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TECHNOLOGIES FOR DEVELOPING DIGITAL COMPETENCES IN STUDENTS

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Abstract

This article examines the issue of developing digital competencies of higher education students. The article analyzes the structure of digital competencies based on the European DigComp 2.2 framework model. According to the results of the study, blended learning and project-based learning methods demonstrate the highest efficiency in the formation of digital competencies. The article provides practical recommendations.

Keywords: digital competence, digital literacy, DigComp 2.2 framework model, higher education, blended learning, educational technologies.

Introduction

Login

In the modern information society, digital technologies are covering all spheres of human life. Production, trade, education, healthcare, and public administration are all undergoing a process of digital transformation. In this situation, the main task of higher education institutions is not only to provide theoretical knowledge, but also to prepare future specialists for effective functioning in the digital environment.

of the President of the Republic of Uzbekistan No. PF-6079 dated October 5, 2020 "On approval of the Digital Uzbekistan - 2030" strategy and measures for its effective implementation", the penetration of modern information and

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communication technologies into the educational and production sectors in our country requires improving the personnel training system based on modern requirements [1]. In order to eliminate problems in the development of students' digital competencies, it is important to create conditions for determining the personal educational trajectory of students, individualize education, introduce modern pedagogical and information and communication technology tools into the educational process, and organize the educational process using advanced foreign experience.

The development of students' digital competencies requires the rapid search and processing of new information related to their specialty, the development of professional competencies such as information and communication, design, construction, management, and research, self-activation, self-management and assessment, independent learning through innovative educational technologies aimed at lifelong learning, mastering foreign languages, critical analysis of activities and teamwork, decision-making, and the development of digital competencies based on the constant search for new ideas and technologies.

Analysis of Literature on the Topic.

The development of students' digital competencies is being widely studied both domestically and internationally. In our country, the issues of digital competence and informatization of education are mainly addressed within the framework of pedagogical technologies and methodologies by the following scientists: R.H.Djuraev - developed the theoretical foundations of informatization of education and improvement of pedagogical skills in a digital environment, U.Sh.Begimkulov - conducted fundamental research on the scientific and theoretical foundations of informatization of the higher education system, introduction of information technologies into pedagogical processes,

[1] *Decree of the President of the Republic of Uzbekistan No. PF-6079 dated October 5, 2020 "On approval of the Digital Uzbekistan - 2030 Strategy and measures for its effective implementation."*

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FMZakirova - worked on the methodology for creating electronic educational resources and improving the digital literacy of future specialists, M.Aripov - studied the methodology of teaching information technologies and the use of software tools in education.

Also from the CIS countries, E. K. Henner - developed multi-level models of the formation of digital literacy, AA Kuznetsov - a leading scientist in the role of informatics and information technologies in education and the assessment of students' technological competencies, SDK Karakozov - studied the issues of transforming the educational process in a digital educational environment.

Among foreign scientists, Y. Punie and R. Vuorikari are the main authors of the European Union's DigComp (Digital Competence Framework for Citizens) model. Their work has established international standards for measuring digital competence, A. Ferrari has systematized the components of digital competence (information, communication, security, etc.), L. Janssen has conducted research on the application of students' digital skills in real practice and their preparation for professional activity, O. Fraile has conducted research on the development of competence in education through digital portfolios and self-assessment mechanisms.

Research Methodology

Digital competence is not just the ability to use a computer, but also the ability to search for, sort, analyze information and create new digital content. According to the European Union's DigComp 2.2 framework, digital competences are divided into five main areas:

1. Information and data literacy - searching, evaluating, and managing information.
2. Communication and collaboration - connecting in a digital environment.
3. Digital content creation - creating text, multimedia, and applications.
4. Security - digital security, personal data protection.

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5. Problem solving is finding creative solutions using digital tools [3].

These competencies help students be competitive not only in their studies, but also in the labor market.

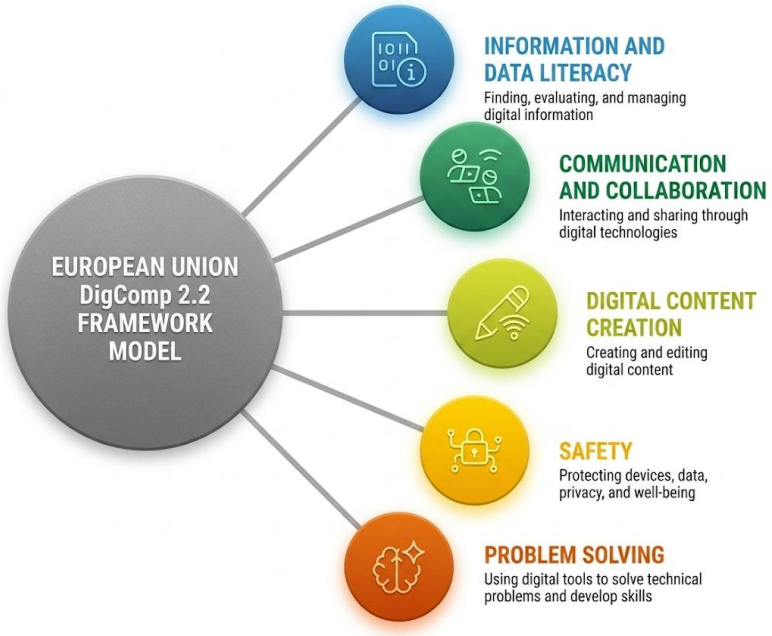

Figure 1. European Union DigComp 2.2 framework model

Digital transformation processes in the higher education system of our country are being carried out on the basis of the “Digital Uzbekistan - 2030” strategy [1]. In particular, the Hemis platform, electronic journals, and online courses have been introduced. However, many studies have shown that technologies for developing students' digital competencies are still not being used sufficiently. It is also necessary to develop the digital literacy of teachers themselves.

For example, special programs are being developed for future engineers and teachers, but an integrated approach is lacking for general students. Tasks for improving professional competencies in a digital learning environment have been

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identified, among which the use of interactive platforms and project-based learning occupy a special place.

Studied, we can give a specific definition of digital competence. Digital competence is an integral quality of a person, formed throughout life, based on knowledge, skills and qualifications acquired in the educational process, manifested in activities using digital technologies, including an installation system that allows for the safe and effective selection and use of digital technologies, the ability to organize and control the process and result of activity, use [2].

Analysis and Results

The development of digital literacy should not be limited to the quantity of knowledge, skills, and competencies acquired in a formal education system. These knowledge, skills, and competencies should be linked to the broader range of knowledge acquired by learners outside the education system, including in the process of learning [4].

In global educational practice, various methodological approaches are used to develop digital competencies. Each method has its own advantages and disadvantages, and when integrating them into the educational process, it is necessary to take into account the purpose, audience, and available resources.

Method	Advantages	Disadvantages
Blended learning	Adaptability, individualization	Requires technical infrastructure
Project-based learning	Practical skills, critical thinking	It takes a lot of time.
Gamification	Motivation, interactivity	Does not provide deep knowledge
Peer learning	Collaboration, communication skills	Control is difficult
Flipped classroom	Independence, active participation	Home study required
MOOC platforms	Convenience, wide coverage	Low graduation rate

Table 1. Comparison of methods for developing digital competencies

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Blended learning combines traditional face -to- face and online learning. This model allows students to learn at their own pace and time, while allowing teachers to provide differentiated instruction. Platforms such as Khan Academy, Coursera, and edX serve as effective resource bases for blended learning.

of the use of blended learning in higher education institutions in our country have shown that this approach increases digital competence indicators by an average of 23% compared to traditional education. An important factor in this is the level of freedom given to students and the skill of the teacher.

guides students to solve real-life problems using digital tools. This method develops not only technical competencies, but also critical thinking, teamwork and communication skills. For example, within the framework of the Smart City project, students simultaneously acquire data analysis, presentation and online collaboration skills as they identify urban problems, collect data, analyze and propose solutions.

Today, the introduction of artificial intelligence platforms such as ChatGPT, Claude, Gemini into the educational process is creating new opportunities and challenges. On the one hand, these tools provide personalized learning, feedback, and help students understand complex topics. On the other hand, there are risks such as academic integrity, reduced critical thinking, and data errors.

In the process of developing students' digital competencies, they need to solve a number of tasks. These analyses describe the manifestation of digital competencies [6]. Conducting a survey to develop students' digital competencies, drawing conclusions about the current state, and determining the prospects for research in the field of digital competencies.

Conclusion

Taken According to the research results, the following conclusions can be drawn: are an integral part of modern professional activity, and their targeted and systematic development in higher education is becoming an urgent necessity.

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- The DigComp 2.2 framework model serves as an effective theoretical basis for measuring and developing digital competencies.
- Blended learning and project-based learning methods are showing the highest efficiency.
- It is necessary to integrate artificial intelligence tools into education with a responsible and critical approach.

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