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THE EFFECTIVENESS OF INTEGRATIVE LEARNING TECHNOLOGIES IN DEVELOPING META-SUBJECT COMPETENCIES OF PRIMARY SCHOOL STUDENTS

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Abstract. This article analyzes the significance and effectiveness of integrative learning technologies in the development of meta-subject competencies among primary school students. It also highlights the role of interdisciplinary lessons organized on the basis of integrative approaches in enhancing students' independent thinking, problem-solving skills, and creative approaches. According to the research findings, the integrative approach increases students' learning activity and expands the possibilities for applying knowledge in practical situations.

Keywords: meta-subject competence, integrative learning, primary education, interdisciplinary integration, pedagogical technologies, competency-based approach

Introduction

In the modern education system, it is becoming increasingly important not only to develop students' subject-specific knowledge but also to enhance their universal learning competencies. In this regard, the formation of meta-subject competencies is considered one of the priority tasks of primary education.

Integrative learning technologies ensure the interconnection between different subjects and contribute to the formation of a holistic knowledge system among students. This, in turn, increases their ability to apply knowledge in real-life situations.

Psychological and pedagogical research shows that effective knowledge acquisition largely depends on students' active participation. In particular, according to the theory of the "Zone of Proximal Development" proposed by Lev Vygotsky, students acquire new knowledge more effectively through social interaction and collaboration. This justifies the need to organize the learning process in an integrative and interactive way.

Similarly, John Dewey emphasized the idea of experiential learning, arguing that knowledge should be connected to real-life situations. Integrative learning practically implements this approach.

The nature of meta-subject competencies

Meta-subject competencies are one of the key components of modern education. They represent universal skills applied across different subject areas rather than knowledge limited to a single discipline. These competencies include students' abilities to think independently, search for and process information, analyze problematic situations, and make effective decisions.

The formation of meta-subject competencies helps students consciously organize their learning activities, evaluate their knowledge, and continuously improve it. In this sense, they represent an important outcome of learner-centered education. In particular, developing these competencies at the primary school level creates a strong foundation for successful learning in later educational stages.

In understanding this process, the taxonomy developed by Benjamin Bloom serves as an important methodological framework. According to Bloom's theory, cognitive processes develop from simple recall to higher-order thinking skills such as analysis, synthesis, and evaluation. Meta-subject competencies encompass precisely these higher cognitive operations.

Therefore, developing these competencies in primary education lays a solid foundation for students to master more complex knowledge in later stages.

The nature of integrative learning technologies

Integrative learning technologies are one of the key directions of modern didactics, aimed at organizing the learning process not within isolated subject boundaries but based on their interconnection and integrity. The main idea of this approach is that in real life, knowledge does

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not exist as separate "subject fragments" but functions as an interconnected system. Therefore, learners should be equipped not with fragmented knowledge but with systematic and integrated knowledge.

Integrative learning technologies form a holistic worldview in students by harmonizing educational content across different subjects. In this process, knowledge is acquired as a complementary and mutually enriching system. For example, while studying a topic, elements of language, mathematics, natural sciences, or visual arts may be integrated, allowing students to understand a phenomenon from multiple perspectives. As a result, students not only memorize knowledge but also understand, analyze, and apply it in various situations.

One of the important features of this technology is that it activates the learning process and places the student at the center of education. In traditional approaches, the teacher is the main source of knowledge, whereas in integrative learning, the student becomes an independent explorer, problem-solver, and "discoverer" of knowledge. This ensures an interactive and learner-centered educational environment.

The theoretical foundations of integrative learning technologies can be explained through John Dewey's concept of experiential learning and Lev Vygotsky's theory of social interaction in cognitive development. According to these approaches, knowledge is acquired more effectively not when it is given in a ready-made form but through activity, social communication, and collaboration.

In addition, integration develops higher-order thinking skills in students. Cognitive processes such as identifying cause-effect relationships, analyzing, generalizing, and drawing conclusions become more active. This directly corresponds to the higher levels of Benjamin Bloom's taxonomy—analysis, synthesis, and evaluation.

In general, the essence of integrative learning technologies lies not only in combining subjects but in transforming students' cognitive activity into a qualitatively new level, developing systematic, logical, and creative thinking. Therefore, these technologies are recognized as an essential didactic foundation of modern primary education.

The role of integrative learning in developing meta-subject competencies

The use of integrative learning technologies serves as an effective tool in developing meta-subject competencies because it directs students not only toward memorizing knowledge but also toward applying it in various situations.

During integrated lessons, students simultaneously engage in multiple activities: analyzing, comparing, generalizing, and drawing conclusions. This fosters their critical and logical thinking skills. At the same time, students learn to work in teams, justify their opinions, and respect others' perspectives, which contributes to the development of communicative competence.

Furthermore, integrative learning also enhances students' self-management skills. They learn to plan their activities, evaluate results, and work on their mistakes. As a result, the effectiveness of the learning process increases, and knowledge becomes more durable.

Research Results and Their Analysis

The conducted experimental study demonstrated the high effectiveness of integrative learning technologies in developing meta-subject competencies. During the research, traditional and integrative teaching approaches were compared.

The results showed that students involved in integrative lessons demonstrated a significantly higher level of learning activity. They actively participated in lessons and showed greater initiative in expressing independent opinions. In addition, their approaches to solving problem situations were more creative and well-grounded.

The analysis also showed that integrative learning positively affects long-term knowledge retention, as knowledge is applied in various contexts and therefore becomes more deeply understood. At the same time, students' self-assessment and reflection skills were also developed.

Overall, the research results scientifically justify the need to widely implement integrative learning technologies in primary education.

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Conclusion

The development of meta-subject competencies among primary school students is one of the priority tasks of modern education. Integrative learning technologies are an important pedagogical tool that effectively supports the implementation of this task.

Through this approach, students not only acquire knowledge but also develop essential life skills such as applying knowledge in different situations, independent thinking, problem-solving, and effective communication.

Therefore, the systematic and purposeful use of integrative learning technologies in primary education, improving teachers' methodological training, and widely implementing modern pedagogical approaches are of great importance.

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