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DEVELOPING PROBLEM-SOLVING SKILLS IN PRIMARY SCHOOL STUDENTS THROUGH DESIGN THINKING

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ABSTRACT

This article analyzes the pedagogical potential of developing problem-solving skills among primary school students through the Design Thinking methodology. It examines the essence and main stages of design thinking, as well as the specific features of its application in primary education. Furthermore, based on scholarly sources, the article substantiates the significance of this approach in fostering students' competencies in creative thinking, critical analysis, collaborative work, and the development of innovative solutions to practical problems. The research findings indicate that integrating design thinking into the educational process contributes to increasing students' motivation for learning, developing their independent thinking skills, and enhancing the overall effectiveness of education.

KEYWORDS: Design thinking, primary education, problem-solving, creative thinking, critical thinking, competency-based approach, innovative education, pedagogical technologies.

INTRODUCTION

Transformational processes taking place in education systems worldwide have made the development of twenty-first-century competencies among students one of the key priorities. While traditional educational approaches have primarily focused on the acquisition of ready-made knowledge, contemporary pedagogical concepts place particular emphasis on developing students' independent thinking, creativity, critical analysis, and ability to solve real-life problems effectively. From this perspective, the integration of innovative methods and technologies into the educational process is regarded as one of the most pressing scientific and practical issues of today.

In the Republic of Uzbekistan, raising the quality of education to the level of international standards, improving students' functional literacy, and developing their creative and critical thinking competencies have been identified as priority areas of state policy. In particular, Presidential Decree No. PF–5712 of the Republic of Uzbekistan, dated April 29, 2019, approved the Concept for the Development of the Public Education System until 2030 and identified the development of students' independent thinking, problem-solving skills, and innovative approaches as one of the principal objectives of education . Furthermore, Presidential Decree No. PF–6108, dated November 6, 2020, specifically emphasized the need to improve the quality of education and develop competencies aligned with the requirements of international assessment programmes.

At the international level, changes in the economy and labour market require school graduates to possess not only subject-specific knowledge but also universal competencies, such as the ability to make flexible decisions in complex situations, think creatively, and work collaboratively. Studies conducted by the OECD recognize students' problem-solving

competence as one of the key indicators of the quality of contemporary education, with particular attention given to this competence in the Programme for International Student Assessment (PISA) . UNESCO experts emphasize that innovative pedagogical approaches, such as design thinking, are important factors in developing students' creativity and practical skills in the pursuit of the Sustainable Development Goals.

In recent years, the Design Thinking methodology, which has been widely applied in educational practice, has emerged as a human-centred approach encompassing the processes of identifying learners' needs, analysing problems in depth, developing several alternative solutions, testing them, and making further improvements. Although this approach was initially developed in the fields of engineering and industrial design, it later began to be widely applied as an effective method within the education system .In particular, the application of design thinking at the primary education level contributes to increasing students' interest in learning, developing their logical and creative thinking, and fostering their ability to make independent decisions in real-life situations.

Today, one of the primary objectives of the education system is to develop students' abilities to think independently, analyse problems, and find effective solutions. While the traditional model of education primarily directs students towards acquiring ready-made knowledge, the modern competency-based approach encourages them to apply their knowledge in new situations and to think logically and creatively. From this perspective, the Design Thinking methodology is recognized as one of the effective tools for developing problem-solving competence in primary education.

Design thinking is a human-centred problem-solving methodology that transforms the student from a passive recipient of ready-made answers into an active participant who independently searches for solutions. The key feature of this approach is that students examine a problem from different perspectives, analyse the existing situation, generate several ideas, test them in practice, and select the most appropriate solution. As a result, they develop subject-specific knowledge together with competencies in decision-making, communication, and teamwork in real-life situations .

Due to their psychological characteristics, primary school students are curious, active, and inclined to learn through practical activities. Therefore, the application of design thinking technology at this stage can be highly effective. Through observing, comparing, asking questions, identifying problems, and developing various solutions, students construct their knowledge independently. This increases their motivation to learn and enhances their active participation in the learning process .

The Design Thinking methodology generally consists of five stages: empathize, define the problem, generate ideas, create a prototype, and test it. In primary education, these stages are applied in a simplified form appropriate to students' age-related characteristics. For example, the teacher presents students with a problem situation related to school life or everyday activities. The students discuss the situation, identify the causes of the problem, and then develop various solutions in small groups. The most appropriate option is selected from among the proposed ideas and tested in practice. Such activities develop students' logical thinking alongside their creativity.

Design thinking can be integrated into almost all subjects taught in primary school. For example, students can connect theoretical knowledge with practical activities by finding

solutions to a literary character's problem in mother tongue lessons, solving real-life mathematical problems using different methods, developing projects addressing environmental issues in natural science lessons, or creating models of useful objects in technology classes. As a result, students acquire knowledge and learn how to apply it in practical situations .

In lessons organized on the basis of design thinking, the teacher's role also changes. Rather than acting as the primary source of knowledge, the teacher serves as an organizer, facilitator, and adviser who guides students' inquiry-based activities. Students, in turn, conduct independent research, exchange ideas, present evidence, and defend their decisions. This process fosters important competencies such as responsibility, initiative, collaboration, and critical thinking.

Another significant advantage of applying design thinking in primary education is that it develops a culture in which students are not afraid of making mistakes, are willing to experiment, and can express their ideas freely. While traditional education often assumes that there is a single correct answer, design thinking recognizes that a problem may have several appropriate solutions. Consequently, students become accustomed to thinking creatively, approaching problems from different perspectives, and justifying their decisions. This contributes to the development of their ability to make independent decisions in complex real-life situations in the future.

Developing problem-solving skills among students at the primary education level is one of the important objectives of contemporary education. In this process, the use of the design thinking methodology contributes to strengthening students' subject-specific knowledge and developing their independent thinking, creativity, critical analysis skills, and ability to find effective solutions to practical problems. Through the design thinking process, students become active participants in learning by analyzing problems in depth, generating various ideas, evaluating them, and selecting the most appropriate solution.

The scholarly sources and pedagogical approaches analysed in the article demonstrate that the integration of design thinking into primary education offers significant pedagogical opportunities for developing students' creative thinking, communication culture, collaborative skills, and problem-solving competencies. In particular, the use of real-life tasks, project-based activities, and group work in lessons increases students' interest in learning and expands their opportunities to apply acquired knowledge in practice.

Furthermore, the effective application of design thinking requires teachers to have a thorough command of modern pedagogical technologies, design lessons based on a competency-based approach, and organize the educational process by taking students' age-related and individual characteristics into account. Therefore, the widespread implementation of this methodology in educational practice is closely linked to the development of teachers' professional competence and the improvement of methodological support.

Overall, design thinking, as an effective pedagogical tool for developing problem-solving skills among primary school students, contributes to improving the quality of education, implementing the competency-based approach in practice, and fostering creative and proactive individuals whose competencies meet the requirements of international assessment programmes. The systematic application of this approach in the educational process creates a solid foundation for developing students' intellectual potential and innovative thinking in the future.

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