



## The formation of creative competence in education: innovative technologies

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### ABSTRACT

This article highlights the importance and role of innovative technologies in the formation of creative competence in the educational process. The concept of creative competence, methods for its development, and the effectiveness of modern technologies are analyzed. Moreover, experiences and results of applying innovative approaches are discussed to develop creativity at various educational stages. Consequently, the research emphasizes the impact of STEAM (Science, Technology, Engineering, Arts, Mathematics) methodologies in fostering creativity.

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## Ta'limda kreativ kompetensiyani shakllantirish: innovatsion texnologiyalar

### ANNOTATSIYA

#### **Kalit so'zlar:**

kreativ kompetensiya,  
innovatsion texnologiyalar,  
ta'lim jarayoni,  
ijodkorlik,  
zamonaviy usullar,  
pedagogik texnologiyalar.

Ushbu maqolada ta'lim jarayonida kreativ kompetensiyani shakllantirishda innovatsion texnologiyalarning ahamiyati va o'рни yoritilgan. Kreativ kompetensiya tushunchasi, uni rivojlantirish usullari va zamonaviy texnologiyalarning samaradorligi tahlil qilingan. Shuningdek, ijodkorlikni rivojlantirishda innovatsion yondashuvlarni qo'llash bo'yicha tajribalar va natijalar muhokama qilingan. Natijada, tadqiqot STEAM (Fan, Texnologiya, Muhandislik, San'at, Matematika) metodologiyalarining kreativlikni shakllantirishdagi ta'sirini ta'kidlaydi.

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# Формирование креативной компетентности в образовании: инновационные технологии

## АННОТАЦИЯ

### Ключевые слова:

креативная компетенция, инновационные технологии, образовательный процесс, креативность, современные методы, педагогические технологии.

В данной статье освещается значение и роль инновационных технологий в формировании креативной компетенции в образовательном процессе. Анализируются концепция креативной компетенции, методы её развития и эффективность современных технологий. Также обсуждаются опыт и результаты применения инновационных подходов для развития креативности на различных образовательных этапах. В результате исследование подчеркивает влияние методологий STEAM (Наука, Технологии, Инжиниринг, Искусство, Математика) на формирование креативности.

The rapidly changing era demands novel approaches in the field of education. In higher education, fostering students' creativity and shaping their creative competence must be achieved using modern technologies. STEAM (Science, Technology, Engineering, Arts, Mathematics) methodology plays a crucial role in this process. This article explores the concept of creative competence and the role of innovative technologies in shaping it.

The following methods were employed in this study:

**Literature Analysis:** A detailed review of international and local studies on developing creative competence was conducted. This analysis identified best practices and highlighted gaps in existing methodologies.

**Practical Observations:** Observations of STEAM methodologies in real educational settings provided insight into their practical implementation. For example, educators' approaches to integrating arts with technology were closely examined.

**Experiments:** Multiple experiments were conducted in classroom environments. In one experiment, students collaborated on interdisciplinary projects that required them to use mathematical models in art creation. Another experiment focused on gamified learning, where language learners used role-playing games to improve their skills.

**Surveys and Feedback:** Surveys were distributed to students and educators to gather qualitative data on the perceived effectiveness of the applied methodologies. Feedback from these surveys informed iterative improvements to teaching strategies. These combined methods ensured a comprehensive approach to understanding and enhancing creative competence development.

**Understanding Creative Competence.** Creative competence is a vital skill in education, encompassing creativity, critical thinking, and problem-solving abilities. These skills are essential for the 21st century, encouraging students to be open to new ideas, adaptable, and innovative thinkers.

Creative competence includes three main elements:

**Creative Thinking:** The ability to generate new and original ideas. For instance, students brainstorming solutions to global environmental issues develop this skill. **Critical Thinking:** The skill to analyze and deeply understand issues. This is demonstrated when students evaluate the validity of online sources for research. **Innovative Activity:** Applying created ideas practically. For example, students designing prototypes in engineering classes exemplify innovative activity.

**The Role of STEAM Methodology.** The STEAM education model integrates science, technology, engineering, arts, and mathematics, differing from traditional education. By blending these disciplines, students develop a more holistic and interdisciplinary perspective. For example, a STEAM activity may involve: Art and Science: Creating a painting inspired by biological phenomena.

Technology and Engineering: Building robotic models to perform simple tasks.

Mathematics in Design: Using geometric principles to create architectural models. Moreover, the interdisciplinary approach of STEAM enhances students' ability to solve complex problems by encouraging them to see connections between fields that are traditionally taught in isolation.

**Practical Results and Case Studies.** Case Study 1: "Language Learning through Augmented Reality" Students used virtual and augmented reality technologies to complete language exercises. The main stages included:

Creating a Learning Environment: Interactive lessons were organized through augmented reality, such as virtual tours of historical sites related to the studied language. Creative Tasks: Students wrote stories in the target language and presented them in a virtual setting. They also created dialogues for virtual characters. Analysis and Discussion: The grammar and stylistic aspects of the stories were analyzed collaboratively.

#### **Results of the Project:**

Vocabulary improvement by 20%. Enhanced ability to understand complex texts. Significant development in teamwork and creative approaches. Case Study 2: "Reinforcing Language through Mobile Applications" Students practiced language skills using specially designed mobile applications. These apps included gamification elements, motivating students to complete tasks, earn points, and advance levels. Additional features like voice recognition helped improve pronunciation.

#### **Results of the Project:**

Increased motivation through competition. Improved effectiveness of interactive language learning by 30%. Enhanced pronunciation through phonetic exercises. Case Study 3: "Collaborative Design Thinking in STEAM"

In this project, students worked in teams to design eco-friendly products. They combined engineering principles with artistic design, using mathematical calculations to optimize efficiency.

#### **Results of the Project:**

Heightened awareness of environmental issues. Improved problem-solving and critical thinking skills. Stronger collaborative and leadership capabilities. The Benefits of Innovative Technologies

Using virtual reality, gamification, and mobile technologies in language learning engages students and actively involves them in the learning process. For example, creating a virtual environment where students live in their desired country fosters greater motivation to use the language. Similarly, gamified language exercises maintain interest and provide immediate feedback.

#### **Recommendations and Prospects**

To enhance creative competence in language learning, the following are recommended: Incorporating augmented reality and gamification elements into curricula to maintain engagement. Developing specialized software tailored for language learning that integrates creative projects. Organizing training sessions for educators on using innovative technologies effectively.

The formation of creative competence in the educational process is a vital component of preparing individuals for the needs of modern society. As a result, the effective integration of innovative technologies in language learning has proven its efficacy in this study. Therefore, broader adoption of creative approaches and technological tools in teaching will significantly enhance student performance.

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