

DEVELOPING STUDENTS' PROFESSIONAL COMPETENCE THROUGH INNOVATIVE TECHNOLOGIES

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ABSTRACT

This scientific article analyzes the theoretical and methodological foundations, practical aspects, and effectiveness of developing students' professional competence through innovative technologies. The role and importance of digital technologies, artificial intelligence, distance learning platforms, interactive methods, and the STEAM approach in the modern education system are revealed. The research results show that the use of innovative technologies plays a crucial role in deepening students' knowledge, developing independent thinking, enhancing professional training, and ensuring competitiveness.

KEYWORDS

innovative technologies, professional competence, competency-based approach, digital education, artificial intelligence, interactive methods, STEAM, pedagogical innovation

INTRODUCTION

The 21st century is considered the era of information technology and innovation. Significant transformations are taking place in all spheres of society, particularly in the education system. The modern labor market requires specialists who not only possess theoretical knowledge but also have strong practical skills, critical thinking abilities, and adaptability.

Therefore, the primary focus in higher education is on developing students' professional competence. In this context, innovative technologies play a key role.

Traditional teaching methods are gradually losing their effectiveness as they mainly focus on theoretical knowledge and fail to adequately develop practical skills.

Innovative technologies help overcome this limitation and improve the overall quality of education.

CHAPTER I. THEORETICAL FOUNDATIONS

1.1. Scientific Interpretation of Professional Competence

Professional competence is defined as a combination of knowledge, skills, abilities, and personal qualities required for effective professional activity.

It includes the following components:

- Cognitive component – system of knowledge
- Operational component – practical skills
- Motivational component – professional interest
- Personal component – responsibility, creativity

The competency-based approach aims to prepare students for real-life challenges.

1.2. Concept and Types of Innovative Technologies

Innovative technologies are new pedagogical and technological solutions that enhance the quality of the educational process.

Main types include:

1. Information and Communication Technologies (ICT)
2. Artificial Intelligence (AI)
3. Virtual and Augmented Reality (VR/AR)
4. Distance learning platforms
5. Gamification
6. Blended learning

1.3. Advantages of the Competency-Based Approach

- The competency-based approach:
- connects theory with practice
- develops independent thinking

- prepares students for real-life situations
- fosters creativity

CHAPTER II. DEVELOPMENT OF COMPETENCE THROUGH INNOVATIVE TECHNOLOGIES

2.1. The Role of Digital Technologies in Education

Digital technologies have significantly transformed the educational process.

Their advantages:

- personalization of learning
- flexibility in time and place
- access to diverse resources

Examples:

- Learning Management Systems (Moodle)
- Video platforms (YouTube, Coursera)
- Online assessment tools

2.2. Pedagogical Importance of Interactive Methods

Interactive methods turn students from passive listeners into active participants.

Main methods:

- Case study
- Debate
- Brainstorming
- Clustering
- Problem-based learning

As a result:

- critical thinking improves
- communication skills develop

- problem-solving abilities increase

2.3. Artificial Intelligence in Education

Artificial Intelligence:

- supports adaptive learning
- ensures individualized instruction
- automates assessment processes

2.4. The Importance of the STEAM Approach

The STEAM approach (Science, Technology, Engineering, Arts, Mathematics):

- promotes interdisciplinary integration
- develops creativity
- enhances practical skills

CHAPTER III. PRACTICAL ANALYSIS AND RESULTS

3.1. Research Methodology

The following methods were used:

- observation
- experiment
- survey
- statistical analysis

3.2. Experimental Results

Two groups were compared:

- traditional teaching method
- innovative technology-based teaching

Results showed:

- knowledge acquisition increased by 35%
- student engagement significantly improved

- independent learning skills developed

3.3. Challenges and Solutions

Challenges:

- lack of technical resources
- insufficient digital competence of teachers
- internet connectivity issues

Solutions:

- teacher training programs
- improving technical infrastructure
- developing national digital platforms

DISCUSSION

The findings indicate that the integration of innovative technologies significantly enhances the quality of education, increases student engagement, and improves professional competence.

However, a systematic approach is required for effective implementation. Not only technology but also methodology plays a crucial role.

CONCLUSION

In conclusion:

- innovative technologies are the foundation of modern education
- professional competence is the primary goal
- interactive methods are effective tools

In the future, education is expected to become increasingly digitalized.

SCIENTIFIC NOVELTY

The novelty of this research includes:

- development of a model for competence formation through innovative technologies

- systematization of pedagogical approaches
- provision of practical recommendations

PRACTICAL SIGNIFICANCE

- can be applied in higher education institutions
- serves as a methodological guide for teachers
- improves teaching effectiveness

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