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CONCEPTUAL FOUNDATIONS OF TRIZ PEDAGOGY

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Abstract. This scholarly thesis explores the conceptual foundations of TRIZ pedagogy and its significance in the educational process. It presents modern approaches to fostering students' creative abilities through the application of the TRIZ program in classroom settings. The paper outlines the potential of the TRIZ methodology, its core principles, and its pedagogical applications.

Keywords: TRIZ, technology, speech development, TRIZ resources, ability, method, information, classroom, education and upbringing, pedagogue, computer, creativity.

Introduction

In today's era of rapid globalization and technological advancement, education is increasingly becoming one of the most critical factors in societal development. The socio-economic progress, intellectual capacity, and moral elevation of any nation are directly linked to the effectiveness of its educational system. Within this context, the science of pedagogy emerges as a leading discipline that develops the theoretical foundations of education and upbringing, serving the holistic development of the individual.

As emphasized by the President of the Republic of Uzbekistan, Shavkat Mirziyoyev:

"The greatest wealth is intellect and knowledge; the greatest legacy is good upbringing; the greatest poverty is ignorance."

This statement underscores the urgent need for comprehensive reform of the education system and the advancement of pedagogical science in line with contemporary demands.

Pedagogy is the science that studies the principles of nurturing a well-rounded individual and developing their knowledge, skills, and competencies. In modern educational systems, the application of innovative approaches, advanced pedagogical technologies, and learner-centered teaching methods is considered a key task of pedagogical practice. Therefore, the scholarly investigation of pedagogical and educational issues and the articulation of their practical significance has become increasingly relevant today.

One of the primary objectives of contemporary education is to cultivate students' creative and critical thinking abilities. From this perspective, TRIZ pedagogy (Theory of Inventive Problem Solving) is being widely adopted as an innovative approach in the teaching and learning process. The central aim of TRIZ pedagogy is to develop learners' skills in systematically analyzing problems, identifying contradictions, and resolving them through optimal solutions. This method shifts the learner's role from a passive recipient of ready-made knowledge to an independent thinker and active inquirer. Through TRIZ pedagogy, students learn to generate original ideas, think unconventionally, and approach problem-solving with creativity.

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In TRIZ technology, concepts such as “contradiction,” “ideal final result,” “resource utilization,” and “inventive principles” play a central role. Integrating these elements into the educational process makes lessons more engaging, effective, and practice-oriented. TRIZ methods are particularly effective in primary and general education subjects, where they enhance student engagement and foster independent decision-making skills in problem-based situations.

The TRIZ program emerged in the mid-20th century. Initially, it was not associated with pedagogy. In 1946, Soviet engineer, scientist, and science fiction writer Genrich Altshuller began studying the most frequently used techniques among inventors. These techniques—approximately forty in number—along with the Algorithm of Inventive Problem Solving (ARIZ), formed the foundation of TRIZ. Over time, the system evolved with new algorithms, and by the early 1980s, educators began adapting it for use in experimental classrooms and school teaching methodologies.

To integrate TRIZ into the educational process, various pedagogical tools and methods are employed, such as brainstorming, contrastive analysis, and analogy construction.

TRIZ pedagogy, under the motto “Creativity in Everything”, provides opportunities for both teaching and upbringing. The school-age period is unique, as it is the stage in which a child’s personality is formed and their future is shaped. Therefore, it is essential not to miss this period in order to unlock each child’s creative potential. The application of this technology in schoolchildren aims, on the one hand, to cultivate qualities of thinking such as flexibility, mobility, consistency, and dialectical reasoning; and on the other hand, to foster exploratory activity, a striving for novelty, as well as the development of speech and creativity.

The primary task of employing TRIZ technology with schoolchildren is to instill in them the joy of creative discovery. Activities are organized in ways that naturally correspond to children’s everyday lives. Educational dialogues are conducted with students on lesson topics, during which learners actively express their thoughts, ask questions about unclear points, seek clarification, and sometimes make mistakes, become confused, or fail to understand. The desire of children to communicate and assist one another significantly increases their engagement and interest.

At the end of the lesson, reflection and analytical skills are fostered through summarization (what they did, what new knowledge they acquired, what remained unclear, etc.). Results are consolidated in various forms such as games—”Interview,” “News Bank,” “Say the Sentence,” and others. Plans for the future are also discussed (for example: “Today we learned about this, and next time we will explore more about the future”). Productive activities and completed tasks are reviewed, while ensuring a natural transition from one type of activity to another, linking lesson content with subsequent sessions. After summarizing results, children share all the activities mentioned until the next lesson.

The main criterion in working with children is clarity and simplicity in presenting material and in constructing situations that may appear complex. Children should not be compelled to adopt TRIZ principles without understanding its basic rules; instead, simple examples should be used. Fairy tales, games, and everyday situations provide the environment in which children learn to apply TRIZ solutions to the problems they encounter. When contradictions are identified, the child independently strives toward the ideal result by utilizing multiple resources.

The aim of TRIZ pedagogy is to cultivate flexible thinking and imagination, as well as the ability to solve complex problems skillfully and effectively. In modern pedagogy, distinctive methods of working with students, unconventional teaching techniques, and the pursuit of high achievement find innovative solutions through the TRIZ program. TRIZ pedagogy encompasses

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a wide range of techniques for addressing creative problems, analyzing situations, reducing cognitive workload, and enhancing students' risk-taking skills.

While general education schools focus on developing subject-specific knowledge, the TRIZ system fosters the ability to apply that knowledge across diverse fields and contexts. Within TRIZ technology, the primary tool for working with students is pedagogical inquiry. The teacher should not simply provide ready-made knowledge or reveal the truth directly, but rather teach students how to discover it themselves. When a child asks a question, the teacher should avoid giving an immediate answer; instead, they should ask the child what they think about the matter, invite them to reflect, and guide them with leading questions so that the child arrives at the answer independently. If the child does not ask a question, the teacher should highlight a contradiction, thereby placing the learner in a situation where they must seek out the solution themselves.

Distinctive Features of TRIZ

- No grade or mark is of primary importance.

- There is no single correct answer.

- Every child has the right to make mistakes.

- What matters most is that the child learns to think and to solve problems independently.

In primary education, it is advisable to employ TRIZ-based games to support the formation of mathematical concepts and to foster students' inventive thinking and mathematical abilities in a subtle, unobtrusive manner. TRIZ methodology differs from classical pedagogy in that it offers a systematic approach to problem-solving. This approach serves to cultivate creative thinking among learners.

Conclusion

TRIZ technology, as a universal tool, can be applied across nearly all types of activities—whether in the educational process, in games, or in routine moments. It enables the formation of a unified, harmonious, and scientifically grounded model of the world in the consciousness of school-aged children. A successful learning environment is created in which decisions are shared, one child's solution stimulates the thinking of another, broadens imagination, and encourages development. The technology allows each child to demonstrate individuality and teaches them to think beyond conventional boundaries.

TRIZ pedagogy is a powerful means of developing students' problem-solving abilities and innovative thinking skills. Its application in the learning process enhances the quality of education and prepares students to meet contemporary requirements. In summary, TRIZ pedagogy is one of the effective pedagogical technologies aligned with modern educational demands, oriented toward the learner, and dedicated to fostering creative thinking. By integrating TRIZ into the educational process, opportunities for developing students' intellectual potential and innovative mindset are significantly expanded.

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