

All of the above allowed us to identify the existing contradictions:

— between the requirements for modernizing the system of professional training of a modern school teacher, conditioned by public expectations of increasing the level of professionalism of a modern teacher, on the one hand, and the traditional organization of pedagogical practice of future teachers, on the other;

— between the growing need to use the didactic capabilities of information and communication technologies (ICT), on the one hand, and the lack of a model of systemic support for students' pedagogical practice by means of information and communication technologies, on the other.

The identified contradictions indicate the existence of an objective problem, which consists in developing systemic support for the pedagogical practice of future teachers, ensuring:

— timely and distance-independent interaction of the main subjects of pedagogical practice based on modern ICT;

— access to a constantly updated resource base of materials on the problems of pedagogical practice;

— reflection and ongoing monitoring of the results of pedagogical practice. It seems that this problem can be solved by generalizing the existing knowledge about the didactic capabilities of modern ICT and developing on this basis a system of networked distance support for students' pedagogical practice, based on the use of Internet technologies and considered as an integral part of the holistic educational process of training future teachers.

The object of the article: pedagogical practice in the professional training of future teachers.

Subject of the article: network distance support of students' pedagogical practice.

The purpose of the article: scientific substantiation, development and implementation of network distance support of students' pedagogical practice.

Hypothesis: the use of network distance support of students' pedagogical practice will contribute to the development of professional competence of future teachers if the pedagogical, organizational, material and technical conditions of its (network distance support) effectiveness are determined and implemented in their unity.

Thus, it follows from the above that the traditional type of education is based on a communicative form of education, in which the teacher conveys certain information to the learner, and the learner must master it perfectly and confirm to the teacher the high level of acquired knowledge; programmed type of education – educational material is communicated and assimilated with the help of programmed textbooks, certain equipment (computer, didactic machines for knowledge control); problematic type of learning - characterized not only by the transfer of knowledge, but also by creating problematic tasks, collecting and grouping facts and discussing ways to solve these problems; the interactive (dialogic) type of training is aimed at developing the student's creativity through the use of interactive technologies.

General issues of higher education and trends in its development were considered by leading scientists: (Day, 2004; Korthagen, 2004; Meyer; 2010; Sahlberg, 2011; Tatto et al., 2015; Novoa, 2017).

The problem of applying innovative approaches to education is considered in the works of scientists (Wenger, 1998; Day, 2004; Niemi & Nevgi, 2014; Biesta, 2015).

The majority of researchers studied general educational processes in higher education. At the same time, they are not sufficiently studied there are opportunities to apply innovative forms of education in higher education institutions. In this connection, scientific substantiation, development and implementation of online remote support of pedagogical practice of students is important and relevant.

MATERIALS AND METHODS

The methodological basis of the article was a system-activity approach, within the framework of which network distance support for students' pedagogical practice was considered as a system of activity, including: goal, content, methods, tool, result, and as components of the structure - subjects of pedagogical practice, means of activity and connections between them.

Theoretical foundations and prerequisites for studying network distance support for pedagogical practice—reveals the essence of the competence-based approach to the practical training of a teacher, considers the importance and role of pedagogical practice in the teacher training system, analyzes the problems in its organization and implementation, identifies the importance of Internet technologies in the practical training of a teacher, defines the concept of "network distance support for students' pedagogical practice", substantiates the feasibility of using a system-activity approach as a methodological basis for step-by-step design of network distance support for students' pedagogical practice. Based on the theoretical analysis, systematization and generalization of scientific and pedagogical literature on the problems of a competence-based approach to the practical training of a teacher, it was established that the basis for the modernization of pedagogical education at the present stage is the widespread use of a competence-based approach. A competence-based approach involves changing the results of education, which are expressed in the language of competencies, and the goal of a teacher's professional training as an expected result is the formation of his or her professional competence (Zeichner & Liston, 2013).

An important component of the integral process of teacher training is his practical training, which presupposes the definition of the goal of practical training as promoting the development of professional competence of future teachers (Cooper, 1998). A new quality of practical training of future teachers is achieved through the selection and structuring of the content of practical training taking into account the main trends in the development of education, in accordance with modern tasks and typical problems of the professional activity of an education specialist, relying on the achievements of pedagogical science and practice; through the use of various technologies for organizing practice, which act simultaneously as elements of the content of pedagogical education and as means of practical training of students.

Based on the analysis of scientific and pedagogical literature on the problems of practical training of teachers, the dissertation considers the essence of the concept of "pedagogical practice" and reveals the significance and role of pedagogical practice in the system of teacher training. It is emphasized that its significance lies in updating the theoretical knowledge acquired by students, identifying educational deficiencies in their theoretical and practical training, understanding the extent to which the future teacher possesses professional competencies and how ready he or she is for independent professional activity. Problems associated with the organizational, substantive aspects of pedagogical practice and its methodological support are identified. It is noted that in scientific and pedagogical literature, issues related to the peculiarities of interaction between participants in pedagogical practice, their spatial separation and difficulties of operational communication have not received sufficient coverage; issues of preparing student interns to work in an information-rich school environment have been poorly studied; no attempts have been made to study the systematic use of ICT to solve problems of organizing and conducting pedagogical practice.

Based on the analysis of scientific and pedagogical literature on the problems of practical training of teachers, the article considers the essence of the concept of «pedagogical practice» and reveals the significance and role of pedagogical practice in the system of teacher training. It is emphasized that its significance lies in updating the theoretical knowledge acquired by students, identifying educational deficiencies in their theoretical and practical training, understanding the extent to which the future teacher possesses professional competencies and the extent to which he or she is ready for independent professional activity. The problems associated with the organizational, substantive aspects of pedagogical practice and its methodological support are identified. It is noted that in scientific and pedagogical literature, issues related to the peculiarities of interaction between participants in pedagogical practice, their spatial separation and difficulties of operational communication have not received sufficient coverage; issues of preparing student interns to work in an information-rich school environment have been poorly studied; no attempts have been made to study the systematic use of ICT to solve problems of organizing and conducting pedagogical practice.

The article presents a description of the project model of network distance support for students' pedagogical practice based on filling the components of the ideal model with specific content. The project model specifies the tool for network support activities in the form of a complex based on a website integrated with the Moodle distance learning system and the services included in it. The activities of subjects involved in pedagogical practice include the development of supporting documents (materials) — methodological, didactic, informational, organizational — and the interaction of subjects. The structure of the complex includes two structural

components: static and dynamic. It is emphasized that the static component is intended to support the activities of subjects associated with obtaining information and includes semantic blocks: didactic, methodological, organizational, informational (González-Zamar et al., 2020). Dynamic — is designed to provide interactive interaction of subjects of pedagogical practice with the level of reliability, speed and convenience that are not achievable with the traditional organization of pedagogical practice, and is a communicative semantic block based on a combination of the following technologies: a forum for support during consultations, discussion of various professional topics; wiki — as a means of reflection; chat — as a tool for on-line discussions, etc. The complex identifies and describes four functional levels of information management, established both in static and dynamic components: university, faculty, department and student.

1. Network distance support of students' pedagogical practice is a system of joint activities of subjects of pedagogical practice based on the use of Internet technologies, consistent with the goals and content of pedagogical practice and resulting in the creation and updating of an information and communication resource that facilitates the solution of immediate tasks by subjects of pedagogical practice.

2. The model of network distance support of students' pedagogical practice based on an Internet resource includes: a description of the components of network distance support, considered from the position of a system of activity, and a description of the structure of network distance support (Bingimlas, 2009). The components of the system of activity of network distance support include:

— intended purpose — to promote the development of students' professional competence by creating a high-tech information and pedagogical environment for pedagogical practice;

— content — includes interaction between participants of pedagogical practice — students, university lecturers, school teachers, as well as their work with information, organizational, methodological, and didactic resources; — methods — posting information on the website, providing the opportunity to create and post the results of the activities of subjects of pedagogical practice, providing the opportunity for interactive interaction;

— tool — a set of network technologies that ensure the creation of a high-tech information and pedagogical environment for pedagogical practice;

— result — creation of a high-tech information and pedagogical environment for pedagogical practice that promotes positive dynamics in the development of students' professional competence.

The structure of network distance support for students' pedagogical practice includes subjects of pedagogical practice (students, teachers responsible for organizing and conducting pedagogical practice, school teachers), means of activity (hardware, software, information, methodological, didactic, organizational materials) and connections between them.

3. The performance criteria of the model of network distance support for students' pedagogical practice are:

— the positive impact of network distance support for pedagogical practice on the development of students' professional competence;

— demand for the portal of network distance support for students' pedagogical practice by its participants;

— satisfaction of subjects of pedagogical practice with the level of comfort provided by network distance support.

4. The performance of network distance support for students' pedagogical practice is determined by the implementation of three groups of conditions in unity: pedagogical, organizational and logistical.

The pedagogical conditions include:

— the presence of a structured high-tech information and pedagogical environment of the portal of network distance support for students' pedagogical practice;

— diagnostics of the level of information competence of subjects of pedagogical practice in terms of skills and abilities in working with a personal computer and on the Internet;

— availability of an educational course (practical seminars) to improve the qualifications of university teachers responsible for conducting pedagogical practice, and school teachers on the use of online distance support for students' pedagogical practice;

— adjustments to the content of training courses on the methodology of teaching subjects, computer science, disciplines of the psychological and pedagogical block taking into account the use of distance technologies;

— no alternative to accessing the portal system for the successful completion of substantive tasks of pedagogical practice and, in general, for its successful completion.

Organizational factors include:

— involvement of administrative resources to resolve organizational issues of introducing online distance support into the process of pedagogical practice;

— availability of a program for introducing online distance support for students' pedagogical practice at various faculties of the university, which includes making the necessary changes to the regulatory framework determining the

conduct of pedagogical practice, and organizing advanced training for university teachers and school teachers on the use of distance technologies in the process of pedagogical practice.

Material and technical factors include:

— the presence of a corporate computing network with Internet access; computer labs and individual computers located in departments; appropriate software.

CONCLUSIONS

The scientific novelty of the article lies in the fact that:

- a new content of the concept of "network distance support for students' pedagogical practice" is proposed;
- a model of network distance support for students' pedagogical practice based on an Internet resource and criteria for its effectiveness are developed;
- the conditions for the effectiveness of network distance support for students' pedagogical practice are presented in the unity of pedagogical, organizational and logistical components.

The theoretical significance of the article lies in the fact that the theory and methodology of vocational education are enriched with knowledge about the essence, methods of organization and results of the implementation of network distance support for students' pedagogical practice, about various options for interaction between subjects of pedagogical practice using network distance support and about the conditions for including network distance support for students' pedagogical practice in the process of professional training of future teachers.

The practical significance of the article lies in the fact that for the successful solution of the problems of pedagogical practice of students, a toolkit has been developed that helps to organize communication between the subjects of pedagogical practice, including a set of network technologies that ensure interactive interaction of practice participants with each other, their interaction with organizational, informational, methodological resources and the preparation of their own resources.

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