

A Model for Improving the Methodology of Developing Future Teachers' Professional Competence through Digital Educational Technologies

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Abstract: This article discusses the content, structure, and practical effectiveness of an improved model for development based on digital educational technologies aimed at increasing the effectiveness of teaching specialty subjects. The model was developed on the basis of systemic and competence-based approaches and relies on the interconnection of the motivational component, the goal-oriented component, and the content-operational components. Within the framework of specialty subjects, the model provides for the formation of students' knowledge, skills, and competencies through modern technologies, the improvement of teaching, and the development of independent learning skills. The results of the experiment showed that, in the groups where the model was introduced, the durability of knowledge, practical skills, and the level of development of professional competencies increased. Statistical analysis confirmed the reliability of the obtained results. The proposed model serves to further improve the quality of teaching specialty subjects and to ensure educational effectiveness more fully.

Keywords: Technological-processual, state educational standards, experiment, logical, heuristic, integrative, critical, innovative.

Introduction

In all developed countries of the world, the issue of using digital technologies is rapidly gaining importance as one of the most urgent tasks in order to provide modern and high-quality education through the broad use of information technologies and to train competitive personnel for different spheres that will contribute to the future progress of the country. In this regard, in the leading higher education institutions of such countries as Great Britain, Germany, China, Japan, Italy, France, and Finland, the problem of improving students' professional competence and educational-cognitive activity on the basis of digital technologies is developing in parallel with the digitalization of science and education.

This is because, today, just as in all other fields, the education system also faces important tasks: to organize the learning process effectively, to create opportunities for students to master digital skills by providing them with digital technologies, to develop analytical and critical thinking, and to equip young people with knowledge and skills that will be needed in the context of large-scale digital transformation in the future.

In many countries, the transition to a digital educational process is being carried out through the application of the most effective and advanced technologies for organizing education with high quality and efficiency. Therefore, at a time when a digital education system is being formed throughout the world, it is important to study

scientifically the effective use of digital technologies as a key means of developing students' professional competence.

At the present stage of social development, there is a great need for higher education institutions to train students as specialists, to form their theoretical and practical knowledge and skills, and to prepare personnel who think independently and are able to solve professional and life-related problems on their own. From this point of view, teaching methods play an important role in developing knowledgeable and independently thinking individuals in higher technical education institutions.

Modern technical higher education institutions must find their clients and cooperate closely with them, which indicates a high demand for graduates. Therefore, the level of personnel and their competitiveness in the labor market are the product of a high-quality educational process. In this respect, monitoring and managing education quality and gradually eliminating shortcomings in it are of particular importance in order to ensure the growth of educational quality.

Testing the experience of foreign countries in the higher education institutions of our republic and, when positive results are obtained, widely introducing and popularizing them in practice will be effective in improving education quality and training highly qualified, competitive personnel.

Multimedia teaching methods have special significance in ensuring the quality and effectiveness of education. The necessity of using multimedia teaching methods in the educational process is based on the principle of visualization.

The demonstration method is convenient for revealing the direction of movement of the phenomenon being studied and is widely used to obtain and provide complete information about the external and internal structure of the object or phenomenon under study. When demonstrating a natural object or phenomenon, attention is mainly paid first to its external appearance, and then the study proceeds to its internal structure or other specific features. In many cases, visualization is carried out on the basis of the object, subject, or project being studied.

Demonstrating objects, processes, or phenomena in their natural state produces a more general didactic effect; however, this type of visualization is not always feasible. In demonstrating natural objects and phenomena, professors and teachers often rely on an artificial environment or use artificially created models of objects.

With the help of the above method, future teachers should guide learners toward independently studying objects, carrying out necessary measurements, establishing connections, understanding the essence of phenomena, and participating actively in the process of cognition.

Like all other fields, modern education requires promptness, effective adaptation to rapid changes within a short period of time, active integration of new knowledge into the basis of existing subjects, and consistent familiarization of learners with that knowledge. In this process, meeting the need for qualified and competitive personnel and joining the states that are members of the Bologna agreement, which is aimed at creating an effective educational area, will create an opportunity to achieve the expected result.

In the educational and upbringing process, when taking students' personal characteristics into account, their significantly different individual indicators play an important role. In pedagogical theory, such indicators are reflected in the "principle of an individual approach," which has been interpreted in different ways at different times. An analysis of scientific and methodological literature shows that, in each

specific case, the content of the concept of “individualization of education” depends on its purpose and means (see Figure 1).

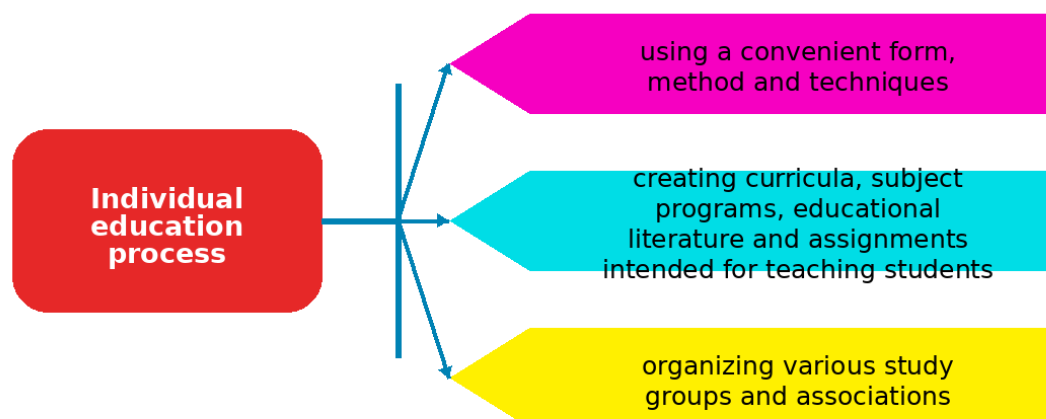


Figure 1. Goals of Individualization in Education

This competence is formed so that knowledge and skills can be used together with tools for collective development, such as version control systems, tools for designing systems according to situations, and the development of developers' personal qualities. It should be noted that a rating system based on a purely systemic approach may hinder the formation of competence by creating unhealthy competition among students.

In higher education institutions, organizing instruction with the help of innovative educational technologies, interactive learning technologies, creative technologies, and modern digital technologies is of great importance in developing students' technical creativity abilities (see Figure 2).

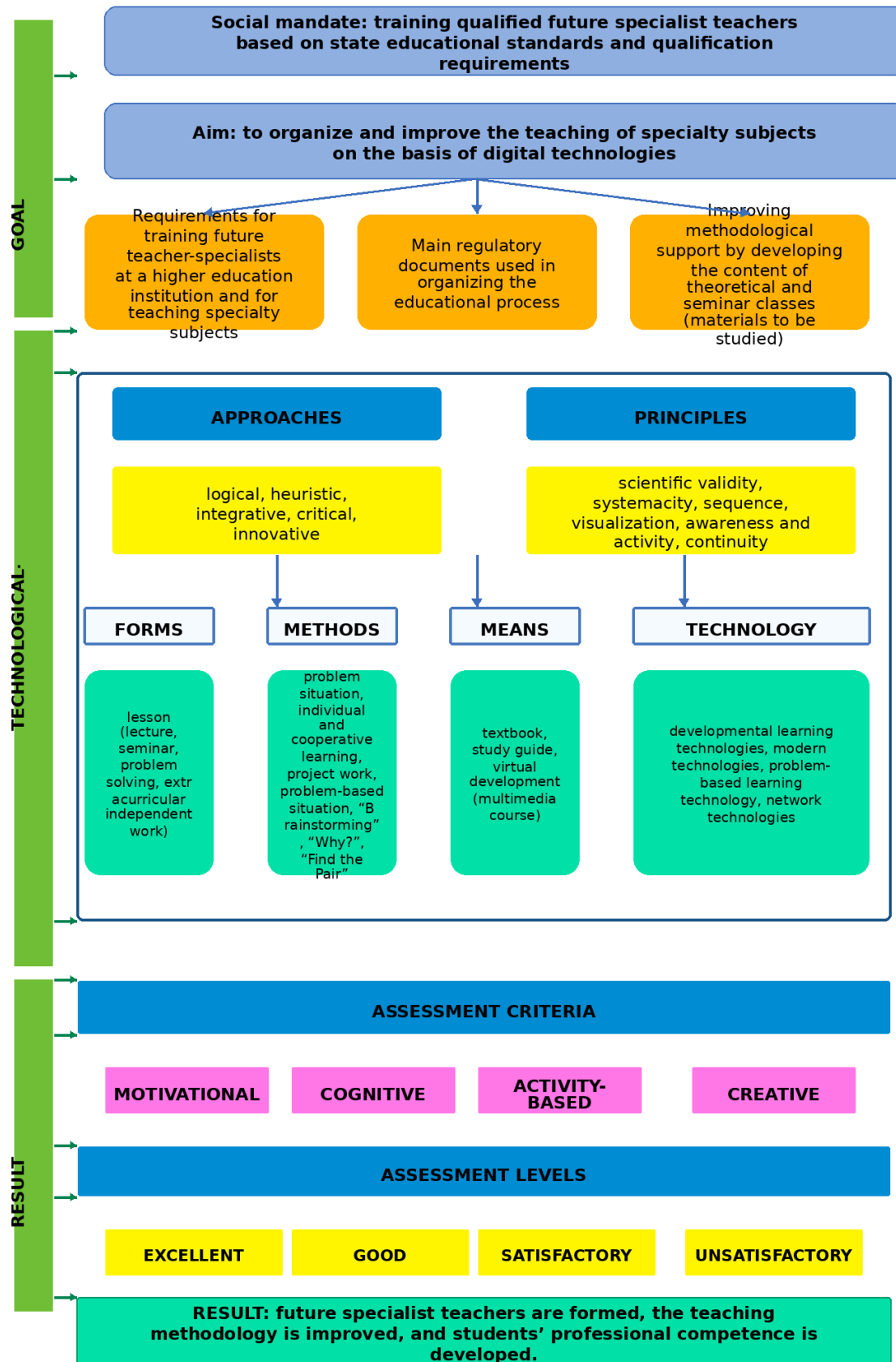


Figure 2. Improved Model for Developing Specialty Subjects on the Basis of Digital Educational Technologies

On the basis of the conducted scientific research, a structural model for training specialists was developed. This model identifies the knowledge, skills, and competencies that students must master in specialty subjects during classroom activities and independent study; the methodology for forming them; the use of software-based educational tools in the educational process; and the logical structure of preparing students for independent knowledge acquisition in a creative spirit through software-based educational tools.

The model for improvement with the help of a mobile application can be explained as follows. Through the created model, a model for using digital technologies in the formation of students' professional competencies was developed, taking into account the state educational standards and qualification requirements established for specialists. The model also provides detailed information about the components that constitute it and the importance of its goal-oriented and content-related components.

In this model, the social mandate is defined as "training qualified future specialist teachers at the level of the requirements of state educational standards."

As the aim, special attention is paid to organizing and improving the teaching of specialty subjects on the basis of digital technologies.

The task part of the calendar-technological component is divided into the following types:

- digitalizing students' lecture activities in the educational process with the help of a mobile application;
- ensuring the integrity of the stages and methods of organizing students' preparation for seminar classes;
- combining students' independent learning and the set of assessment criteria within a single application in the educational process.

The recommendations given for improving methodological conditions show that, over time, after the education system is fully digitalized, it may be described as a "digital complex of independent education." Digitalization, as a product of human cognition, is a process whose introduction into the education system is appropriate; on the basis of research in this area, methodological support and systems of digital education have emerged in recent years.

In the process of preparing for seminar classes, samples of multimedia lectures based on modern technologies and instructions for completing seminar assignments were created with consideration of the requirements, wishes, and interests of today's youth. The use of digital educational technologies and their tools is considered appropriate for developing future teachers' professional competencies. Today, the issue of training mature specialists is one of the primary factors in the development of the education system. Implementing the above process on the basis of digital educational technologies is regarded as a main tool that plays a decisive role in solving this problem positively [1].

Conclusion

In the model presented above, the process of assessing students is carried out in accordance with the form of the lesson and on the basis of clearly defined criteria. Assessment criteria are indicators that show the extent to which a student has achieved the learning objectives and determine the level of mastery with the help of the teacher or digitalized teaching systems.

Assessment of learners' acquired knowledge and skills is mainly carried out by taking into account the degree to which theoretical knowledge, practical skills, and competencies have been mastered. The qualification requirements of specialty subjects specified in state educational standards are converted into a form corresponding to the types of knowledge assessment that students are expected to master.

References

1. Gulomov S.S., Alimov R.Kh., Lutfullaev Kh.S., Shermukhamedov A.T., Nazarova G.G., Alimov K.A., Khodiev B.Yu., Begalov B.A., Khoshimkhodjaev Sh.Kh., Kucharov A.S., Rasulev D. Information Systems and Technologies. Under the general editorship of S.S. Gulomov. Tashkent: Sharq, 2000. 592 p.
2. Ashirova A.I. Creating a Software Shell for the Subject "Designing Information Systems" and the Methodology of Using It in Education (on the Example of Technical Higher Education Institutions): Abstract of the Dissertation for the Degree of Candidate of Pedagogical Sciences. Tashkent: TDPU, 2009. 24 p.
3. Fayzieva M.R. Creating Adaptive Web Systems for the Educational Process. Abstract of the Dissertation for the Degree of Doctor of Philosophy (PhD) in Pedagogical Sciences. Tashkent, 2017. 45 p.
4. Cropley A., Cropley D. Using Assessment to Foster Creativity. Singapore: World Scientific, 2007. Pp. 209-230.
5. Magrupov A.M. Improving the Mechanisms for Integrating Strategic and Functional Management in the Higher Education System. Abstract of the Dissertation for the Degree of Doctor of Pedagogical Sciences (DSc). Tashkent, 2017. 69 p.
6. Mekhmonov M.A. Competencies of a Teacher in Improving the Effectiveness of Education and Upbringing. In: Current Problems of Physical Culture and Sports in Modern Socio-Economic Conditions. Cheboksary, May 20, 2019. Pp. 158-160.