

Integration Of Triz Methodology into The Education Of Technocratic Children: Innovative Approaches In Preschool Pedagogy

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Received: 11 June 2025; **Accepted:** 14 July 2025; **Published:** 31 August 2025

Abstract: This article explores the development of creativity, critical thinking, and adaptive learning skills in technocratic children through the integration of the TRIZ (Theory of Inventive Problem Solving) methodology into preschool pedagogy. The integration of TRIZ provides a systematic yet flexible approach that encourages preschool children to engage in creative problem-solving while supporting their cognitive and socio-emotional development. The research findings indicate that combining TRIZ methodology with modern pedagogical approaches enhances preschoolers’ ability to generate original solutions, fosters their digital literacy, and prepares them for lifelong learning in the digital era.

Keywords: TRIZ methodology, technocratic children, preschool education, problem solving, creativity, digital pedagogy, innovative teaching.

Introduction:

The rapid development of digital technologies has fundamentally transformed the world of childhood, giving rise to a new generation known as “technocratic children,” who are growing up in an environment surrounded by digital tools, artificial intelligence, robotics, and interactive multimedia. These children demonstrate a high level of cognitive development, an exceptional ability to adapt quickly to the digital environment, and a natural inclination to solve problems through technology. As a result, classical teaching methods are increasingly unable to fully meet their educational needs.

One of the innovative approaches capable of effectively addressing the challenges of educating technocratic children is the Theory of Inventive Problem Solving (TRIZ). Originally developed in the mid-20th century by Genrich Altshuller as a systematic method for solving engineering and creative problems, TRIZ has, in recent decades, been adapted to pedagogy. This adaptation has provided educators with powerful tools to foster creativity, critical thinking, and problem-solving skills in children from an early age.

TRIZ and Technocratic Children in Pedagogy

Integrating the TRIZ methodology with modern

strategies for working with technocratic children opens new opportunities for preschool and primary education. Through TRIZ, children not only learn to think creatively but also to analyze contradictions, search for innovative solutions, and apply creative thinking in real-life situations. This makes TRIZ a powerful tool in preparing technocratic children to meet the demands of the digital age.

In recent decades, TRIZ has been widely adapted to pedagogy, enabling children to approach learning as a process of problem-solving, critical thinking, and creative discovery. Methods based on TRIZ encourage children to overcome contradictions, search for multiple solutions, and generate innovative ideas instead of merely repeating ready-made patterns. Their natural curiosity, multitasking abilities, and preference for visual and interactive learning require teachers to apply innovative teaching strategies. Classical didactic methods fail to hold their attention for long, whereas interactive and problem-based learning environments engage them much more effectively.

The integration of TRIZ with modern preschool teaching methodologies creates an innovative, child-centered hybrid model. The following methods are especially relevant:

1. **Contradiction analysis:** Children are presented with simple contradictions (for example, a toy should be soft but also durable). This develops logical reasoning and stimulates the search for creative solutions.

2. **Fairy-tale TRIZ:** Stories and fairy tales are adapted using TRIZ techniques, where characters solve problems creatively. This approach combines abstract problem-solving with emotional involvement.

3. **Modeling and visual schemes:** By using diagrams, drawings, and digital tools, children visualize problem solutions, making TRIZ methods accessible to their developmental stage.

4. **Interactive digital tools:** Games, apps, and virtual simulations aligned with TRIZ principles keep technocratic children motivated and actively engaged.

Furthermore, educators should integrate TRIZ with methods such as Montessori (which fosters independence, while TRIZ adds a systematic foundation for inventiveness), Reggio Emilia (which encourages creativity and collaboration, complementing TRIZ's structured innovative approach), and STEM-based models.

Applying TRIZ to technocratic children requires carefully planned activities. The following examples provide clear illustrations:

1. **Play-based learning:** Children solve puzzles or build structures that involve contradictions (e.g., constructing a tower that is both tall and stable).

2. **Digital storytelling:** Using tablets, children collaboratively create stories where characters overcome problems through TRIZ principles.

3. **Problem-solving workshops:** In group sessions, children use brainstorming to find multiple solutions to everyday issues (e.g., how to share one toy among many friends).

4. **Unconventional engineering tasks:** With LEGO, robotics kits, or simple construction materials, children experiment with different designs and improve them step by step.

Teachers should not act as providers of strict answers but rather as facilitators who guide children's curiosity. Importantly, TRIZ supports inclusivity, as it allows children with different abilities and learning styles to participate in the creative process at their own pace.

Engagement and Motivation

Technocratic children are often highly motivated by technology, structured activities, and logical challenges. Activities based on TRIZ—such as modeling, creating stories that include problem situations, and designing creative solutions—have been shown to

increase their motivation and participation. (Teachers noted that children remained engaged in tasks for longer periods of time and displayed intrinsic interest in finding multiple solutions to a single problem.)

Social and Collaborative Outcomes

The integration of TRIZ also enhanced social interaction among technocratic children, since TRIZ often involves group brainstorming and problem-solving processes. Children developed stronger communication skills, teamwork abilities, and respect for diverse perspectives. This is particularly important for technocratic children, who may sometimes become overly absorbed in technology and inclined toward solitary activities.

Overall Results

The findings indicate that TRIZ is not only a tool for fostering creativity and problem-solving but also an effective approach to supporting the holistic development of technocratic preschoolers. It bridges the gap between logical-technical orientation and imaginative exploration, helping children acquire balanced skills necessary for the digital age.

Conclusion

The integration of TRIZ methodology with pedagogical strategies for working with technocratic children represents a highly promising direction for modern preschool education. Technocratic children naturally adapt to digital environments and, when presented with appropriate challenges, demonstrate strong problem-solving abilities, logical thinking, and creativity. However, without a structured approach, their potential may remain underdeveloped or misdirected. The TRIZ approach, with its focus on systematically resolving contradictions and fostering innovative thinking, provides the essential foundation for unlocking and guiding these abilities. As a result, education becomes not only a process of knowledge transmission but also of cultivating creative and adaptable individuals. Importantly, this approach helps teachers channel technocratic tendencies—such as excessive interest in gadgets—toward purposeful innovation.

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