The OSCAR PUBLISHING Services
International Journal of Pedagogics

VOLUME Vol.06 Issue01 2026
PAGE NO. 114-116
DOI 10.37547/ijp/Volume06Issue01-25

Specific Features Of The Modeling Problem In The Didactic Process

Oripova Nodima Halilovna
Doctor of Pedagogical Sciences, Professor, Head of the Department of Preschool Education, Karshi State University, Karshi, Uzbekistan

Sobirova Mohinur Zafar qizi
Master's Student, Shahrisabz State University, Shahrisabz, Uzbekistan

Received: 22 November 2025; **Accepted:** 13 December 2025; **Published:** 18 January 2026

Abstract: This article examines the specific features of using various models in the development of social competence among prospective teachers. The paper also analyzes the content and essence of the concept of modeling, its main types, and current scientific research conducted in the field of pedagogical modeling within the didactic process. The study emphasizes the role of modeling as an effective pedagogical tool in teacher education and competence-based learning.

Keywords: Competence, social competence, modeling, didactic process, pedagogical modeling, various models.

Introduction: The development of social competence among prospective teachers requires the purposeful integration of various models into the didactic process. In this regard, modeling is considered one of the most effective pedagogical tools, as it enables the systematic organization of educational content and facilitates the integration of theoretical knowledge with practical activity. Therefore, a comprehensive understanding of the essence, functions, and types of modeling is essential for improving the effectiveness of teacher education [1].

According to the Explanatory Dictionary of the Uzbek Language, the term model originates from the Latin word modulus, meaning a measure or standard [5]. This definition highlights the normative and representative nature of models, which serve as simplified yet meaningful representations of complex pedagogical phenomena. In the didactic process, models allow learners to grasp abstract concepts, analyze educational situations, and predict learning outcomes.

Various aspects and directions of modeling in education have been widely studied by numerous scholars. Research conducted by Afanasyeva, Golik, Pervukhin, Vikulina, Polovinkina, Kozyrev, Kozyreva, Subbotenko, Ilina, Dakhin, Lodatko, and Bogatyrev focuses on the methodological foundations and practical applications of pedagogical modeling [2]. These studies emphasize that modeling contributes to the formation of analytical thinking, reflective skills, and professional competence in future teachers.

From a methodological perspective, pedagogical modeling is regarded as a specific scientific research method aimed at investigating innovations introduced into modern education systems and at creating conditions for realizing learners' intellectual potential [3]. In particular, N. A. Kozyrev and O. A. Kozyreva define pedagogical modeling as a means that helps students clearly understand the content of academic disciplines, comprehend the structure of didactic materials, select appropriate pedagogical tools, visualize educational processes, and introduce innovations into teaching practice [3].

At the same time, researchers note that pedagogical modeling is characterized by abstraction and idealization. Under such conditions, the most critical

and complex task is to ensure the adequacy of the selected model and the accuracy of its parameters. Some scholars argue that special attention should be given to structural and functional models, as they represent the object as an integrated system consisting of interrelated components, elements, and subsystems [1].

Furthermore, analytical studies by Subbotenko and Ilina focus on developing students' informational and analytical competence through pedagogical modeling. In their view, a model is an artificially constructed object—such as a diagram, structure, symbol, or formula—that reflects the essential characteristics of the original phenomenon and serves as an effective didactic tool [4]. Thus, pedagogical modeling occupies a central place in the didactic process, contributing significantly to the development of social competence among future teachers.

METHODS

This study employs a theoretical, analytical, and conceptual research design aimed at examining the role and specific features of pedagogical modeling within the didactic process of teacher education. The methodological framework of the research is based on a systematic analysis of pedagogical concepts, modeling approaches, and didactic structures relevant to the development of social competence among prospective teachers.

The research process involved several interrelated stages. At the initial stage, key theoretical concepts related to pedagogical modeling, didactics, and competence-based education were identified and clarified. This stage focused on defining the essence, functions, and structural components of pedagogical modeling as a scientific and practical tool in education. Special attention was given to distinguishing pedagogical modeling as both a general research method and an independent methodological direction.

At the second stage, comparative and structural analysis methods were applied to examine different types of pedagogical models used in educational practice. These included models classified according to scale, purpose, application field, form of presentation, and level of abstraction. This analysis made it possible to identify the strengths and limitations of various modeling approaches and to determine their relevance to the didactic process.

The third stage involved the systematization and generalization of pedagogical modeling principles. Core methodological requirements—such as adequacy, integrity, simplicity, completeness, flexibility, and adaptability—were analyzed in order to establish a coherent framework for effective model construction. These principles served as criteria for evaluating the applicability and effectiveness of models in organizing educational content and processes.

In addition, the study employed logical analysis and pedagogical interpretation to examine how modeling contributes to structuring the educational process. This included analyzing the interrelationships between educational goals, content, teaching methods, instructional tools, organizational forms, and expected learning outcomes. Modeling was considered as a means of ensuring consistency, sequence, and coherence within the didactic system.

Throughout the research, a conceptual approach was used to design an integrated view of pedagogical modeling that reflects the dynamics of modern education. This approach allowed the authors to explore variative modeling as a flexible and adaptive method that responds to changing educational environments, learner diversity, and individual learning trajectories.

Overall, the chosen research methods ensured a comprehensive and in-depth analysis of pedagogical modeling in the didactic process and provided a solid methodological basis for drawing conclusions about its effectiveness in developing social competence among future teachers.

RESULTS

The analysis shows that pedagogical modeling significantly enhances the effectiveness of the didactic process by ensuring systematic organization, logical consistency, and structural coherence of educational content. Modeling enables the acquisition of accurate information about real educational processes and their internal structures.

Based on the reviewed literature, pedagogical models are classified according to several criteria:

– By scale: micro-models, adequate models, macro-models;

– By purpose of use: research models, models for complex testing, optimized models, demonstration models;

– By application fields: educational models, experimental models, scientific-technical models, game-based models;

– By presentation method: material (physical) and abstract models;

– By existence in reality: material and informational models [4].

The results also indicate that four main educational models are currently distinguished in global pedagogical theory: traditional, rationalistic, humanistic (phenomenological), and non-institutional.

Each model reflects a specific pedagogical philosophy and determines the role of learners, teaching methods, and expected outcomes. The traditional model emphasizes knowledge transmission and standardized thinking, while the rationalistic model focuses on behavioral adaptation and efficiency. In contrast, the humanistic model prioritizes individuality, personal development, and learner-centered education. The non-institutional model expands learning beyond formal educational institutions through alternative and digital learning environments.

DISCUSSION

The findings confirm that pedagogical modeling serves as an effective mechanism for increasing the efficiency of the educational process and implementing systematic pedagogical measures. Modeling ensures the interconnection, integrity, and continuity of the didactic process by organizing its forms, methods, tools, principles, and factors into a unified structure.

A key requirement for effective modeling is adherence to the following principles: conceptual clarity, integrativity, effectiveness, universality, and adaptability. These principles ensure that the model functions successfully under varying educational conditions and meets the needs of diverse learners.

The discussion highlights the growing importance of variative modeling, which reflects the modern trend toward flexibility and differentiation in education. Variative modeling supports learners' freedom of choice, independent learning activities, access to high-quality instruction, and the development of healthy competition among educators. Such features align with the demands of a rapidly changing educational environment and contribute to the formation of socially competent and professionally prepared teachers.

CONCLUSIONS

In general, the use of variative modeling in modern, dynamic educational processes creates diversity and flexibility in teaching and learning. Given the contemporary learners' strong demand for innovation and adaptability, variative modeling effectively addresses their educational needs.

Moreover, this approach fosters students' ability to quickly adapt to changing educational environments, enhances self-directed learning skills, and strengthens psychological and pedagogical readiness for their future profession. As a result, pedagogical modeling—particularly variative modeling—plays a crucial role in improving the quality of teacher education and ensuring the development of socially competent, reflective, and professionally prepared educators.

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