FACTORS INFLUENCING THE DEVELOPMENT OF STUDENTS' ANALYTICAL THINKING SKILLS BASED ON A SYSTEMATIC APPROACH

Amanova Gulkhayo Dilmurod kizi

Namangan State University
PhD Candidate

Abstract: Analytical thinking is a crucial skill for students, enabling them to analyze complex problems, compare diverse information, and make logical conclusions. This study explores the factors influencing the development of students' analytical thinking skills through a systematic pedagogical approach. Using both theoretical analysis and empirical methods, the research identifies pedagogical, psychological, technological, and social factors that significantly impact analytical thinking. The results show that problem-based learning, interactive teaching methods, digital tools, and a supportive social environment enhance students' ability to think critically, independently, and systematically. The study highlights the importance of integrating multiple factors to foster analytical thinking and provides practical recommendations for educational practice.

Keywords: Analytical thinking, Systematic approach, Pedagogical factors, Problem-based learning, Critical thinking, Educational strategies

Introduction

Analytical thinking is the ability of a student to analyze complex problems, compare different pieces of information, and draw logical conclusions. This competency is highly demanded in modern education and is considered essential for successful performance in contemporary society. A systematic approach provides the opportunity to effectively develop analytical thinking by teaching topics in an interconnected way and integrating various pedagogical methods and tools. Factors such as problem-based learning, interactive methods, and student motivation play a significant role in fostering analytical thinking (Mamadiyorov, 2025).[1]

Purpose of the study: The aim of this article is to identify and analyze the main factors influencing the development of students' analytical thinking skills based on a systematic pedagogical approach.

Research objectives:

1. To theoretically analyze the concepts of analytical thinking and the systematic approach.
2. To identify development factors from pedagogical, psychological, and social perspectives.
3. To provide practical recommendations for the educational process based on the findings.

Methods

The study employed both theoretical analysis and empirical methods.

• Theoretical stage: Scientific literature, articles, theses, and practical studies on the educational process were analyzed (Santosa & Nugroho, 2024)[3]
• Empirical stage: Diagnostic tests were used to assess students' analytical thinking, along with surveys and observations of teachers' approaches.

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- Analysis: Statistical and qualitative methods were applied to identify the main influencing factors.

Results

The study results indicate the following:

1. Pedagogical factors:

   o Problem-based and project-based teaching strategies significantly enhance students' analytical thinking skills. For example, problem-based learning helps students deeply analyze cause-and-effect relationships (Mamadiyorov, 2025).[1]

   o Interactive methods, including debates and group work, encourage students to analyze different viewpoints (Ro'zmetov, 2025).[2]

2. Psychological factors:

Students' intrinsic motivation, self-regulation, and emotional stability positively affect the analytical thinking process (Kaur & Sharma, 2025).[4]

3. Technological factors:The use of digital resources, simulations, and interactive tools within a systematic approach helps strengthen analytical thinking (Santosa & Nugroho, 2024).[3]

4. Social factors:A supportive social learning environment and interaction with mentors enhance students' systematic thinking skills.

No	Factors	Content	Impact on Students
1	Didactic Factors	Problem-based learning, interdisciplinary integration, interactive methods (debate, cluster, case-study)	Develop skills in analyzing problems, comparing opposing viewpoints, and synthesizing information
2	Pedagogical Factors	Teacher's methodological skills, reflection process, individualized approach	Supports personal development of students, strengthens independent and critical thinking
3	Psychological Factors	Motivation, creative environment, promotion of critical thinking	Increases student engagement, develops independent decision-making and innovative approaches
4	Technological Factors	Management of information flow, online platforms, digital educational tools	Enables modeling, filtering, and rapid analysis of information
5	Social Factors	Responsibility, teamwork, leadership	Teaches independent decision-making, promotes collaborative thinking

Discussion

The results indicate that teaching through a systematic approach develops not only students' analytical thinking but also their critical and independent thinking. In this process, pedagogical strategies are not the only important factor; student motivation and the social context must also be taken into account. International studies also emphasize that innovative pedagogical methods, including problem-based learning and inquiry-based learning strategies, significantly enhance students' analytical thinking skills (Santosa & Nugroho, 2024)[3].

Furthermore, psychological factors—such as students' emotional stability and motivation—become essential conditions in the analytical thinking process, as they improve the efficiency of cognitive processes (Kaur & Sharma, 2025)[4].

Conclusion

Developing students' analytical thinking skills through a systematic approach is a multifaceted process that requires the integration of pedagogical strategies, psychological conditions, technological opportunities, and a supportive social environment. Problem-based learning, interactive methods, and the use of digital tools significantly enhance students' analytical thinking skills. Future research should focus on comparing these factors across different disciplines and studying their long-term impact.

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