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Methodology Of Application Of Digital Technologies In Forming Professional Competence Of Future Teachers

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ABSTRACT

This article analyzes professional competence, qualification requirements for modern specialists, methods and effective use of digital tools aimed at forming their professional competence during the training of informatics and information technology teachers.

Keywords: Competence, professional competence, modern specialist, Insert method, traditional lesson, professional training, professional activity.

INTRODUCTION

Modern digital information technologies are putting on the agenda issues such as the comprehensive improvement of education, its organization on the basis of contemporary requirements, and the achievement of high efficiency. Therefore, the quality and effectiveness of education are determined solely by the level of training of specialists.

Based on the above, it is advisable to approach the training of personnel in accordance with the requirements of modern technologies. This raises questions about the concept of a competence-based approach, its study, its place and significance. It is expected that applying methods of using digital technologies to the formation of the professional competence of future pedagogical teachers in various fields of education will yield high efficiency.

METHODOLOGY

The problems of training teachers and specialists in higher education institutions have been covered in a number of works by scholars of our republic and foreign specialists. Issues related to the formation of the personality of the future teacher and specialist for the profession in the higher education process have been studied in the research of M.A. Abdullajonova, O.A. Abdulina, A.A. Akbarov, X.A. Abduraxmanova, S.V. Safonova, N.A. Muslimov. The professional mastery of the teacher has been examined in the works of such pedagogical scholars as H. Abdukarimov, N. Azizxo‘jaeva, A. Aliev, Yu.A. Axrorov, A.A. Verbitskiy, R.H. Jo‘raev, B.R. Jo‘raeva, J.G‘. Yo‘ldoshev, S.M. Markova, G.M. Maxmutova, A.A. Hamidov, F.R. Yuzlikaev.

Competence is the ability to perform a particular task effectively, the ability to carry it out in accordance with the standards applied in a given profession.

The following types of competence are distinguished:

- behavioral (individual)
- technical (professional)
- basic (threshold)
- general
- special
- differential

- performance.

1. Behavioral competence – is understood as the type of competence that characterizes a person's individuality in the process of fulfilling his or her professional duties.

2. Technical competence – is understood as the type of competence directly related to labor results and the standards for fulfilling professional obligations.

3. Basic competence – is understood as the foundation, the core competences required for an employee to perform the assigned professional tasks.

4. General competence – is the type of competence that characterizes all individuals engaged in a particular profession.

5. Special competence – is understood as the type of competence necessary for the effective performance of specific professional duties.

6. Differential competence – is the type of competence that helps to distinguish performers who are more or less effective.

7. Performance competence – is the type of competence that determines the quality of the result achieved.

The use of teaching methods and tools aimed at developing competence in the process of teaching Informatics and Information Technologies.

In designing a model of the teacher's personality on the basis of the requirements imposed on the pedagogical profession, the following aspects defined in the State Educational Standards of higher education were taken as the basis [10]:

spheres of a teacher's activity: education and management;

types of a teacher's activity: instructional, methodological, educational (upbringing), work with personnel, research, entrepreneurial, organizational, expert activity and others;

institutions in which pedagogical activity is carried out: preschool education, general secondary education, secondary specialized and vocational education, higher education, post-graduate education, out-of-school education, and educational administration bodies.

The content of the requirements for the teacher's personality has been substantiated, and each of them has been described.

One of the priority directions in the development of the modern education system is the introduction of information technologies into the educational process. The use of digital technologies in educational activities is becoming an established practice. The provision of schools with equipment is increasing; almost every school now has interactive whiteboards, tablets, modern computers, virtual reality glasses and other devices. At present, an educational environment has been created in which it is possible to use digital technologies, and many teachers are successfully making use of them.

"Today the development of education is progressing and changing very rapidly. Almost every minute various changes and innovations are taking place in all corners of our planet. Each of our days passes under a powerful flow of information. The intensity and volume of modern information flows affect every moment and place of life — in the learning process, at home, at work and even during leisure time." [1].

Digital technologies in the present era are not only a tool, but also a new environment that enables people to use advanced technologies in the modern world. The digital educational environment offers fundamentally new opportunities. This includes the transition from classroom-based learning to studying at any place and at any time, the design of an individual learning trajectory that meets the learner's educational needs, and the transformation of students from active consumers of electronic resources into creators of new resources, among other things.

There are various types of modern courses, through which—such as via webinars and seminars—teachers become acquainted with new digital technologies used in education. To encourage the study of this topic, various competitions are held in which teachers share their methods and techniques for using modern technologies. The more technologies a teacher masters, the more interesting and diverse they can make the lesson.

Digital technologies open up an unlimited range of new technologies and opportunities for the teacher. Using these technologies makes it possible to demonstrate possible

representations and visualizations more successfully. There is a large number of new modern technologies. Modern digital technologies include: technologies for joint experimental research between teacher and student, virtual reality, panoramic imaging technologies, 3D modeling, educational robotics, MSI technologies (using small information technology devices), and multimedia instruction. Content, interactive electronic content and other multimedia technologies are being harmoniously integrated into the educational process.

The modern informatization of society and, as its specific manifestation, the informatization of education lead to the emergence of new technologies for organizing the educational process. One of the technologies that reflect the consequences of informatization is open education, and one of the effective ways to expand and globalize the open educational space is the development of distance learning technologies (DLT) as the most important component of the evolving open education system.

“Taking into account that this type of education is widely used worldwide and has been yielding good results, distance education has its own technological types and participants involved in organizing this form of instruction. The main technologies of distance education include the following interactive technologies:

- internet distance learning portal;
- video and audio conferences;
- learning via e-mail;
- independent learning via the internet;
- remote control systems;
- the availability of online simulators and educational software, and others” [2].

Working independently with large volumes of information and acquiring new knowledge on numerous websites available on the internet serves as the most important educational and methodological foundation for learners.

“Education via e-mail is manifested in the use of the most widespread internet services, organizing learning through correspondence between the student and the teacher. With its help, various types of tests, tasks, and independent works can be uploaded as documents to distance learning portals and modules.

Non-interactive technologies also play an important role in independent learning. These include:

- video, audio, and printed materials;
- television and radio programs;
- software stored on disks.” [3].

Video and audio conferences are a way of organizing education in which two geographically distant audiences are connected to each other in a telecommunication mode via the Internet and other telecommunication channels. Video and audio conferences require a large amount of special equipment, a high-speed communication channel, and the involvement of specialists who provide support for organizing the teaching process.

Learning to use new modern technologies is a vital skill and an important form of literacy. At present, the process of introducing modern information technologies into education is ongoing. This process requires a lot of time and knowledge, but in the end, “technology is a path to new knowledge and new experience.” Over time, the use of technology becomes familiar to teachers and easier to implement.

Of course, it is advisable that the possibilities of teaching and learning through multimedia tools—during lessons or at home, in the classroom or from any location—can be realized via computers, especially in our regions.

Multimedia is a field of computer technology that, by using various computer tools (text, graphics, audio), makes it possible to create information material in a more direct, visual, and memorable way. Conducting lessons with the use of multimedia resources is one of the newest and most powerful incentives for students to acquire knowledge. With modern methods, students’ mental processes are improved during classes. In the learning process, students’ attention, memory, and thinking become much more active and faster, and their interest increases.

“Another important feature of computer-based teaching methodology is that it manifests itself at all stages of the teaching process, including explaining new educational material, revising, generalizing, and assessing the knowledge, skills, and competencies that students have

acquired in the subject. In such processes the computer performs various functions for the student, in particular those of a pedagogical tool, a means of instruction, an object of learning, and a partner in communication. At the same time, its advantages in organizing the assessment of knowledge and monitoring their compliance with relevant standards and requirements have led to its widespread introduction into the teaching system." [4].

It should be emphasized that modern information and communication technologies do not replace traditional education; on the contrary, they complement it, creating and providing new opportunities for interaction between teacher and student. By ensuring freedom of creativity in the choice of tools for presenting educational material, they ultimately contribute to an increase in the quality of education shaped in this way, and to the improvement of the quality of students' knowledge, skills, and competencies.

Information and communication technologies not only improve the quality of the educational environment and the learning process itself, but also impose certain requirements on the teacher's qualifications, demanding that they constantly develop and enhance their competence in information technologies.

Information and communication technologies create great opportunities for improving the quality of education in schools and universities, but they need to be integrated with other measures aimed at modernizing the higher education system.

Software for editing video images and audio information is a great aid for teachers and users. With such programs, we can create educational videos on various topics of the curriculum.

A screencast is a digital video recording of the information displayed on a computer screen, in other words, a "video screen image," often accompanied by voice commentary. This technology makes it possible to record work step by step and to explain what is happening on the screen in your own voice.

OBS Studio is a free program; using pre-prepared images, videos, and presentations, I can record video lessons to explain material to students, show how to work with a particular educational platform, where to search for information, and many other things.

Another interesting technology is video scribing (this is a hand-drawn dynamic video that consists of a combination of drawing and an engaging story, supplemented with animation and special effects).

The popularity of this phenomenon is due to several reasons. First, video scribes attract attention and are able to hold it for a long time. Their style differs greatly from conventional videos. Another reason for their popularity is that recording the video draws the viewer into what is happening and creates an effect of presence. It seems as if the storyline is developing in real time before the viewer's eyes.

Chroma key technology is a method for precisely cutting out unnecessary parts of content from several frames by painting a given, uniform key color and then combining two or more images or frames into a single composition.

In conclusion, we should say that e-learning should not completely replace traditional education, but rather complement it, because nothing and no one can replace live communication between teacher and students. The teacher, receiving feedback from the student, can reorganize the learning process and present the material in a clearer and more accessible way. E-learning on its own cannot adapt the learner in the same way as a living mind—in this case, the teacher—can guide them.

DISCUSSIONS

The essence of the educational process is made up of three interrelated main factors: teaching, upbringing (education in the broader sense), and development. A large number of sources on this topic have been analyzed. The views and research of scholars have been studied. The methods and tools they recommend have been examined. On this basis, proceeding from the topic and purpose of the lesson, ways of organizing the session so that it is effective and optimal for learners' mastery have been substantiated.

RESULTS

The information provided must not only correspond to the content of the lesson topic, but also consist of tasks and assignments that ensure the formation of the necessary skills and competencies in students. It should determine the volume of information that students need to master, be presented within a certain logical system, correspond to the principles of continuity and succession, and ultimately

meet the principle of systematicity. It is also advisable that the information be appropriate to the students' level of preparation.

The tools of modern information technologies include computers, scanners, video cameras, LCD projectors, interactive electronic whiteboards, fax modems, telephones, e-mail, multimedia tools, the Internet and Intranet networks, mobile communication systems, database management systems, and artificial intelligence systems.

Teaching methods are multifaceted. Therefore, they have many classifications. In these classifications, methods are grouped according to one or several criteria.

1. Traditional classification. As a general criterion, the source of knowledge is taken.

- Practical: experiment, doing exercises, independent work, laboratory work.
- Visual: illustration, observation.
- Verbal: explanation, narration, conversation, lecture.
- Working with a book: reading, skimming, taking quotations, retelling, outlining, making a conspectus.
- Video method: viewing, doing exercises.

2. At present, three large groups of teaching methods are distinguished:

- methods of organizing and implementing educational-cognitive activity;
- methods of monitoring and self-monitoring of educational-cognitive activity;
- methods of stimulating and motivating educational-cognitive activity.

It is well known that the main task of the subject "Informatics and Information Technologies" is to introduce students to certain general concepts of modern information technologies, to reveal the practical application of information technologies and the role of computers in modern life. However, taking into account didactic principles, it is necessary not only to provide students with a strictly scientific presentation of facts, but also to apply various interesting teaching methods.

Today, one of the main objectives is to educate students to think independently. Solving this task largely depends on the use of interactive teaching methods.

The word interactive comes from the English word interact. Inter means "mutual," and act means "to do, to work." These methods require collaborative work and are aimed at involving everyone in the classroom. The essence of interactive teaching is to organize the educational process in such a way that all learners are engaged in the cognitive activity and have the opportunity to think freely, analyze, and reason logically.

For organizers of instruction using interactive methods, the following aspects are important in addition to purely educational goals:

- understanding other students' abilities during group communication;
- developing the need to interact with others and rely on their support;
- fostering a sense of competition and constructive rivalry among students.

Therefore, two main functions must be carried out for effective activity in groups using interactive methods:

- the pragmatic aspect of teaching — the requirement to solve the given learning task;
- the educational aspect — forming the ability to help group members during collaborative work.

CONCLUSION

In conclusion, it should be emphasized that presenting every subject and topic through digital technologies should first and foremost aim to provide students with high-level knowledge and to develop strong professional competence in them. This will help them become capable and competitive specialists in the future. Such an approach serves as a key factor in advancing high technologies in society. Therefore, training highly qualified pedagogical personnel with modern digital technologies ensures that capable and knowledgeable young people will continue to emerge from educational institutions in the years to come.

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