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DEVELOPING FUTURE EDUCATORS' DIGITAL COMPETENCE THROUGH PEDAGOGICAL DESIGN

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Abstract
The rapid development of information and communication technologies (ICT) in modern education requires new approaches to pedagogical practice. In particular, forming the information-constructive competence of future preschool educators has become a pressing issue. This article analyzes the process of developing educators' professional competencies through pedagogical design technologies. It highlights the educational reforms underway in Uzbekistan, programs aimed at enhancing teachers' digital competencies, and the role of innovative technologies. The study reveals the impact of pedagogical design on the professional preparation of future educators and offers methodological recommendations.

Keywords: Pedagogical design, information-constructive competence, preschool education, innovative technologies, digital competence.

Introduction

In today's rapidly evolving educational environment, where information and communication technologies (ICT) are advancing at a remarkable pace, preschool educators are expected not only to possess traditional knowledge and skills but also to demonstrate abilities such as working efficiently with information resources, integrating innovative technologies into the teaching process, and creating independent pedagogical projects. From this perspective, forming the information-constructive competence of future educators is considered a highly relevant scientific and pedagogical issue.

Information-constructive competence refers to the ability to design educational processes using information tools, analyze information flows, and apply modern technologies in creating innovative solutions. The effective use of ICT in preschool education plays a vital role in optimizing the learning process and fostering children's creative and logical thinking. Therefore, studying the technology of developing information-constructive competence based on pedagogical design is a significant topic both scientifically and practically.

The Presidential Decree of the Republic of Uzbekistan No. PF-5198, dated September 9, 2017, "On Measures for the Fundamental Improvement of the Preschool Education System", focuses on modernizing preschool institutions, introducing new teaching methodologies, and improving the qualifications of educators.

The application of ICT in preschool education is becoming increasingly relevant. The government of Uzbekistan is implementing several reforms aimed at preparing future educators to work with digital technologies, including:

Since 2021, mandatory digital competence training courses have been introduced for all educators. These programs equip teachers with skills in using electronic platforms, online resources, and interactive technologies.

Based on the "Digital Education" concept, electronic curricula, multimedia tools, and interactive textbooks have been developed for preschool institutions.

New academic courses in "Digital Pedagogy" have been introduced in pedagogical universities to prepare future educators with information-constructive competencies.

Methods

The analysis of the technology for developing information-constructive competence in future educators through pedagogical design allows for the identification and systematic study of the following structural components of pedagogical technology. This approach ensures a **comprehensive and systemic methodology** to forming professional competencies:

Components of pedagogical design

Component	Description	Example (Future Educator)
Goal-setting Component	Defines specific and measurable objectives for developing pedagogical technologies and information-constructive competence.	**Objective**: To develop core social skills in children. **Expected goals**: Solve pedagogical problems, organize lessons, and address individual student needs.
Conceptual Component	Encompasses key pedagogical theories and principles applied in the process of forming pedagogical technologies and information-constructive competence.	**Theoretical basis**: Application of Piaget's theory of cognitive development and Vygotsky's sociocultural development theory to equip future educators with skills.
Content Component	Covers the educational materials and content required to form information-constructive competence.	**Content**: Pedagogical methods, instructional materials, curriculum. **Example**: Full lesson plans and teaching materials in Child Psychology and Pedagogical Diagnostics.
Procedural Component	Defines how the learning process is organized, planned, implemented, and managed.	**Process**: Development of competencies through practical sessions, group work, and independent research. **Example**: Project-based learning, problem-based approach.
Evaluative Component	Includes methods and tools to assess and analyze the outcomes of the competence formation process.	**Assessment**: Evaluation methods to measure competencies. **Example**: Tests, assessment of practical tasks, self-assessment, peer assessment, and result analysis.

This table explains the components of pedagogical design with scientifically grounded examples and demonstrates the interrelation between the goal-setting, conceptual, content-based, procedural, and evaluative components.

The goal-setting component enhances the effectiveness of the educational process by clearly defining objectives focused on the development of specific competencies in preparing future educators for professional activities.

The conceptual component outlines the theoretical and methodological foundations of pedagogical design, specifying which concepts and theories are used to support the development of educators' competencies.

The content component organizes educational materials in a systematic manner and defines core knowledge, skills, and abilities, contributing to the enhancement of educators' professional competencies.

The procedural component describes how the educational process is structured, planned, implemented, and managed, and determines how pedagogical technologies are applied in practice.

The evaluative component creates opportunities for assessing, measuring, and analyzing future educators' competencies and introduces necessary improvements to enhance the effectiveness of pedagogical technologies in practice.

Analyzing the technologies for developing information-constructive competence through pedagogical design from a comprehensive and systematic perspective enables a deep understanding of each component and its interrelations and functions. This approach ensures the effective implementation of pedagogical technologies in the teaching process and strengthens their role in forming future educators' information-constructive competencies.

DISCUSSION

The development of human capital and workforce potential is one of the key factors in societal progress and must be implemented by integrating economic, social, and scientific achievements. Higher education institutions should not only provide education but also foster personal growth and conduct scientific research to fully develop the potential of young people. Therefore, introducing innovations into education, advancing scientific research, and preparing competitive specialists are among the top priorities in strengthening human capacity.

By thoroughly analyzing the informatization trend across various levels of educational governance, we observe the strategic development of this direction within Uzbekistan's education system. This includes the integration of ICT into education, the modernization of management methods, and the enhancement of educational quality. We also aim to identify the

strategies and measures being implemented to improve the effectiveness of ICT within the education system.

N. A. Muslimov studied the scientific-methodological foundations for forming professional-pedagogical qualities in future vocational educators. He emphasized the importance of nurturing spiritually mature, independent, creative thinkers who are committed to both universal and national values when preparing the new generation of specialists.

The term “constructive” originates from the Latin word constructivus, derived from constructio (to build, construct), composed of con- (together) and struere (to build). The word entered English as constructive and conveys similar meanings in many languages. It refers to structure (composition, organization) and, more broadly, to approaches that are positive, generative, and development-oriented.

In pedagogy, the constructive element refers to "creating, organizing, and experimentally testing tools, methods, and forms of pedagogical influence," and designing educational processes such as lessons, meetings, and excursions based on a system of instructions defined by curricula and available teaching tools.

In our view, **constructive competence** in pedagogy represents the ability to effectively organize, manage, and develop the educational process. This includes the ability to select appropriate content, logically and systematically organize educational material, and create a clear and efficient learning environment. It also involves stimulating creative and independent thinking among learners.

Thus, constructive competence encompasses the essential abilities for effectively organizing and developing the teaching process through thoughtful content selection and composition.

REVIEW OF SCIENTIFIC STUDIES

Scientific research focused on technologies for developing information-constructive competence plays a vital role in advancing new methodologies and technologies. Below is a brief overview of key studies and their outcomes:

R.N. Uzakov explored the role of pedagogical technologies in developing information-constructive competence. His research highlighted the effectiveness of integrating project-based methods and ICT in improving competency development.

Kh.T. Rakhmatov focused on practical approaches to enhancing ICT competence using innovative pedagogical methods and technologies. His findings confirmed the impact of new tools on developing learners' and future educators’ competencies.

M. Shodmonov studied the use of digital educational resources—such as e-textbooks, interactive platforms, and digital games—for developing information-constructive competence and improving education quality.

A. Karimov examined the role of innovative approaches in the learning process, particularly the contribution of ICT to improving educational efficiency and developing constructive competence in future educators.

These studies emphasize the importance of integrating innovative technologies and digital resources into education and offer practical strategies for improving competencies among future educators. Their relevance strengthens the significance of the research topic.

RESULTS

It can be concluded that a well-developed system of professional and personal qualities ensures the complete formation of pedagogical competence. These qualities enable educators to apply knowledge and skills effectively in practice, thereby enhancing the success of the learning process. Each component reflects the personal and professional development of the educator and enables effective teaching and quality interaction with students.

Uzbek scholars **Sh.R. Normurodov, A.M. Khojayev, N.A. Boboyev**, and **A.T. Karimov** expanded the structure of professional pedagogical competence by adding a **motivational-level component**. They conceptualize competence not just as a set of knowledge and skills but as a combination of capabilities, values, and attitudes. Their research emphasizes the importance of motivation and self-development in improving educational effectiveness. It also helps identify motivational and ability-related gaps critical to developing information-constructive competence.

CONCLUSION

The ongoing educational reforms in Uzbekistan are focused on the wide implementation of innovative technologies in pedagogy and the development of educators' ICT competencies. Research findings show that pedagogical design technologies are among the most effective tools for forming information-constructive competence in future educators.

Based on the results, the following conclusions were drawn:

The integration of ICT into the learning process plays a crucial role in the professional development of future educators.

The use of pedagogical design methods enhances students' abilities to independently create and utilize educational resources.

Interactive teaching tools and digital resources significantly improve the quality of professional training for educators.

There is a need to introduce specialized programs and courses on ICT use in preschool education.

Therefore, it is necessary to further improve pedagogical design technologies and ensure their wide implementation in real educational practice. This will contribute to increasing the effectiveness of innovative methods in preschool education.

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