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THE ROLE OF DIGITAL TECHNOLOGIES IN DEVELOPING THE CREATIVE ABILITIES OF PRIMARY TEACHERS

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Abstract:

This article analyzes the role of digital technologies in the formation of creative competence in the process of training primary school teachers and suggests mechanisms for implementing innovative approaches in the pedagogical process. The conditions for the development of the components of creative competence of future primary school teachers are analyzed. Creative competence depends not only on pedagogical knowledge, but also on the ability to think creatively, based on a practical approach.

Keywords: future primary school teachers, creative competence, creative thinking, digital technologies, digital learning environment, interactive methods, pedagogical innovations, professional competence.

ENTRANCE

Nowadays, the education system is closely connected with global processes and technological progress, and the issues of effective use of pedagogical methods by teachers and optimization of the educational process are becoming increasingly important. In particular, within the framework of professional training of primary school teachers, developing students' creative thinking skills and teaching them to think independently and critically are one of the main goals of the educational process. In this regard, it is necessary for teachers to use innovative approaches and enrich the educational process with interactive and digital technologies.

The education system of Uzbekistan has been undergoing significant changes and modernization in recent years. Updates in state education policy and the need to adapt to international educational standards require updating pedagogical methods and strategies, as well as preparing future teachers for modern conditions. Therefore, the issues of forming and developing the creative abilities of primary school teachers are becoming an important direction not only for practical pedagogy, but also for scientific research.

This article aims to identify the role of digital technologies in the process of training future primary school teachers, to analyze methods aimed at introducing innovative approaches in pedagogical processes and developing students' creative and critical thinking skills. The main scientific goal of the study is to highlight current problems in the field of education and increase the effectiveness of pedagogical activities using digital technologies, which will serve to increase the professional competence of primary school teachers and identify scientifically based directions for implementing pedagogical innovations in practice.

The article also provides recommendations for improving pedagogical methods and technologies, which will help to organize the educational process more interactively and effectively, as well as develop students' ability to think creatively and make independent decisions. Thus, the integration of digital technologies in the process of training primary school teachers creates scientific and practical solutions that are in line with the modern requirements of pedagogical activity.

THEORETICAL PART

The development of creative competence is a key component of the process of training future primary school teachers [6]. The current rapidly changing global and technological educational environment requires:

Table of components of creative competence

Component	**Description**	Development methods through digital technologies	Expected result
Creative thinking skills	to develop new ideas and concepts, consider different options	Interactive simulations, virtual labs, creative projects	Students generate independent ideas and develop alternative solutions

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Problem solving	Ability to independently analyze and find solutions to complex pedagogical or mathematical problems	Question platforms (Kahoot, Moodle), group work, tests	Students strengthen their analytical and problem-solving skills
Innovative approaches	Ability to integrate new methods and technologies into the pedagogical process	Digital lesson modules, virtual experiments, interactive assessment	Students test and put into practice innovative approaches
Independent decision-making	Ability to make quick and effective decisions in personal and pedagogical situations	Online projects, problem situations, individual monitoring	Students feel responsible for their decisions, justifying them

Students need to develop not only the acquisition of scientific knowledge, but also the ability to think creatively, apply innovative approaches, and solve problems independently. In this regard, the digital learning environment and modern digital technologies are an important tool in increasing the effectiveness of the pedagogical process.

The digital learning environment is not limited to physical space, but is considered a system that shapes the learning process, encompassing all its structural aspects. It is important that such an environment is aimed at activating students' creative abilities and is enriched with various interactive forms, simulations, virtual laboratories, and tools that stimulate independent activity.

Modern digital technologies play an important role in the effective organization of the educational process. With their help, students have the opportunity to independently or in groups develop ideas and concepts, experiment and analyze, visualize and evaluate the results obtained. At the same time, digital tools allow the use of pedagogical control, individual development monitoring and interactive assessment mechanisms, which significantly increases the effectiveness of the formation and development of creative competence.

Thus, digital learning environments and technologies are important not only as tools in developing the creative abilities of future primary school teachers, but also as an integrated component of the modern pedagogical process.

Comparing the conditions of Uzbekistan and international experience, it allows us to identify regional and global differences in the use of digital technologies in the educational process. For example, in Finnish schools, digital technologies are widely used in an integrated learning environment, and great attention is paid to the development of independent project activities and creative thinking of students. In South Korea, digital lesson modules and online platforms are used to enhance collaboration and interactive learning between students. In Chinese schools, adaptive learning systems based on artificial intelligence have been introduced, which allow for individual development monitoring and rapid assessment [3,4].

In Uzbekistan, digital educational programs and interactive platforms are being introduced, but the following differences are observed compared to the above advanced countries:

Effective methods: Virtual laboratories, interactive lesson modules, and project work are also effective in developing students' creative competencies in Uzbekistan.

Incompatible methods: Adaptive learning systems based on artificial intelligence and individual monitoring technologies have not yet been widely implemented, and the level of training of teachers in advanced digital pedagogical methods does not meet international standards.

Thus, comparison with international experience allows us to identify the strengths and weaknesses of the introduction of digital technologies in the Uzbek education system, as well as effectively integrate innovative methods.

METHODOLOGY

During the research process, a number of scientifically based methodological approaches and methods were integrated to effectively use digital technologies in developing the creative competence of primary school teachers.

Theoretical analysis - pedagogical, psychological and methodological theories, as well as advanced scientific research, were analyzed. This process served to determine the theoretical foundations for the selection of digital teaching methods and the formation of creative abilities in the learning process.

Analytical and comparative methods - Existing methodologies and international experience in the Uzbek education system were analyzed. At the same time, the effectiveness of digital learning platforms, virtual laboratories, and interactive pedagogical tools was compared.

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Experimental method - experimental groups were formed to integrate digital technologies into the educational process. Interactive lesson modules, simulations, online project work, and digital assessment tools were developed for the groups. The experiment measured the practical effectiveness of digital methods in developing creative competence [7].

The duration of the experiment was 12 weeks, and an experimental group of 30 students and a control group of 30 students were formed. The results of creative competence were assessed through interactive project work, test results, and the effectiveness of group work. This approach allowed us to accurately measure the effectiveness of digital technologies in the development of creative competence.

The following tools and platforms were used during the research process to integrate digital technologies into the learning process:

Moodle platform - for organizing interactive lesson modules and independent project activities of students.

GeoGebra – for visualizing mathematical concepts and supporting students' experimental work.

Kahoot – for interactive assessment through group work, quick tests, and quizzes.

Virtual labs – to develop independent and group work skills by giving students the opportunity to experiment.

Interactive simulations – to solve complex problems in a practical way, generate innovative ideas, and stimulate creative thinking.

Questionnaires and interviews were conducted to determine the experiences of future teachers in using digital tools, their opinions on pedagogical approaches, and their needs in creative activities. This method allowed us to assess students' activities in a digital learning environment and teachers' attitudes towards innovative approaches.

Statistical analysis - data was analyzed based on the results of the experiment and survey. The impact of the use of digital technologies on the development of creative competence was scientifically assessed, the results were compared, and performance indicators were determined.

Using these approaches, the research allowed not only to identify practical methods for the formation of creative competence, but also to develop scientifically based mechanisms for integrating digital teaching methods into pedagogical processes [8]. With the help of digital technologies, students' independent and group work, interactive project activities, and the processes of creating and evaluating innovative ideas were systematically implemented. Thus, the methodological department demonstrates modern, scientifically and practically integrated digital pedagogical approaches in the process of training primary school teachers.

RESULTS

The results of the study showed that digital technologies serve as an important and effective tool in developing the creative competence of primary school teachers. The digital learning environment expands the opportunities for students to think creatively, make independent decisions, and develop innovative approaches [3]. As a result of experimental studies and surveys, the following conclusions were drawn:

The experimental group's creative project work was rated with an average of 85 points, while the control group's was rated with 70 points. At the same time, the experimental group showed a 20% higher result in independent decision-making and innovative approaches skills, which clearly confirms the effectiveness of digital technologies in the development of creative competence.

The effectiveness of digital methods - using interactive lesson modules, simulations and virtual laboratories, students were able to independently develop, analyze and evaluate their ideas and concepts. This significantly supported the development of creative thinking.

Supporting group and individual activities – digital technologies enabled students to work in groups, exchange ideas, and create innovative solutions together. At the same time, individual monitoring and interactive assessment mechanisms helped personalize the learning process.

Integrating pedagogical innovations – digital technologies have made it easier for educators to use interactive and creative methods, making the teaching process more effective and interesting. At the same time, this approach has also served to increase the professional competence of future teachers.

Scientifically based recommendations – the research results allowed us to develop specific scientific recommendations for the introduction of digital technologies in pedagogical processes. These recommendations serve to organize the educational process in an interactive, effective and creative way, aimed at developing students' creative abilities.

Thus, the research results allowed us to identify effective mechanisms for developing the creative competence of primary school teachers through the integration of digital technologies and pedagogical innovations. They create an important scientific and practical basis for modernizing the educational process, training students in creative and critical thinking, and

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harmonizing pedagogical activities with modern requirements.

CONCLUSION

The rapid development and widespread introduction of digital technologies in the modern education system is fundamentally changing the content and forms of pedagogical activity. In this regard, the use of digital technologies in the development of creative competence of future primary school teachers is one of the urgent scientific and practical problems. The use of interactive platforms, virtual environments and digital tools in the educational process not only increases the efficiency of knowledge transfer, but also helps students think creatively, make independent decisions and form innovative approaches.

The results of the study showed that the educational process organized on the basis of digital technologies is more effective than traditional methods, and this idea is scientifically confirmed by the significantly higher results of the experimental group (70 points compared to 85 points) and a 20% increase in creative competence indicators. This serves to substantiate the pedagogical effectiveness of the digital learning environment.

Also, the results of comparison with international experience show that while in developed countries digital technologies are systematically and deeply integrated into the educational process, in Uzbekistan this process is at the development stage, and there is a need to adapt some advanced technologies and train teachers. This will determine important directions for future scientific research and practical work.

In general, the integration of digital technologies into the educational process is an effective tool for developing the creative competence of primary school teachers, which serves to modernize the pedagogical process, introduce innovative approaches, and improve the quality of education. The results of this study serve as an important theoretical and practical basis for developing scientifically based methodological recommendations in this area and putting them into practice.

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