

DEVELOPING CRITICAL THINKING IN STUDENTS THROUGH INNOVATIVE  
TECHNOLOGIES

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**Abstract:** This article analyzes the importance of developing students' critical thinking skills through innovative technologies. Critical thinking is the ability not only to accept information but to analyze, evaluate, and make well-founded decisions. Innovative technologies, including interactive learning platforms, simulations, artificial intelligence, cloud technologies, and virtual reality tools, contribute to improving the efficiency of the educational process. The article also highlights the teacher's role in the correct and effective use of these technologies.

**Keywords:** Innovative technologies, critical thinking, interactive platforms, simulations, artificial intelligence, cloud technologies, virtual reality, educational process, independent thinking, analytical approach.

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### Introduction

Modern education systems do not only focus on imparting knowledge but also aim to enhance students' independent thinking, problem-solving abilities, and social engagement. In this process, critical thinking plays an important role. Critical thinking is understood as the ability to analyze, evaluate, and make decisions based on information. Researchers Paul and Elder (2006) define critical thinking in their book *Critical Thinking: Tools for Taking Charge of Your Learning and Your Life* as “a process of logical analysis, evaluation, and decision-making.” According to them, critical thinking is not only an intellectual process but also encompasses moral and social aspects.

Critical thinking enables students to express their ideas clearly and logically. This prepares them to make independent decisions in the future. The process of critical thinking requires logical analysis and a critical approach, which promotes intellectual development.

### Innovative Technologies and Their Impact on the Educational Process

The term “innovation” translates from English as “introducing something new.” According to the *Uzbek National Encyclopedia*, innovation is defined as “new technologies, techniques, and management methods based on scientific and technical achievements and best practices.” American researcher E. Rogers defines innovation as “the process of adopting and implementing new ideas.” Innovative technologies bring new approaches to the educational process. Internet resources, multimedia tools, software, and artificial intelligence technologies provide students with modern methods of learning. All of these help develop independent learning, logical thinking, and analytical skills.

Innovative technologies create new opportunities in the educational process. For example, internet resources, multimedia tools, software, and other technological solutions offer students new methods of learning. Through these technologies, students can learn independently, assess their knowledge, and develop critical thinking skills. Introducing innovative technologies into the educational process is of great importance for the development of students' critical thinking. For example, interactive learning platforms (such as Khan Academy, Coursera, and Edmodo) offer opportunities for independent learning, while simulations and educational games (like Minecraft Education Edition)

develop problem-solving and decision-making skills. At the same time, artificial intelligence and machine learning technologies help create personalized learning programs, and cloud technologies provide opportunities for students to exchange ideas and work collaboratively in groups.

These examples show that innovations and innovative technologies are closely interconnected. Innovations contribute to improving the effectiveness of the educational process, while innovative technologies provide the most convenient tools for this process. Therefore, the effective use of innovative technologies in modern education not only enhances students' knowledge but also plays a significant role in developing their critical thinking, logical analysis, and decision-making skills.

### **Innovative Technologies that Contribute to the Development of Critical Thinking**

Below is a description of how innovative technologies play a role in developing students' critical thinking skills:

No	Innovative Technology	Description	Impact on Critical Thinking
1	Interactive learning platforms	Platforms like Khan Academy, Coursera, Edmodo offer opportunities for independent learning.	Develops students' ability to analyze knowledge, draw independent conclusions, and enhance logical thinking.
2	Simulations and educational games	Games like Minecraft Education Edition teach students to solve problems.	Develops decision-making skills, testing alternative solutions, and evaluating outcomes.
3	Artificial Intelligence and Machine Learning	Provides personalized learning programs for students.	Teaches students to monitor their learning process, analyze, and develop strategic approaches.
4	Cloud technologies	Platforms like Google Docs, Microsoft Teams enable group work and collaboration.	Promotes collaborative problem-solving, considering different perspectives, and developing an analytical approach.
5	Virtual and Augmented Reality (VR/AR)	Students can conduct scientific experiments and analyses in a virtual environment.	Helps to create new concepts, simulate real-life problems, and develop analytical thinking.

These technologies play a crucial role in shaping students' critical thinking abilities.

### **The Role of the Teacher in Applying Innovative Technologies**

The teacher's role is crucial in the effective integration of innovative technologies. Teachers must not only be familiar with these technologies but also understand how to use them effectively. The following factors influence this:

- Teachers should provide assignments that encourage independent thinking.
- They must use innovative technologies to develop students' logical and analytical thinking skills.
- Teachers should create an environment that promotes critical thinking by organizing group discussions and interactive activities.

### **Conclusion**

Innovative technologies are an essential tool for developing students' critical thinking skills. Interactive platforms, simulations, artificial intelligence, cloud technologies, and virtual reality offer students the opportunity to not only learn information but also analyze, evaluate, and make decisions. Additionally, the teacher's effective use of these technologies enhances the quality of the educational process.

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