# Methodological Support For The Development Of Digital Competence In Students

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**Annotation:** This article presents information on the methodological support of the development of digital competence in students, the classification of the terms ''digital product'', "digitized product'', the component of the development of digital competence, digital communication tools, digital research methods, goals for the development of digital competence, stages of formation of Information Literacy, factors for the development of digital competencies.

**Key words:** digital competence, digital competence, digitization, digital information, digital product, digital identity, Digital Science, Information Literacy, electronic resource, digital education.

**Introduction**

As globalization and rapid technological progress have changed the way people live together and the world of Labor, educational systems have become disconnected from the reality and needs of society and the world economy. However, the Covid-19 virus pandemic, which caused the suspension of classes globally, served as a catalyst for the digital transformation of Education. In addition to the use of technology, digital transformation in education includes the introduction of digital skills needed by students and teachers, as well as innovative pedagogical methods and practices. This work is a combination of organizational, technological and human factors that, as a result of the analysis of the documents of international reference organizations, should direct the strategy of digital transformation to Education 4.0. [11]

**Literature review.** Today, it is predicted that a'' digitized " society, a period in which globalization processes are developing, will create a new technological revolution of future economic growth, and the whole world will once again move towards a new economic stage and relationship. Accordingly, the purpose of the educational system is to create "human capital", and the force that ensures this transition is "human capital".[13]" human capital " is the creator power of economic growth, the main weapon of intelligence and management-oriented labor, the main factor in innovative economics. "Human Capital" assumes constant growth, Skill Development, full mastery of various professions, skillfulness, competence, ownership of multi-profile qualifications, polyglot division from the modern individual. [10]

In pedagogical practice, various courses, activities are organized by information resource centers in higher educational institutions for the development of student competence. The importance of information competence as it is concerned with the activities of students throughout their careers is increasing as the flow of information increases.

**Discussion.** "Digital production'' or "digitization'' is the most basic component of digital education and refers to the development, digitization of a "digital product" for science, subject, educational process or its component, spiritual and educational activities and processes related to

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organizational activities based on digital technology and tools. Pedagogy the acquisition of knowledge, skills and qualifications of students of a higher educational institution in the development or "digitization" of a "digital product" remains a tarbi of professional and pedagogical activity.

**"Digital product" or "digitized product" may refer to:**

**1. Digital mediaproduct.** Development of music, graphics, animation, video and other digital media resources using digital mediatechnologies within the framework of professional-pedagogical activity. The digital mediamahsulot development of students assumes creativity along with knowledge, competence in the harmony of practice and theory. Also, students ' knowledge of the preparation of didactic materials in one subject is activated. Digital mediamahsulot includes the processes of imaging, processing, assembly, and presentation as ready-made mediamahsulot.
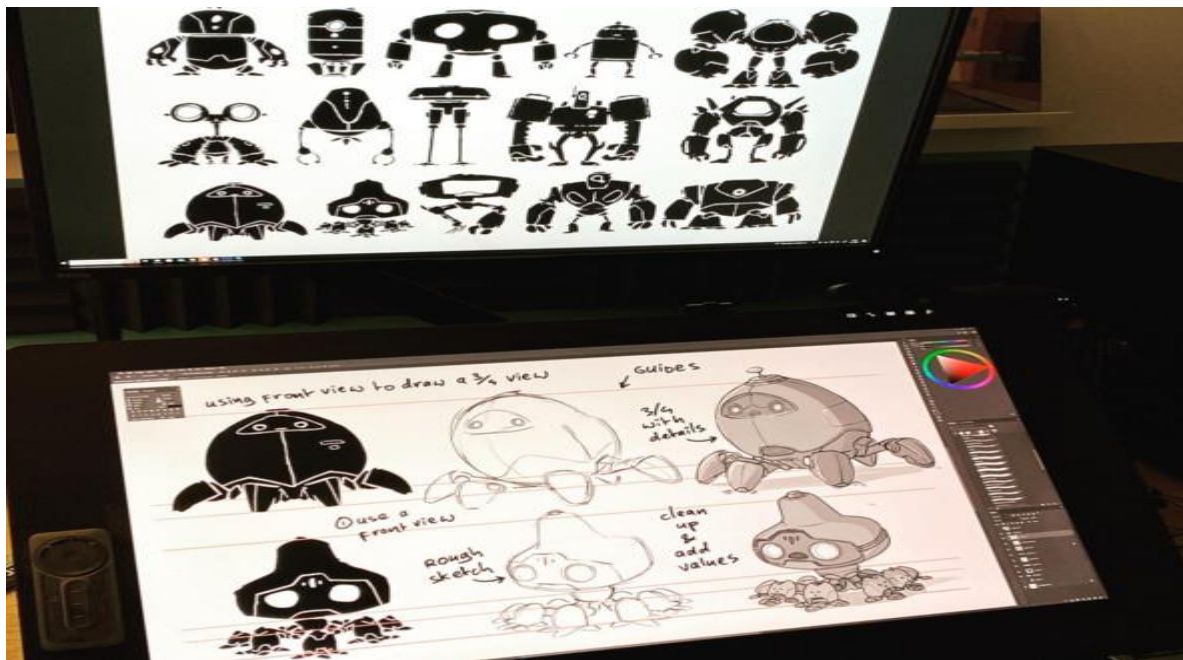
**2. Digital content products (Digitale Content-production).** For the same target group, the focus is on content in the production of mediamahsulot. In everyday practice, digital content products are prepared and made available to the general public by bloggers, social media influencers using digital platforms and tools. Digital content products can be quoted as text, image, poscast, video content.

**3. Digital music products.** Pedagogical higher educational institutions are becoming one of the main requirements for the specialty, namely, the preparation of digital music products for future teachers in the direction of music and art, students in the direction of primary education. Programs now widely used in pedagogical practice include digital audio station (Audio-Workstations (DAWs) as well as music composed and processed through digital instruments.

**Digital music product.**

**4. Digital art products.** Pedagogical higher educational institutions the skill of working with programs developing digital art products for students of the direction of fine arts, engineering graphics.

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Communication and collaborationism are cited as another component of the development of students ' digital competencies. Communication and collaboration are considered the main factor in the development of students in personal, professional and social terms in connection with one.

Communication is the process of exchanging information, ideas, thoughts and feelings between people or groups of people. Communication is considered a fundamental human need, through communication, human beings are integrated with each other, knowledge, exchange of experiences, strengthening of ties and solving problems occur. [12] communication is divided into verbal and nonverbal types and includes oral, written, gestural mimicry. In a digitized society, communication is radically changing. Nowadays, digital communication tools are gaining wide popularity.

**Digital communication tools include:** E-Mail, Instant Messaging, social media, video calls, online conferences. Digital means of communication provide the opportunity to communicate, exchange information with a person who is standing anywhere in the world. Effective communication ensures that relationships, in communities,in organizations, are successful. As the main condition for communication, it is important to avoid misunderstandings, develop cooperation and target communication.

Collaborationism is understood to be the collaboration of students towards a common goal. The main essence of this lies in the fact that students achieve an individually unattainable goal through the mutual exchange of existing cognitive resources; knowledge, skills, experiences. Collaboration can be individuals, communities, organizations, and even interstate. Digital technologies are expanding the possibilities of collaboration. Working in a digital community, Cloud-services, collaborative document processing provide an opportunity for people to collaborate wherever they are. Collaborationism is of great importance in solving complex problems in a globalizing world through an inter-industry integrative approach. [9]

Successful collaboration is based on open communication, mutual trust, openness to various points of view, consensus-based decision-making. In this, when working in collaboration, it is important to share roles, feel responsible and deal with conflicts constructively.

In the development of digital competencies of students of higher educational institutions of pedagogy, dialogue and collaboration are complementary. Effective communication is the basis for successful collaboration, while good collaboration increases communication quality and productivity.

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Analysis and feedback (reflexion) is important in the development of digital competencies in students. The rapid improvement of digital technologies will make it necessary for members of a digital society to analyze and evaluate their own digital competencies. [1]

Analysis of students ' own digital competencies – makes it possible to analyze the strong and weak aspects of themselves in this regard. Based on the analysis, it will be possible to improve the weak side of digital competence, enrich it with new knowledge. In pedagogical higher educational institutions, demand-based courses, projects, measures are carried out by analyzing the state of development of digital competencies of students. The rapid development of digital technologies makes it technically impossible to regularly integrate them into state educational standards. A solution to this is the establishment of systematic activities in higher education institutions that regularly increase students ' knowledge of digital technologies.

Also, the establishment of digital laboratories (digital lab)aimed at introducing digital technologies into the educational process in pedagogical higher education institutions is important in developing digital, information, mediacompetences of students and preparing them for professional and pedagogical activity. Students ' knowledge of Digital Technologies develops in the field of practical application as well as transformation into unfamiliar situations. In pedagogical higher educational institutions, these aspects should be taken into account.

**Digital project management** is integrated into the content of pedagogical education as the latest innovative method. It describes the digitization of the planning, implementation and formation of reports of projects in the educational process. In the organization of educational and pedagogical projects in pedagogical higher educational institutions, the mejment of digital projects can be effectively used. Digital project management is organizationally accessible when students work in a small group for a specific period (usually 1 semester) of collaborative work on a project, discuss results, present final results within a set period. Pedagogical observations indicate that nowadays students mainly use telegram software, which is effective all the time to effectively organize the work of the project. [8]

Another important aspect of the development of digital competence in students of a pedagogical higher educational institution is the development of digital identity in them. Digital identity represents the online presence of an individual or legal entity on the internet and its associated information, opinions, relationships. Digital identity is the digital equivalent of an individual's physical identity. [6]

Digital identity has the following structural structure:

1. **Information on the person.** Name, residence address, date of birth, gender, currently residence address or place of residence.
2. **Information on the profile of the person.** Profile name, paswords, member platforms. This information is determined by the technical capabilities of the ijtimoy network or software tool. The profile can also contain information such as pictures, interests, its own personal and academic history.
3. **Online business.** A person's activities on the internet, the information he is looking for, the internet pages he is visiting, the sharing of information and the written reporting of his comments are also part of his digital identity.
4. **Digital certificate.** Digital identity is protected by means of digital certificates. It acts as a valid identity document. An example is the now common SSL certificate.

There are both positive and negative consequences of digital identity. Below are the descriptions of these two aspects:

➢ as a positive aspect of digital identity, the individual is able to present himself to the general public through positive imej, find partners, take advantage of educational opportunities,

effectively use digital services;

➢ insufficient protection or false digital identity as a negative aspect of digital identity can lead to identity theft, cyberbullying, defamation, fraud. In addition, the storage of information on the mountain of professors, students in higher education institutions requires a guarantee of high security.

**"Digital Science Research"** is a multidisciplinary concept with different content in different contexts. In a general sense, it is said about the use of digital technologies and tools in scientific research, scientific analysis and scientific communication. In particular:

**Digital research methods.** Digital science involves the use of computational methods and tools for data collection, data analysis, and data visualization. [7] this may involve the use of large data analysis, machine learning, simulation, and other computational approaches.

**Open Science and open data.** Digital science supports the idea of openness and free access to scientific data and information. Open science practices include publishing research findings, disclosing research data, and collaborating on open online platforms.

**The crisis of reproducibility and reproducibility.** Digital Science also raises questions about the reproducibility of research results. There is an increasing awareness of the need to make the study transparent and reproducible.

**Scientific communication.** Digital technologies have radically changed the form and types of communication of researchers. In particular, in practice it is possible to cite online magazines, preprint servers, scientific and social networks, digital platforms. These serve to ensure the effectiveness of scientific communication. [5]

Creativity can be cited as a component of digital competence. "Creative, independent-minded students seek to consistently improve their pedagogical activities in order to organize a collaborative teaching environment. They describe their views on educational innovations, innovative technologies, their development processes. Creative students are distinguished by their stable attitude towards the acquisition of collaborative pedagogical technologies and novations". [15]

As a future teacher, a student who is able to carry out professional and pedagogical activities in a digital educational environment, the following should be embodied in his person:

➢ In the field of democratization and humanization of education in the Republic of Uzbekistan and the use of digital educational tools, they are well aware of the reforms, approaches and their main parameters;

➢ based on the main goal of education, the student can choose private goals of the educational process and educational assignments aimed at collaborative performance;

➢ through the use of digital educational tools, the educational process is designed by students with an approach from the point of view of comprehensive development and promotion of communication;

➢ how to effectively organize and manage the educational process of education based on the use of digital educational tools;

➢ modern students on the organization of the educational process should be armed with pedagogical and psychological knowledge, digital educational technologies;

➢ we believe that in a teaching environment based on the use of digital educational tools, it is important to take into account the internal and external motives, positive and negative factors in them that affect the student's personality.

**The development of digital competencies of students is a necessity for the implementation of the following goals:**

**1. Background.** The development of digital competencies in students is important in the

Information Society for quality and reliable educational resources, coursework, projects and scientific research with the efficient and targeted use of resources, and nowadays it is becoming difficult to imagine education without e-learning resources.

**2. Professional development.** One of the important tasks of pedagogical higher education institutions is to ensure that students acquire Ó'rganish strategies for continuous and continuous professional development, based on the principle of "study throughout life". At this point, the development of Information Literacy from the point of view of professional development in them, the development of skills for them to work with the most reliable resources are important for students to be aware of the latest changes in their field during their professional activities and make reasonable decisions.

The development of students ' digital competencies coincides with the development of their media literacy, and both competencies complement each other. Media literacy describes the degree to which students react to activities such as Data Analysis, Critical Evaluation, source verification that are conveyed through media tools.

Within the framework of professional-pedagogical, life-practical activities of students, the ability to make decisions is formed and developed on the basis of their information literacy. Depending on how much reliable and justified information students use, they develop knowledge and experience in decision-making based on their surroundings and taking into account all aspects.

Media competence describes the effective use of the didactic capabilities of students 'media educational technologies, independent implementation in the educational process, constant monitoring of the traditions of development and implementation of modern innovative media technologies, as well as their introduction into their activities.

*Information literacy as a complete activity through the performance of a number of activities includes:*

**Search for information.** Students ' search for efficient and targeted data from various databases, electronic resources, the internet.

**Information assessment.** Assessment of reliability and relevance of information and critical assessment of its sources.

**Information processing.** Understanding, analyzing, synthesizing, prioritizing, and using searchable data in accordance with its training purpose.

**Ethics and law.** Knowledge of the ethical and legal aspects of the use of information also determines the competence of information. And legally, to take into account the regulatory requirements of copyright in the use of information.

Digital competence includes information literacy. Information literacy refers to an individual's ability to find, evaluate, understand, and make the most of information. In a society that is branching and digitizing year after year, information literacy is becoming decisive. The amount of data available in the world is growing exponentially. This creates the most fundamental problem, the differentiation of reliable and unreliable sources of information.

At present, digitization is affecting all areas of Education, opening up new opportunities for the organization of educational space, new forms and tools of education, the transformation of the control function as a way of feedback in students ' learning, and the processes of assessment.

The concept of an electronic resource can be defined as any information that requires the reproduction of information using electronic devices. Any information that is not intended for education cannot be used in the educational process. Information in educational purposes is characterized by, as a rule, the consistent and systematic presentation of material, focusing on a particular audience, focusing on obtaining a predetermined result, and a number of other distinguishing features. [14]

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In the development of digital competencies of students of pedagogical higher educational institutions, the relevance of the educational environment to the study of professional and pedagogical activities, the existing, technical and organizational conditions of integrative programs ensuring the professional dependence of digital technologies, the responsible attitude of students towards digital technologies are decisive.

A.Ferrari [3] cites the following as factors in the development of students ' digital competencies in their research:

- private motivation;
- educational program of higher education institution;
- technical-organizational environment;
- opportunities to access digital resources.

The first composition of the digital competence of pedagogical higher educational institutions should be emphasized digital education. Digital education involves the use of digital technologies and tools in order to improve and improve the effectiveness and effectiveness of the educational process. Digital Education describes the organization of the teaching process of a teacher from various methods, tools, platforms, providing an interactive, efficient and accessible to all learners.

**The following are important aspects and features of digital education:**

**E-learning platforms (E-Learning).** The number of e-learning platforms is increasing from year to year. These platforms provide a variety of course and study materials online. This allows students to use the course or study materials in question wherever or at the time they wish. [2]

**Digital classroom.** A digital classroom can be cited as another component of digital education. With the help of videoconferencing tools, teachers and students are organized in a digital classroom in different places in real-time conditions. In order for this to be as effective as a traditional training session, it will be necessary to pay close attention to the technical and organizational aspects.

**Online courses and tutoring.** Online courses and tutoring can be cited as another component of digital education. A science or science network, online courses or tutoring activities organized within the framework of a particular topic, create a flexible learning environment. Online tutoring is an additional form of study that is formed based on the needs of students.

**Materials aimed at providing interactivity.** Materials aimed at ensuring interactivity are also a component of digital education. Such materials should provide interactivity in students, support and promote motivation for learning in them. [4] online crasswords, simulations or interactive presentations can be cited as an example.

**Learning apps (Learn-App) and online games.** Learning apps (Learn-App) and online games are also components of digital education. Game elements are widely used so that learning apps make students find learning attractive and interesting. The goal from online games is also to learn through play, and in online games, students will have the opportunity to compete, collect points, and win.

**Online assessment and feedback (Online-Assessment, Feedback).** Online assessment and feedback (Online-Assessment, Feedback) is an important component of digital education. Digital teaching techniques provide the opportunity for the teacher, students to present assignments and tasks online and to evaluate their results at a short opportunity. Feedback is also fast and efficient.

**Distance learning and mixed learning (Blended Learning).** Distance education and mixed Learning (Blended Learning) are another component of digital education. Digital education allows learners to receive distance learning. Through mixed education, however, traditional and digital educational methods are combined and both approaches can be used.

**Conclusion.** The high flexibility of digital education in general, the fact that it has different

teaching methods, supports the education of learners to receive an independent education, and the opportunities for the use of educational resources indicate that it meets modern requirements. It should be noted that from a didactic point of view, digital education is planned taking into account the target group of Education recipients, the content of Science, the possibilities of applying the appropriate technologies and the pedagogical training of the teacher. In turn, there are problematic situations in maintaining a balance between digital education and traditional education, which is due to the communication, collaborative work of the learners.

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