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DEVELOPING CONSTRUCTION AND MODELING COMPETENCIES OF FUTURE PRIMARY SCHOOL TEACHERS

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Abstract: This article discusses the theoretical foundations and practical significance of developing construction and modeling competencies in future primary school teachers. In particular, it analyzes the essence of the concepts of construction and modeling, their role in the educational process, and their importance in teachers' professional activities. Furthermore, modern pedagogical methods, innovative approaches, and new technologies that contribute to the formation of these competencies are examined. The article also provides recommendations for solving problems that may arise in the educational process.

Keywords: construction, modeling, competence, primary education, pedagogical activity, innovative methods, creative thinking.

At a time when the modern education system is undergoing significant renewal, the development of professional competencies of pedagogues and teachers is considered one of the main tasks. In particular, it is of great importance to develop the knowledge, skills, and abilities of primary school teachers on the basis of new-generation textbooks. The main reason is that the stage of primary education creates a solid foundation for students' further educational activities.

Currently, construction and modeling competencies are regarded as one of the key professional components of a teacher's activity. Through these competencies, a teacher not only organizes the educational process effectively, but also develops students' creative, logical, and critical thinking skills.

Below, the theoretical foundations, methods, and effective approaches for developing construction and modeling competencies in future primary education teachers are analyzed.

The Concept of Construction and Modeling

Construction is the process of designing, creating, and improving an object, process, or system based on a specific goal. In pedagogical activity, construction is associated with planning the educational process, preparing lesson plans, and developing didactic materials.

Modeling is a method of studying objects or processes through the creation of their simplified representations or models. In the educational process, modeling helps explain complex concepts more easily and enables students to master them more quickly.

Construction and modeling are closely interconnected and serve as important tools for organizing the pedagogical process effectively and efficiently.

The content of construction and modeling competence can be described as follows. The competencies of future primary school teachers consist of the following components:

- **Theoretical knowledge** – scientific understanding of the theoretical and practical foundations of construction and modeling, as well as pedagogical technologies;
- **Practical skills** – designing theoretical and practical lessons, preparing educational and methodological materials, and developing models appropriate to the topic;
- **Creative approach** – generating and developing new creative ideas and applying innovative methods in practice;
- **Analytical thinking** – analyzing, evaluating, and improving the educational process.

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This competence serves as an important factor in the professional activity of a teacher and determines the high effectiveness of their pedagogical mastery.

The Importance of Construction and Modeling in the Preparation of Primary School Teachers

A primary school teacher carries out multifaceted activities. They are not only a provider of knowledge, but also an educator, organizer, guide, and at the same time a manager.

The following important aspects demonstrate the significance of construction and modeling competencies:

1. **Effective organization of lessons.** The teacher carefully plans lessons in advance, determines the content, objectives, and tasks along with the expected outcomes, and selects methods appropriate to the topic.
2. **Increasing students' activity.** In the teaching process, teachers engage students actively by selecting suitable role-playing games, applying models, and organizing practical activities.
3. **Simplifying complex concepts.** Through modeling, unclear concepts and knowledge are transformed into understandable forms that students can comprehend and apply in practice.
4. **Developing creative thinking.** Students are encouraged not only to think independently, but also to improve their creativity and find new solutions in problematic situations.

Methods for Developing Competencies in Future Primary School Teachers

The following methods are considered effective in developing construction and modeling competencies in future teachers:

1. **Project-based learning.** Students independently develop projects. For example, they may create didactic games for primary school students or design lesson plans.
2. **Practical activities.** Through laboratory work, training sessions, and seminars, students test and apply their knowledge in practice.
3. **Use of information technologies.** The use of computer programs, simulations, and interactive platforms expands opportunities for creating models.
4. **Problem-based learning.** Students are presented with a problem and acquire new knowledge through the process of solving it.
5. **Cluster and Venn diagram methods.** These methods help systematize and analyze knowledge.

Innovative Approaches

The following innovative approaches play an important role in modern education:

- **STEAM education** – integration of science, technology, engineering, art, and mathematics;
- **Robotics** – develops modeling skills;
- **3D modeling** – enhances imagination and technical thinking;
- **Interactive platforms** – provide visual and practical learning opportunities.

These approaches raise the professional training of future teachers to a new level.

Problems and Ways to Solve Them

There are certain challenges in developing construction and modeling competencies, including:

- Insufficient material and technical resources;
- Limited number of practical training sessions;
- Teachers' lack of sufficient knowledge of innovative methods.

To solve these problems, it is necessary to:

- Equip educational institutions with modern technologies;
- Increase the number of practical activities;

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- Organize professional development and training courses.

Conclusion

In conclusion, the development of construction and modeling competencies is an important factor in the preparation of future primary school teachers. These competencies improve teachers' professional skills, enable the effective organization of lessons, and make the learning process more engaging for students.

Modern pedagogical staff should not only be providers of knowledge, but also innovators, organizers, and creative professionals. Therefore, special attention should be paid to the development of construction and modeling competencies within the system of pedagogical education.

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