



MAIN COMPONENTS OF THE MODEL FOR TRAINING FUTURE INFORMATICS TEACHERS

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Annotation. *This article analyzes the main components of the model for training future informatics teachers - target, content, technological, motivational-communicative and result-oriented aspects. The content, function and role of each component in preparing a teacher for effective work in a digital educational environment are highlighted. Also, the development of the model was based on state educational standards, digital transformation requirements and modern pedagogical approaches. As a result of the study, a comprehensive system is proposed that increases the effectiveness of the training process for informatics teachers.*

Keywords: *Informatics teacher, training model, digital competence, pedagogical technologies, motivational-communicative competence, target component, content component, effectiveness.*

The modern education system is undergoing fundamental changes in the process of digital transformation. The role of the computer science teacher in this process is of particular importance, since he not only teaches students programming or technologies, but also directs them to digital thinking and innovative thinking. Therefore, the process of training future computer science teachers should be organized on the basis of a systematic approach. [3]

This article analyzes the main components of the computer science teacher training model. This model is aimed at the comprehensive development of the teacher's personality in professional, methodological, information-communicational and social aspects, and five main components are distinguished in its structure:

purposeful, substantive, technological, motivational-communicative and result-oriented components. [4]

The purposeful component is the central and guiding element of the model of training future computer science teachers, which determines the content, form and result of the entire educational process. The main task of this component is to form a specialist in the field of computer science education who is digitally competent, innovative thinker, and able to effectively use ICT tools in their professional activities, based on the essence of the teaching profession. [2]

The target component is manifested in the following areas:

1. Educational goal - to form in future computer science teachers fundamental knowledge, algorithmic thinking, programming basics, and the ability to use digital technologies in teaching.

2. Upbringing goal - to develop commitment to the teaching profession, responsibility, professional ethics, information culture and communicative culture.

3. Developmental goal - to develop creativity, critical thinking, problem-solving and innovative decision-making skills.

4. Professional goal - to form the ability of a computer science teacher to correctly use methodological approaches in the educational process, design curricula, and create educational resources based on ICT.

Also, the target component is developed in close connection with the State Educational Standard, qualification requirements, and the digital transformation of the education sector. This component, taking into account the strategic directions of the education system, predetermines the final results of the process of training a computer science teacher.

The effectiveness of the target component is ensured by the following principles:

- The principle of professional orientation - all educational processes should be focused on the activities of the computer science teacher;

- The principle of integration - the integration of technical, pedagogical and information and communication knowledge into a single system;
- The principle of innovation - supporting the professional development of the teacher through the application of new technologies in teaching activities;

As a result, the target component determines the strategic direction of the process of training future computer science teachers and creates the necessary basis for their successful work in their professional activities.

The content component is the central component of the model for training future computer science teachers, which embodies the theoretical, practical and methodological aspects of the educational process. The main purpose of the content component is to ensure the teaching of the content of computer science from among the disciplines based on a deep, systematic and modern approach. [1]

1. Theoretical foundations are related to the fundamental concepts, laws and principles of computer science, which form the scientific worldview of the future teacher. Through theoretical training, the student will gain in-depth knowledge in such basic areas as algorithmization, programming, data structures, information systems, networks, cybersecurity and artificial intelligence. This will allow students to logically justify the science and explain it from a scientific point of view in the future.

2. Practical foundations constitute the applied aspect of computer science. During practical training, the future teacher acquires practical skills such as programming environments, office programs, graphic design, multimedia technologies, web development, working with databases. Also, the use of various educational platforms (Google Classroom, Moodle, Kahoot, etc.), the organization of distance learning are considered one of the important areas of practical training.

3. Methodological foundations include methods, technologies and forms of teaching computer science. Future teachers need to have skills in teaching methodology, the use of didactic tools, the development of student activity

management and assessment criteria. Also, the integration of modern information and communication technologies (ICT) into the educational process, the use of STEAM education elements and the mastery of digital pedagogical approaches are an integral part of the content component.

The effective organization of the content component allows you to improve the quality of training computer science teachers, to form them as creative and innovative thinking specialists who can operate in a digital educational environment. Therefore, it is important to rely on modern regulatory documents, educational standards and international experience in the development of the content component.
[1]

The technological component is an important part of the model for training a computer science teacher, which involves the effective use of modern technologies, innovative approaches and digital tools in the educational process. The main goal of this component is to prepare the teacher to organize, manage and improve the educational process based on information and communication technologies (ICT).
[5]

1. Innovative technologies mean the introduction of new methods, platforms and digital tools into the educational process. Future computer science teachers should learn to work with the concept of “digital pedagogy”, artificial intelligence-based teaching systems, AR/VR technologies, as well as automated testing systems. This will allow them to combine the educational process with the modern information environment.

2. Interactive technologies serve to increase the activity of students, develop their independent thinking and creative approach. These include the Smart Board, virtual laboratories, educational simulators, test modules, interactive exercises, gamification methods. Also, the Flipped Classroom model, Project-Based Learning and problem-based learning technologies allow for effective teaching of computer science. serve to increase the activity of students, develop their independent thinking and creative approach. These include the Smart Board, virtual laboratories,

educational simulators, test modules, interactive exercises, gamification methods. Also, the Flipped Classroom model, Project-Based Learning and problem-based learning technologies allow for effective teaching of computer science.

3. Distance learning technologies train computer science teachers to teach on digital platforms and manage students' online activities. Organizing lessons, assigning and assessing control tasks, and creating electronic resources through platforms such as Moodle, Google Classroom, Microsoft Teams, Edmodo, and Zoom increase the teacher's technological potential.

As a result of the effective implementation of the technological component, the future computer science teacher will be formed as a specialist who can integrate modern ICT tools into the educational process, form digital competence in students, and constantly adapt to innovative developments.

This is one of the most important factors in modernizing the education system in the current digital economy. [5]

The motivational-communicative component is an integral part of the model for training future computer science teachers, which involves the formation of a positive attitude of the student towards professional activity, increasing interest in the teaching profession, as well as the development of communication and cooperation skills. This component covers the person-oriented, social and psychological aspects of pedagogical activity. [4]

1. Professional motivation helps the student to understand himself as a computer science teacher, to approach his chosen field with responsibility and dedication. In this process, students are formed with a complete picture of the role of computer science in society, its importance in the era of digital transformation, as well as the social value of the teaching profession. Among the motivational factors, personal growth, creativity, self-expression and the desire to lead in the field of digital education play an important role.

2. Communication skills are an integral part of a teacher's work and include the development of effective communication, teamwork, listening, clear expression

of ideas, and the ability to provide a healthy psychological environment with students. A future computer science teacher should be not only technically knowledgeable, but also a person with communicative competence. Therefore, the use of interactive communication exercises, team project work, presentations, debates, and role-playing games in the educational process is very effective.

3. Social activity and culture of cooperation form students' skills of open expression of their opinions, mutual assistance, responsible decision-making and teamwork. This creates the basis for their successful future work as a member of the pedagogical team in an educational institution. As a result of the full implementation of the motivational-communicative component, the future computer science teacher will acquire not only technical and methodological knowledge, but also strong personal and social competencies. He will be formed as a mature specialist who loves his profession, can effectively communicate with students, and directs them to digital thinking. [4]

The outcome component is the final and most important component of the computer science teacher training model, which serves to analyze the results achieved in the educational process, determine the professional competence of the future teacher, and assess the quality and effectiveness of education. This component relies on a set of theoretical knowledge, practical skills, and personal qualities to determine the integral level of computer science teacher training. [5]

1. The level of theoretical training assesses the mastery of the fundamental concepts, laws, information technologies, algorithms, programming languages, computer systems, and networks of computer science. The teacher must have knowledge of the main conceptual areas of computer science, as well as the ability to convey them to students in an understandable form.

2. Practical competence - includes the ability of a computer science teacher to effectively apply his knowledge in the real learning process, the skills to use various software tools, technological platforms and interactive resources. In this process, the teacher's ability to work in software environments, create digital educational

resources, implement an assessment system based on tests and projects is considered an important criterion.

3. Pedagogical and methodological competence represents a deep knowledge of the methodology of teaching computer science, the ability to take into account the age and individual characteristics of students, and the ability to organize a lesson based on modern pedagogical technologies. The teacher must be able to develop students' logical thinking, problem-solving, analysis and creative approach.

4. Personal and social competencies reflect the professional ethics, communication culture, teamwork skills and readiness of the computer science teacher to constantly work on himself. These competencies form the teacher not only as a specialist in the field of science, but also as a teacher who guides students to the digital world and motivates them.

The main task of the outcome component is to determine the effectiveness of the educational process, to assess the extent to which the goals set in the teacher training process have been achieved. This assessment is carried out through traditional control methods (tests, interviews, written work), as well as modern approaches - competency-based assessment, portfolio analysis, electronic rating systems and the results of practical projects.

When the outcome component is effectively implemented, the process of training an informatics teacher ensures coherence, consistency, and quality. The end result is a teacher who can meet modern educational requirements, has a digital mindset, is an innovative thinker, and can effectively use technological approaches in his or her professional activities. [5]

Conclusion

The model for training future informatics teachers is a complex but effective system consisting of five interconnected components. Each component plays an important role in the professional formation of an informatics teacher. While the goal component determines the strategic direction, the substantive and technological components constitute the essence of the educational process. While the

motivational and communicative component ensures personal development, the outcome component evaluates the effectiveness of the entire process.

As a result, this model serves to train an informatics teacher as a professionally mature specialist who has a digital mindset, is an innovative thinker, and can use modern technologies in the educational process.

References

1. Shneiderman B. Designing the User Interface. MIT Press, 2016.
2. Wing J. Computational Thinking. Communications of the ACM, 2006.
3. UNESCO. ICT Competency Framework for Teachers, 2018.
4. Mishra P., Koehler M. Technological Pedagogical Content Knowledge (TPACK), 2009.
5. Anderson J. Integrating ICT in Teaching and Learning. UNESCO, 2015.