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SCIENTIFIC AND METHODOLOGICAL FOUNDATIONS OF TEACHING THEORETICAL AND PRACTICAL CONCEPTS IN TEACHING THE SUBJECT "TECHNOLOGY" IN PRIMARY EDUCATION

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Abstract
This article examines the scientific and methodological foundations of teaching theoretical and practical concepts in the subject “Technology” in primary education. The study highlights the importance of integrating theory with practice to develop pupils’ technological literacy, creative thinking, and practical skills from an early age. Attention is given to modern pedagogical approaches, including competency-based education, activity-oriented learning, and the use of interactive and project-based methods in technology lessons. The paper also analyzes the role of age-specific characteristics of primary school learners, the selection of appropriate teaching methods and tools, and the application of didactic principles in ensuring effective learning outcomes.

Keywords: Primary education, technology subject, scientific foundations, methodological approaches, theoretical and practical concepts, competency-based learning, practical skills, creative thinking.

Introduction

In the context of modern educational reforms, special attention is being paid to the improvement of primary education as the foundation of a child’s intellectual, practical, and personal development. Among the subjects taught at this level, Technology occupies a unique place, as it combines theoretical knowledge with hands-on activities and helps pupils acquire essential life skills, work habits, and creative abilities. Teaching technology in primary school is not limited to introducing tools and materials; it also aims to develop technological thinking,

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problem-solving skills, and an understanding of the relationship between human activity, nature, and society.

The effectiveness of teaching the subject Technology largely depends on the scientific and methodological foundations on which the educational process is built. A scientifically grounded approach ensures that theoretical concepts are age-appropriate, logically structured, and connected with practical tasks, while a sound methodological framework enables teachers to select effective teaching strategies, methods, and tools. In primary education, where pupils' cognitive abilities, motor skills, and interests are still developing, the integration of theory and practice becomes especially important.[1]

DISCUSSION AND RESULTS

The analysis of the scientific and methodological foundations of teaching the subject Technology in primary education demonstrates that the effectiveness of this subject largely depends on the balanced integration of theoretical knowledge and practical activity. Primary school students perceive learning most effectively through action, observation, and hands-on experience; therefore, abstract theoretical concepts must be presented in close connection with practical tasks. From a scientific perspective, this approach is grounded in activity theory, constructivist learning principles, and developmental psychology, which emphasize learning through purposeful activity and experience.

The term competence originates from Latin and is understood to mean a combination of knowledge, skills, and abilities. In the Law of the Republic of Uzbekistan "On Education", competence is defined as the totality of professional knowledge, skills, and qualifications. In this sense, the concept of competence should be understood as follows:[4]

1. future teachers' possession of theoretical knowledge in the fundamentals of pedagogy;
2. future teachers' acquisition of teaching and educational skills;
3. future teachers' mastery of practical professional activity.

The integration of these components reflects the full meaning of competence. From this perspective, future pedagogical specialists acquire theoretical knowledge of the Technology subject during higher pedagogical education, develop professional skills through practical classes, and gain pedagogical experience during weekly

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teaching practice. In order for future teachers to achieve the expected level of competence, special attention must be paid to these aspects throughout the training process.

Modern pedagogy places primary emphasis on the development of competence in pedagogical personnel. This is because competence provides guidance on how to teach, what to teach, and how to educate learners. In this context, developing a comprehensive set of competencies for the Technology subject has become a pressing issue. According to our approach, the following aspects should be taken into consideration:[5]

a) determining the scope of theoretical and professional knowledge in labor and technological education and focusing on the theoretical preparedness of future teachers;

b) establishing the foundations for developing future teachers' skills in creating tools, equipment, and products using harmless and recyclable materials such as plasticine and special clay;

c) defining mechanisms for developing future teachers' abilities to provide labor and technological education within the Technology subject.

Such an approach enables the formation of a new competency framework for the Technology subject, through which future teachers' professional competencies can be systematically developed.

Since the Technology subject is relatively new, defining competency-based requirements for future teachers is particularly important. Based on educational норматив-huquqiy documents, including the Regulation "On the National System for the Development of Professional Qualifications, Knowledge, and Skills" approved by Resolution No. 287 of the Cabinet of Ministers of the Republic of Uzbekistan dated May 15, 2020, the following competency requirements for future teachers can be identified:[2]

1. the ability to form students' labor and technological qualities;
2. the ability to familiarize students with the foundations of labor and technological knowledge;
3. the ability to develop students' skills in creating various products, tools, equipment, and devices;
4. the ability to enhance students' technological aptitude.

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Future pedagogical personnel are expected to teach the Technology subject based on these competency requirements. It should be noted that students' technological aptitude refers to their ability to use modern technologies appropriately in accordance with their age and physical capabilities. For example, since most students actively use computers, it is effective to apply these skills in creating technological products, projects, tools, and equipment.

To achieve this, teachers should adopt the following approaches:[6]

a) working individually with each student whenever possible;

b) organizing activities in small groups;

c) conducting instruction at the class level.

Such approaches enhance teachers' competency-based skills. Moreover, from our perspective, it is effective for the Technology subject to be taught by the same teacher from primary through upper grades. This allows the teacher to purposefully and consistently develop students' technological abilities at each educational stage. Practical experience shows that cooperation with specialists is beneficial for teachers in meeting competency requirements. For instance, during practical lessons involving the creation of objects, assistance from specialists proves to be highly effective.

The teaching of the Technology subject in primary school has specific characteristics that require consideration of students' age, physical, and aesthetic capabilities. Therefore, the following competency-based approaches are recommended:[7]

1. focusing primarily on creating various items using cardboard, paper, plasticine, and special clay;
2. teaching students to design tools and equipment and to create their models;
3. encouraging students' individual creative products;
4. developing students' labor and technological activity at the class level.

Such approaches are both engaging and practically effective for primary school students.

In the current stage of societal development, improving technological education in primary school is essential. In particular, the National Program for the Development of Public Education for 2022–2026, approved by Presidential Decree No. PF-134 dated May 11, 2022, sets objectives for teaching rationalization, robotics, and construction fundamentals in general secondary schools.

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Accordingly, during Technology lessons in primary school, students should be taught:[3]

- rationalization skills, including the ability to generate new ideas for inventions and create products based on those ideas;
- basic robotics skills, such as creating simple technical devices using wires, metal sheets, and other materials;
- construction skills, including designing initial models of household appliances, equipment, and tools.

All of the above contribute to the effective development of primary school students' knowledge, practical skills, and competencies in labor and technological education. Thus, competency-based approaches in teaching the Technology subject play a crucial role in forming students' practical abilities and preparing them for independent, creative, and productive activity.[8]

CONCLUSION

In conclusion, the scientific and methodological foundations of teaching the subject Technology in primary education provide a framework for effectively combining theoretical knowledge with practical skills. The integration of these elements ensures that students not only understand technological concepts but also develop the ability to apply them in real-life situations, fostering creativity, problem-solving, and critical thinking from an early age.

Competency-based approaches play a central role in this process, as they focus on forming students' technological skills, work culture, and practical abilities, rather than merely transmitting theoretical knowledge. Age-appropriate, interactive, and project-based methods enable learners to engage actively, retain knowledge more effectively, and cultivate hands-on skills necessary for modern technological education.

Furthermore, the teacher's methodological competence is crucial for guiding students, designing tasks of increasing complexity, and integrating interdisciplinary knowledge. Collaboration with specialists and the use of modern teaching tools further enhance the educational process.

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