

# TECHNOLOGY OF DEVELOPMENT OF PROFESSIONAL QUALITIES OF STUDENTS OF PEDAGOGICAL HIGHER EDUCATION INSTITUTIONS IN A DIGITAL EDUCATIONAL ENVIRONMENT

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**Abstract.** *The purpose and content of the educational and professional activities of future teachers, and the practice-oriented and competence-oriented direction of the training of pedagogical personnel in the regulatory documents are noted in the article. Also, "Competences on readiness for professional activity" was replaced by "able to perform professional activity", the growth of the future teacher's level of preparation for pedagogical activity was studied.*

**Keywords:** *competence, teacher, digital technology, criterion, project, pedagogy, higher education.*

At the same time, there is a need to bring higher education closer to the needs of the local labor market (teacher's professional standard) and qualifications. According to our research, the formation of professional qualities for working in digital technologies within the framework of modern state projects on digitization of education has been added to the main requirements.

The first pedagogical condition was fulfilled taking into account the main tasks:

1. The purpose and content of educational and professional activities within the framework of the digital educational environment were considered through the following criteria:

- determines the motivation-need criterion for the formation of professional qualities of future teachers to work in digital technologies, the level of motivation to be aware of pedagogical activities, the level of understanding the level of knowledge. The social significance of the chosen activity in working in the digital educational environment, the value attitude of students to the future pedagogical activity, the desire to increase the level of formation of professional qualities for working in digital technologies.

- the gnostic criterion for the formation of professional qualities of future teachers determines the student's idea of the future professional activity (professional image).

- the operational criterion for the formation of professional qualities of future teachers determines the ability of students to connect the professional quality for working in digital technologies with the professional characteristics (normative requirements) of the profession they occupy.

- In addition to assessing the professional readiness of future teachers, self-assessment includes forecasting and assessment of their professional quality for working in digital technologies.

2. Formation of professional qualities of future teachers to work in digital technologies through the purpose and content of science programs, including project, distance, electronic, active and problem-based educational technologies.

3. The process of formation and development of professional qualities of future teachers for work in digital technologies (set of social-pedagogical, motivational-emotional, gnostic, cultural-educational, constructive-projective and digital literacy qualities).

The specified tasks of the first pedagogical condition are aimed at successful implementation of the level of formation of professional qualities of future teachers to work in digital educational technologies.

The following methodological requirements are based on the construction of the goals and content of educational and professional activities for the formation of professional qualities of future teachers: Compliance with the requirements of higher education. Content, technologies, forms, means of formation of professional qualities of students of "Technological education" direction.

Forms of independent work of students of higher educational institutions are as follows: general course (scientific-practical conferences, open lectures on practice, roundtable discussions, distance tests), group (work on joint projects, independent supervision) work, group work), individual (course work, semester work, scientific research (abstract, lecture), participation in Olympiads, studying theoretical material, solving problems, exercises, recording and summarizing primary sources, various preparations, types of attestation (test, colloquium, exam, report), graduation qualification doing things.

According to the DTS of higher education, research work is aimed at acquiring basic skills in the field of science and education, setting and solving research problems using scientific research methods.

The development was carried out for an academic semester, as it was envisaged to control the progress of the subject (in the form of assessment and self-assessment) in order to be able to correct actions in time at the practical stage. The methodological basis of education and professional activity was competency-based and professional activity approaches. The second approach was the basis for the construction of the structure of subjects, which allowed future teachers to apply the foundations of theoretical training in practice, to form a list of professional qualities for working in digital technologies, and to independently evaluate their actions. A competent approach was manifested in the ability and willingness to solve professional problems of various complexity.

Pedagogy includes the creation of a comprehensive system of development of ICT competence of future teachers to work in digital technologies through theoretical and practical training in the subjects of "Design and robotics" and "Professional ICT-competency of the teacher" in HEIs.

Training in specialized subjects includes the following stages:

1) Preparation, in which the individual level of formation of professional qualities of future teachers for working in digital technologies was determined through formation criteria (motivational-emotional, gnostic, operational and reflexive).

2) Performing laboratory and practical work, individual assignments, design work using digital technologies within the scope of elective subjects; participation in scientific events, Olympiads, competitions, scientific-practical conferences and other events. Teaching of subjects was carried out through Moodle LMS, HEMIS information-educational environment.

3) Finally, in which students self-assessed the level of formation of their professional qualities to work in digital technologies.

"Professional competence of the teacher" according to the curriculum of technological education. Studied in the 5th semester of the 3rd year. The purpose of the developed course was to organize and develop modern digital technologies, to use its capabilities, resources and technologies to improve the quality of education, to master and develop the methods of effective use of information, and to form readiness and ability. contributes to the formation of professional qualities of future teachers to implement the educational process in the educational process of telecommunication technologies and digital educational environment. Within the framework of the course, students received theoretical training on the trends and problems of the development of a unified digital educational environment of the educational institution, software products designed to solve educational problems, and standard qualification requirements in the field of ICT for subjects of the educational system. The content of the subject is designed for 60 hours (2 credits), and the type of intermediate certification was a test. This science revealed the following possibilities:

- The ability to organize the educational process using ICT tools and ICT technologies effectively (conducting test sessions, organizing classes with schoolchildren within the framework of the robotic educational platform);
- the ability to use the functional capabilities of social networks in the field of education (leading a group on robotics in social networks);
- have ICT competencies in the field of creating and managing websites (creating a teacher's website using ready-made platforms for creating websites such as Jomla, WordPress, Google),
- to have information security skills;
- having tools for online testing, voting and survey development (creating surveys using social networks and cloud technologies);
- knowledge of modern online documentation (Google, Bitrix, Office.live, Document.on-line);
- ability to work with digital educational platforms.

In the field of education, the lecture became the main form of work for the formation of such qualities as organization, efficiency, self-development, and the ability to use the functional capabilities of social networks. The information-educational environment of the educational organization, Shakhrisabz State Pedagogical Institute, gives lectures in remote access based on the educational portal, which allowed students to work with the material at a time convenient for them and without restrictions on access.

In order to develop the skills of students to work with regulatory documents, laboratory work was conducted on the subjects "Teacher's ICT Competence Structure", "Teacher's Professional Standard on ICT" within the subjects "Teacher's ICT Competence".

The purpose of the work is to get acquainted with the legal documents regulating the work of the teacher, including the technologies of the digital educational environment. Laboratory work includes answering questions, making comparative tables, preparing messages, filling in the teacher's model, analyzing educational resources (school websites, DER, etc.).

Forms of independent work within the subject "Teacher's ICT Competence" are determined by remote tests, studying theoretical material, performing exercises, etc. According to the topic "Qualification characteristics of the positions of teachers", students completed the tasks of compiling a list of professional training of a teacher to work in digital technologies in a certain

specialty (mathematics, physics and informatics, technology). In addition, during the training, a roundtable discussion was held to discuss the relevance of the teacher's portfolio and qualification indicators to the positions held (mathematics teacher, physics teacher, technological education teacher and informatics teacher). Students presented their work, shared comparison charts, asked questions, and shared ideas.

To get feedback on the effectiveness of the lessons, we invited students to hold a forum and discuss the problems that arose through communication through social networks.

The subject "Design and robotics" is studied in the 2nd semester of the first academic year. The purpose of the developed course was: familiarization, updating, systematization of knowledge and skills in the field of design, modeling and design using robot kits. During the course, students received theoretical training in educational robotics, worked with various data sources on robotics, performed a number of research, design and cultural works (independent and remote work), including using digital technologies. . The content of the subject is designed for 90 hours (3 credits) and the type of intermediate attestation is a test. "Design and robotics" opened up the following possibilities:

- the ability to work in a team (laboratory work in pairs, developing projects),
- a creative approach to solving professional problems (grouping and assembling robot models);
- supporting students' initiatives in designing and modeling, developing students' creative abilities (designing and conducting research);
- preparation for application of theoretical and practical skills and qualifications (ability to use innovative technologies in education);
- preparation for participation in scientific-practical conferences and webinars on robotic systems and educational robotics (having modern video communication tools (Skype, Zoom)).

At the stage of information exchange, filled interactive tables and the results of assembled models were presented, questions were asked, opinions were exchanged, and the performance levels of classmates were evaluated.

Student evaluation and self-evaluation were carried out at the end of the training and activities in selected subjects. Self-assessment of future teachers' achievements is carried out with the principle of comparability of data and the possibility of appropriate assessment of their performance. Students compared the professional qualities created for working in digital technologies with the results of the initial level of diagnostics.

The effectiveness of the educational technology developed by us is described in detail in the third chapter of the dissertation.

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