

IMPROVING THE PROFESSIONAL COMPETENCE OF TEACHERS IN COMPUTER SCIENCE EDUCATION

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Abstract. *In the rapidly evolving landscape of information technology and computer science, the role of educators becomes paramount in preparing the next generation of professionals. This abstract introduces a framework aimed at enhancing the professional competence of future computer science educators, ensuring they possess the necessary skills to effectively navigate the dynamic field of information technology.*

Keywords: *informatics, informatization of education, information technologies, competence.*

In modern Uzbekistan, the problem of reforming the system of improving the quality of training of specialists is becoming more acute, which is associated with new social needs caused by the entry of the state into market relations.

Historically, it was education that became one of the first areas of informatization of society, designed to form a new information culture of a person – a person who is able to work in the conditions of the introduction of information technologies, informatization of all spheres of human activity.

The decisive role in the implementation of the informatization of education belongs to the teacher, first of all, to the computer scientist. Currently, there is already a lot of pedagogical research aimed at developing individual aspects or components of the system of training teachers of computer science and other specialties in the field of computer science and the use of information technologies. However, there are practically no studies systematically covering the main components of professional training of future teachers in the field of ICT application in educational practice in the context of informatization of education [1,2].

Improving the professional competence of teachers in computer science education is crucial for preparing students for the digital age. Here are some strategies and recommendations to enhance their skills and knowledge:

Continuous Professional Development (CPD):

Provide regular workshops, seminars, and training sessions focused on the latest advancements in computer science and educational technology.

Encourage teachers to attend conferences, webinars, and online courses to stay updated on industry trends and teaching methodologies.

Collaborative Learning Communities:

Facilitate the creation of communities where teachers can collaborate and share best practices, resources, and lesson plans.

Foster a culture of continuous learning within the school or district, encouraging peer mentoring and knowledge exchange.

Curriculum Design and Integration:

Integrate computer science into the overall curriculum, ensuring that it aligns with both national standards and the needs of the local community.

Develop interdisciplinary projects that allow teachers to incorporate computer science concepts into various subjects.

Access to Resources:

Provide access to up-to-date textbooks, software, hardware, and other resources that support computer science education.

Establish partnerships with industry leaders and local businesses to bring real-world applications and experiences into the classroom.

Technology Infrastructure:

Ensure schools have the necessary infrastructure, including reliable internet connectivity and up-to-date computer labs, to facilitate effective teaching and learning.

Inclusive Education:

Promote inclusive teaching methods to cater to diverse student populations, including those with different learning styles, abilities, and backgrounds.

Professional Networking:

Encourage teachers to join professional organizations related to computer science education. These organizations often provide resources, networking opportunities, and support for educators.

Certification Programs:

Support teachers in obtaining relevant certifications in computer science education. These certifications can enhance their credibility and demonstrate their commitment to professional development.

Student-Centered Approaches:

Encourage teachers to adopt student-centered learning approaches, such as project-based learning, where students actively engage in solving real-world problems using computer science concepts.

Feedback and Evaluation:

Establish a system for feedback and evaluation, allowing teachers to receive constructive input on their teaching methods and providing opportunities for improvement.

Government and Institutional Support:

Advocate for policies that support computer science education at the governmental level. Seek funding and support from educational institutions to invest in teacher training programs.

I would like to note that graduates are versatile specialists who work in schools, universities, and also practically, in their daily professional work, they are faced with a large amount of work, etc., i.e., the information flow.

The new educational goals are based on the priority of the human personality, the development of which should become the main value and the most important result of education. These new guidelines of the education system are manifested in various directions of its development: the construction of a system of continuous education, the emergence of alternative forms of learning, the development of new approaches to the formation of educational content, create a new educational environment, etc. In such conditions, the issue of improving the content of methodological training of the future teacher of computer science is becoming increasingly relevant. In addition, there are still unsolved problems that reduce the effectiveness of the

introduction of ICT, among which, first of all, it should be noted that the theory and practice of using information technologies in training lag behind the pace of development of computer hardware and software [3,4].

These factors confirm the need to improve the training content of the future computer science teacher, review the existing technologies of his methodological training in the pedagogical university. In addition, modern approaches to the content and organization of higher pedagogical education in a new way raise the question of the criteria for the readiness of the individual for pedagogical activity.

Thus, we have developed an adaptive model of teaching computer science, based on the study and consideration of individual and personal characteristics of computer science students (conducting surveys, interviews, questionnaires) and aimed at the formation of information technology competence of future specialists. The article substantiates the structure and criteria for evaluating the process of forming professional information and technological competence, identifies the factors that affect the quality of education and their structure, and identifies the pedagogical conditions that contribute to its successful formation.

Therefore, it can be noted that there are a number of factors that indicate the need to improve the content of training of future computer science teachers, including:

- * the discrepancy between the level of training of computer science teachers and the requirements put forward by modern society to the education system;

- * lack of comprehensive psychological and pedagogical research that substantiates the pedagogical possibilities of ICT in teaching and the need for integrated use of ICT in teacher training; the lack of a system of objective criteria and methods of monitoring and evaluation that diagnose the quality of professional training and readiness for pedagogical activity of a computer science teacher.

According to many scientists, innovative educational technologies should be focused on the formation of systematic creative thinking of students, their ability to generate non-standard ideas when solving educational, practical or creative tasks, which in turn is a formative factor of professional competence of future specialists. At the same time, the main requirement for the modernization of education is the transition from an informative learning model to a developing one, which involves the formation of students not only subject knowledge, but also the ability to independently acquire them [3].

Computer science education is becoming increasingly important in today's world, and it is essential that teachers have the necessary professional competence to effectively teach this subject to their students. Here are some ways to improve the professional competence of teachers in computer science education:

1. Attend Professional Development Programs: Teachers can attend professional development programs to enhance their knowledge and skills in computer science education. These programs can be online or face-to-face and can cover a wide range of topics such as programming languages, coding, and cybersecurity.

2. Join Professional Associations: Teachers can join professional associations such as the Computer Science Teachers Association (CSTA) to connect with other educators and stay up-to-date on the latest trends and developments in computer science education.

3. Collaborate with Other Teachers: Teachers can collaborate with other teachers in their school or district to share best practices and resources for teaching computer science.

4. Use Technology in the Classroom: Teachers can use technology in the classroom to enhance student learning and engagement. They can incorporate tools such as interactive whiteboards, coding software, and online resources to make their lessons more engaging and effective.

5. Pursue Further Education: Teachers can pursue further education in computer science by taking courses or obtaining certifications in relevant areas. This will not only enhance their knowledge but also add value to their resume.

6. Stay Up-to-Date on Industry Trends: Teachers should stay up-to-date on industry trends and developments in computer science education. This will enable them to better prepare their students for future careers in this field.

By following these tips, teachers can improve their professional competence in computer science education and provide their students with a high-quality learning experience.

In addition, due to the constantly changing picture of the technical equipment of the educational institution with computers and IT tools, there is a wide variety of software in which the computer science teacher should easily navigate. Thus, during the time of studying at the university, the future teacher of computer science needs to form subject competencies in the field of information technology.

In order to form a subject competence, it is necessary to solve the following training tasks: training in working with operating systems; with computer software, with information and communication computer technologies, including text processing systems, numeric tables, graphs, databases, integrated environments, the Internet, etc.

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