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METHODOLOGY FOR DEVELOPING METHODOLOGICAL COMPETENCE OF FUTURE TECHNOLOGICAL EDUCATION TEACHERS THROUGH DIGITAL TECHNOLOGIES

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Abstract: This article provides a deep scientific and theoretical analysis of the methodology for using digital technologies in the process of forming methodological competence of future teachers of technological education and developing it at the level of modern requirements. This study highlights the role of digital educational tools in the educational process, their didactic capabilities in developing methodological competence, as well as their effective integration with modern pedagogical technologies. In particular, special attention is paid to the opportunities of teachers using digital technologies to improve teaching strategies, lesson planning, assessment, create an interactive learning environment, and develop students' independent learning skills.
and analyses conducted within the framework of the study , it was found that the systematic and comprehensive use of digital tools significantly increases the level of methodological preparation of future teachers [1; 54-b]. The article also provides methodological recommendations on the selection of digital educational tools, their adaptation to the content of education and their effective use aimed at pedagogical goals. The results of this study serve as a scientific and practical basis for improving the quality of personnel training in the field of technological education.

Keywords: methodological competence, digital technologies, technological education, pedagogical methodology, digital pedagogy

Introduction

The 21st century is one of the most urgent and priority issues of our time. The rapid development of information and communication technologies and their widespread penetration into all areas, including the education system, imposes new requirements on the professional activities of teachers [3; 124-b] . In particular, the formation of methodological competence for future teachers working in the field of technological education is not limited to the acquisition of theoretical knowledge, but also includes the development of skills for the effective integration of modern digital technologies into the educational process and their skillful use for pedagogical purposes.
digital pedagogy, artificial intelligence, virtual and augmented reality (VR and AR), interactive online simulators, and learning management systems (LMS) are creating significant opportunities for improving the quality and efficiency of the educational process. [6; 75-b] . With the help of these technologies, teachers will have the opportunity not only to make the lesson more interactive and interesting, but also to take into account the individual learning needs of students, effectively assess their knowledge, and also adapt the educational process. Therefore, the formation of methodological competence in the use of digital technologies is becoming one of the priority areas in the training of educational institutions and pedagogical personnel.

This issue serves to create a solid scientific basis for improving the professional skills of teachers, improving the quality of the educational process, and creating an innovative educational environment. Therefore, the systematic study of ways to develop methodological competence of future technological education teachers through the use of digital pedagogical tools and effective methodological approaches is one of the current areas of scientific research.

skills and personal pedagogical approaches that allow a teacher to successfully manage, design, organize and evaluate the educational process . This concept is a key component of pedagogical activity and represents the skills and abilities of a teacher necessary for effective teaching [5; 51-b]. Shulman's model of pedagogical knowledge presents methodological competence as a set of "pedagogical knowledge", in which the teacher must be able to ensure consistency between the content of education, the characteristics of students and the strategies of the educational process.

Methodological competence for teachers of technological education has its own specific aspects. Their professional activity is not limited to planning and conducting traditional lessons, but requires the organization of practical training in a more interactive, practical and effective way through the use of digital tools [4; 52-b]. In this regard, methodological competence includes the following skills:

- Selection, adaptation and integration of digital educational resources into the educational process;
- Managing online and virtual learning environments, including monitoring and motivating student engagement;
- Establishing mechanisms for evaluating the learning process and providing feedback using digital tools;
- Introducing advanced technologies such as artificial intelligence, simulators, and virtual reality into the pedagogical process.

Thus, methodological competence is not only a set of knowledge and skills of a teacher, but also the ability to use modern pedagogical technologies, constantly improve their activities and constantly organize the educational process in innovative ways. This, in turn, allows you to increase the effectiveness of students' learning, develop their critical thinking and creative skills.

serve as an important tool for making training sessions more effective, interactive and personalized [2; 117-b] . The rapid development and widespread use of information and communication technologies are fundamentally changing the traditional forms of the education system and introducing new innovative approaches to the pedagogical process. Digital tools allow for a more active, free and effective level of communication and cooperation between students and teachers, enriching the educational process with interactivity and creativity.

do provide broad opportunities for didactically supporting and developing the pedagogical process at various stages of education [8; 45-b] . They are not only a means of conveying knowledge, but also play an important role in deepening the knowledge, skills and competencies of students, encouraging independent and creative activity. In this sense, the educational environment created with the help of digital technologies allows adapting to the individual learning styles of students, serves to adapt the content and form of education, taking into account their abilities and needs.

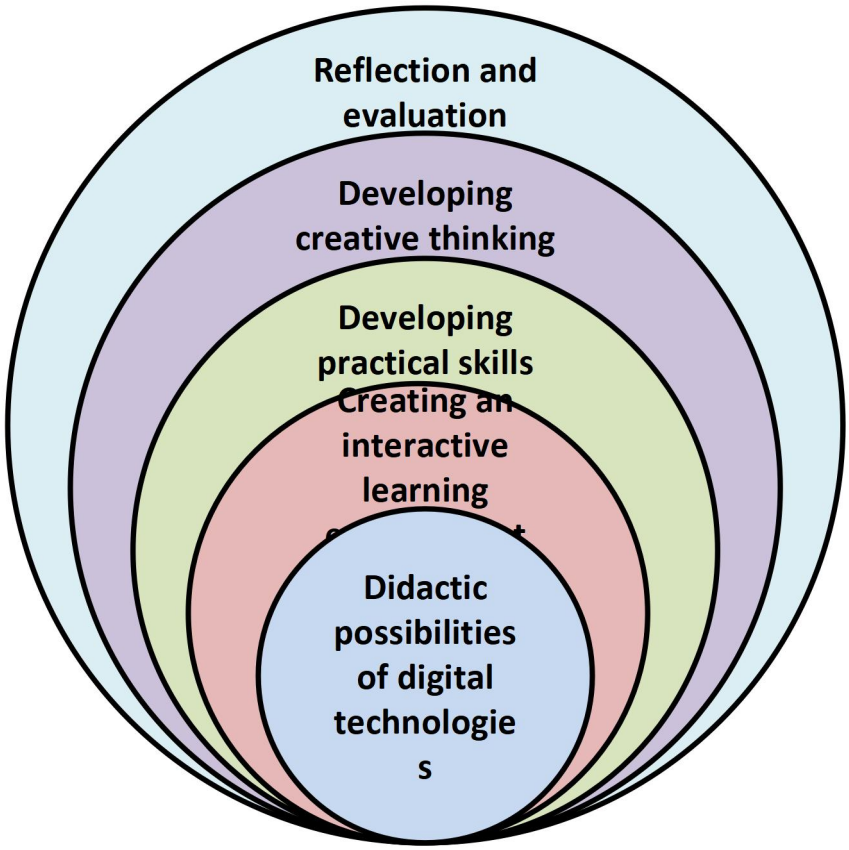


Figure 1. Didactic possibilities of digital technologies

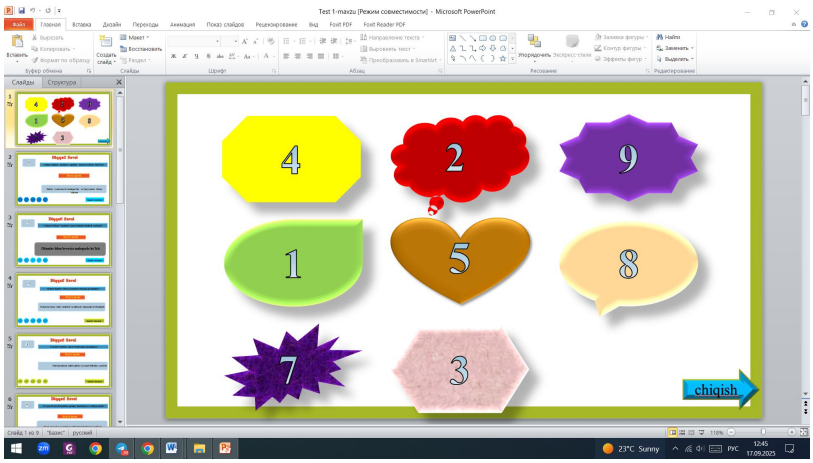
1. Creating an interactive learning environment. LMS (Learning Management System) platforms — systems such as Moodle, Google Classroom, Blackboard — provide great opportunities for organizing the educational process. They help teachers organize course materials in one place, distribute and collect assignments, monitor student activity, and provide effective feedback. Studies show that interactive learning environments created through LMSs increase student interest in learning, encourage independent work, and make the learning process transparent (Ally, 2008; Siemens, 2013). At the same time, LMS systems allow educators to individualize the learning process and accurately assess student achievements and difficulties.

2. Development of practical skills . The formation of practical skills plays an important role in technological education . In this regard, 3D modeling programs (AutoCAD, SolidWorks) allow students to simulate complex technological processes in conditions close to real-world conditions. In this way, students consolidate theoretical knowledge with practice and acquire the skills to create, modify and analyze technological objects. Scientific research shows that simulation tools in technological education increase the level of understanding of students and develop the ability to solve practical problems.

3. Fostering creative thinking. Advanced technologies such as multimedia projects, digital labs, Arduino, and the Internet of Things (IoT) provide ample opportunities for students to develop creative and critical thinking. With these tools, students learn to create their own projects, find new solutions to problems, program various devices, and apply them to real life. In this way, digital technologies in education serve not only as a means of imparting knowledge, but also as a means of developing higher-level thinking.

4. Reflection and assessment. Digital technologies simplify and make the processes of teacher assessment and student self-assessment simpler and more effective. Electronic portfolios, online testing systems, analytical platforms (for example, Kahoot!, Socrative, Google Forms) allow for

continuous monitoring of the quality of the educational process, real-time assessment of student learning achievements. At the same time, these tools, while clearly indicating the level of knowledge of students, serve to form and improve their learning strategies.
Here is an example of a lesson development using the Blended Learning method on the topic of "Career Guidance and Its Historical Development":
Lesson topic: Vocational guidance and its historical development
Lesson objective:
to students the concept of career guidance, its importance and historical development on a deep theoretical basis.
-Engaging students in independent research using digital resources.
traditional and digital methods.
Teaching method: Blended learning
Required equipment and materials:
Computer, projector, PowerPoint presentation, platform for online tests (Kahoot!, Google Forms), Video tutorials and links to articles.
Lesson plan: 1. Introduction (15 minutes)
-The topic will be announced.
-Discussion about the concept of career guidance and its role in the education system.
-A brief presentation on the historical context and relevance of the topic.
-Students are asked about their prior knowledge and opinions on the topic (test questions , discussion).
Students are given test questions to reinforce the topic covered. Students select a certain number from the screen. In this case, the test questions are hidden, and when the number is clicked, the test question appears on the screen. Reinforcing the topic covered through this method helps to develop the methodological competence , interest in science, and creative thinking of future teachers of technological education. increases further .



2. Theoretical part (20 minutes)

In the theoretical part, students are given a broad overview of the stages of historical development of vocational guidance:

The system of labor and vocational training is one of the great works that directly implements the labor and vocational education of young people, their education, vocational information, career choice, and career guidance, and has a very meaningful past development. The formation of our people as a nation, people, and ethnic group cannot be imagined without

labor, professions, and crafts. Since the emergence of mankind, they have been engaged in labor. They have performed tasks that made household goods. Initially, labor was done only for subsistence, but later. it was carried out for a greater purpose, to gain wealth, and even, in the 10th century, it developed to the level of production sectors that could provide large military armies . millions of people with goods and equipment.

In the 12th - 15th centuries, the development of the science and scale of crafts in Maveronnahr and Khorasan reached its highest level. Each people, inherited from their ancestors and passed down from generation to generation, was distinguished by its historical and cultural unity, preserving its own unique characteristics. Uzbeks are one of them. Archaeological research conducted in the territory of our republic shows that crafts developed in these places two thousand years ago. During this period, a class society emerged, and crafts emerged as an independent branch on the basis of a large-scale division of labor.

In the 9th-12th centuries, crafts were widely developed, and economic and cultural ties of our people with foreign countries flourished. According to some sources, a place where 32 different types of crafts were practiced was called a city. During the first census in 1897, the majority of the population in large cities were considered craftsmen. For example, 64 percent of the population of Namangan, 52 percent of Kokand, 54 percent of Chust, and 50 percent of Margilan were considered independent craftsmen.

The most common types of crafts in ancient times were blacksmithing, jewelry, coppersmithing and tinsmithing. One of the ancient professions that is still widespread today is the craft of making wooden products. With the advent of sewing machines at the beginning of the 20th century, a new craft profession - machine-building - emerged. One of the most common household professions of Uzbeks is hat-making.

In addition, artisans made various leather goods, and shoemakers walked around towns and villages selling their products to the public. Bakers, confectioners, and butchers were also professions, and their shops were everywhere. The custom of holding large weddings and feasts gave rise to the profession of a special chef.

, have emphasized and glorified the sacredness and necessity of honest labor and the acquisition of a profession in their works, poems and ghazals, and literary heritage.

Our great ancestor A. Navoiy, in his ghazals, calls on young people to acquire knowledge and skills.

He pursued his scientific profession until his death,
He learned the trade when he had the opportunity.

Our great ancestor Abunasr Al-Farabi, who lived and worked in the 10th century, also calls on people to work honestly and acquire a profession. According to Al-Farabi, man is not a "weak servant" or "a being incapable of anything," but rather the highest perfection, " a being endowed with the power of reason and understanding, capable of creating everything necessary for himself." Al-Farabi emphasized the need to develop moral qualities through work and professional skills: "If the virtue of profession and profession were innate, kings would not have acquired it by their own will and action, but kingship would have remained a natural obligation that was only naturally available to them and demanded by nature. Since the virtue of profession and profession was not innate, it would require the great strength and power of three people to create morality, customs, profession, customs and will in peoples and cities. This is achieved in two ways: through education and upbringing. The word education means the combination of theoretical virtue and practical professional qualities between peoples and cities."

, information is provided about vocational training (manual labor and crafts) in primitive societies, the Industrial Revolution and changes in educational processes, and the role of

digital technologies in education in the modern era, and visual materials are shown through PowerPoint presentations.

Explanation with historical examples and infographics to develop the methodological competence of future technology education teachers through digital technologies.

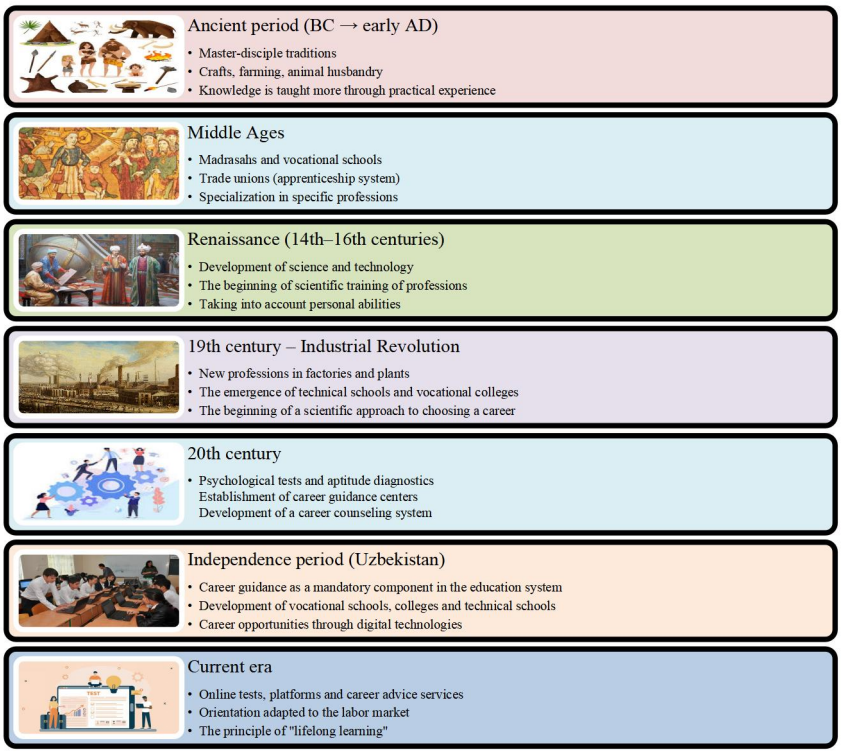


Figure 3. Infographic of career guidance and its historical development

3. Independent work (10 minutes, in class). Students will be provided with links to online resources and video tutorials (e.g. Youtube videos, electronic articles). Students will be assigned to write a short written paper on the topic " Integrating Career Guidance with Modern Technologies".

4. Practical exercise (20 minutes, in class). Students are divided into groups and discuss the topic studied. Each group makes its own presentation. The teacher also actively participates, evaluates and provides necessary explanations.

5. Control and conclusion (15 minutes, in class). Students are divided into 2 groups and given a crossword puzzle on paper related to the topic. The results of the crossword puzzle are analyzed together and recommendations for further study are made.

crossword 1

1			h				
2							sh
3.	H						
4.						j	
5.	I						
6.			a				
7.	Y						

1. What did humans do to satisfy their needs in the beginning? (Labor)
2. The main goal of the career guidance system is to guide young people in choosing a career based on what? (Interest)
3. Abu Nasr Al-Farabi and Ibn Sina considered this concept important for the stability of society: ___ labor. (Halal)
4. What is the name of the secondary specialized educational institution in Uzbekistan that has expanded its vocational training? (After independence). (College)
was the basis for recruiting young people into the civil service in China ? (Exam)
6. Germany has a vocational training system that combines practice and theory. (Dual)
7. In Sweden, each student is given individual ……help in choosing a career. (Approach)

crossword 2

1					r						
2.	Q										
3			and								
4.	T										
5.					m						
6.	I										n
7.			p							l	
8.	A										

1. What were places where more than 32 types of crafts existed in the Middle Ages called? (City)

2. Pythagoras, Plato, and Socrates established the principle of education based on the individual's ___. (Ability)

3. In which two regions did handicrafts develop in the history of Uzbekistan? (___ and Khorasan) (Movarounnahr)

4. One of the oldest types of crafts, a profession that works with metal. (Blacksmithing)

5. One of the modern directions of vocational education after independence: information and ___ technologies. (Digital)

6. What type of thinking is career guidance based on in Japan? (Innovative)

and career guidance in the UK ? (Multi-sectoral)

8. In Uzbekistan, professions were often taught through which system in the Middle Ages? (Traditional)

The integration of digital technologies into the educational process is of great importance in improving the methodological competence of future technological education students. In classes conducted on the basis of digital technologies, students acquire a higher level of methodological competence compared to traditional classes [7; 52-b]. This leads to an improvement in the quality of education, an increase in the efficiency of the educational process, and the enrichment

of students' knowledge with practical skills. In particular, with the help of digital technologies, students' skills in performing creative tasks are significantly developed. This serves to strengthen their ability to think independently, create new ideas, and solve problems in innovative ways.
Methods developed using digital tools strengthen the skills of future teachers of technological education in designing and analyzing education. This serves as an important factor in preparing them for the effective organization of the educational process based on modern pedagogical approaches. In general, digital technologies allow organizing the educational process in a more interactive, creative and effective way, which in turn serves to radically improve the quality of education. At the same time, continuous professional development of teachers and mastering innovative methods play a decisive role in the development of the education system. As a result, training based on digital technologies is an important tool in preparing future specialists as modern and competitive personnel.

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