NEW ASPECTS OF TEACHING INFORMATICS IN PEDAGOGICAL UNIVERSITIES

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ABSTRACT

The paper is devoted to a promising development of a methodological system for the formation of a teacher's professional competence and concludes that pedagogical design today is a powerful toolkit in the hands of a teacher, allowing you to create and implement a project for solving a pedagogical problem.

Keywords: Informatics, informatization of education, information technologies, competence.

INTRODUCTION

O. M. Spirin believes that the competence-based approach becomes important in the design of professional training systems for computer science teachers, which should be used as a basis for the development of educational standards characteristics that reflect the qualitative results of the educational process in terms of professional competence (Spirin, 2007).Thus, A. K. Markova believes that the content of the professional competence of a teacher is characterized by procedural and effective indicators and is defined as his or her ability and willingness to carry out personal professional activities (Markova,1996). Possession of relevant competences allows acting independently and responsibly; the basis for conclusions on competence is the assessment of the final results of its activity; it is also a characteristic of an individual and is manifested in the results of its activity. Professional competence is an integrative personal formation, formed on the basis of theoretical knowledge, practical skills, significant personal qualities and life experience (Evstegneyev & Torbunov, 2003). All this determines the readiness of a computer science specialist to perform specific activities and ensures a high level of self-organization. The main practical skills of a future computer science teacher include the following: algorithmization of various applied problems; programming of developed and typical algorithms; construction and study of mathematical models of various objects with the help of applied computer systems. Achieving these skills helps to fulfill one of the most important tasks for the computer science teacher – to promote the interest of students to study at the lessons of computer science.

Theoretical methods have been applied for the purpose of analysis of academic literature on the subject; curricula, working programs and methodical manuals on Computer Mathematics. Empirical methods (questionnaires, conversations, lesson observation) have been used to determine the role of computer mathematics in the development of informatics competencies of future computer science teachers. Modeling was used to build a model for the formation of information competence of future teachers of computer science in the process of studying the discipline "Computer Mathematics".

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].

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.

In theoretical terms, the basics of professional readiness of the future teacher are covered in the works of domestic researchers A. A. Abdukodirova, M. H. Allambergenova, M. M. Aripov, A.D. Askarov, U. S. Begimkulov, R. H.Juraev, F. I. Zakirova, M. H. Lutfillaev, N. A. Muslimov, M. Sugat, N. I. Tailakov, etc.

As well as the issues of forming the content of training of future teachers of Informatics, his readiness to use ICT in professional and pedagogical activity, updated, methodology and methods of teaching Informatics in pedagogical universities are investigated in the works of foreign scientists M. I. Bashmakov, G. A. Mordovskogo, G. G.Vorob'eva, N. and. Gandini, A. P. Ershov, E. S. Polat, V. G. Razumovskiy, V. A. Dallinger, T. V. Dobudko, I. V. Robert,O. Erstad, O. by Jennifer and others.

From all the variety of system-forming factors that determine the relevance of the issue of the effectiveness of the process of training computer science specialists in the formation of professional information and technological competence, the fundamental factor is identified-the organizational and methodological support of the educational process. The structure of this factor, along with the development of a system of internal regulations, variable curricula in accordance with the state standard and the choice of the student's educational trajectory, is determined by: updating work programs; optimization of the educational process, the formation of an innovative integrative educational environment [5,6]. Today, innovations in education consist in the introduction of new goals, content, methods and forms of training and education, in the organization of joint activities of teachers and students; changes in the style of professional pedagogical thinking. The term we use in the educational environment: innovation activity refers to the process aimed at implementing the results of completed research and development. This term was introduced by the Decree of the President of the Republic of Uzbekistan "On the State strategy for 2017-2021".

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].

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.

Relevance and expediency of introduction of a training course of computer mathematics for students of "Secondary Education (Computer Science)" is caused by necessity of use of computer equipment with the corresponding software almost in all areas of human activity; the fact that computer mathematics is one of priority directions of research work both in the field of mathematical sciences, and in the field of computer science. Computer mathematics is a field of applied computer science in which problems of development, implementation and use of information technologies for solving mathematical problems are studied. The purpose of teaching computer mathematics is to study and use computer mathematics systems by students to solve applied problems; to master the conceptual and terminological base of modern computer science as a fundamental science; to master theoretical fundamentals of computer science related to formal systems, knowledge bases and models of their representation, models and algorithms of decision making.

Transition to a new generation of industry-specific standards of higher education through a competence-based approach is a necessary step on the way to reforming the education system in Ukraine, in particular, reforming the teaching of mathematics and computer science. Person-oriented education, introduction of innovations and communication technologies, creation of modern means of education is a priority in the educational process. Application of computer mathematics systems as a means of education through a competence-based approach creates conditions for bringing education closer to the needs and requirements of the labor market, further development of educational technologies and the education system as a whole. General regularities and theoretical bases for the application of computer mathematics systems in the educational process of training future computer science teachers are based on the implementation of interdisciplinary relations and the development of professional competencies of students studying mathematics and computer science.

Development of methodical aspects of building informatics competencies of future computer science teachers in the process of studying computer mathematics.

An important trend of modern pedagogical education is the integration of traditional methodical systems of teaching various subjects with modern information and communication technologies through a competency-based approach to learning.

A. V. Khutorskoi, the developer of the theory and methods of competence-based education, has noted that the competence based approach assumes that students do not master separate knowledge from each other, but master it in a complex way, and in its turn, allows applying the knowledge, skills and abilities gained in specific life situations (Khutorskoi, 2005). He defines competence as a set of interrelated qualities of a person (knowledge, skills, abilities, ways of activity), defined in relation to a certain range of subjects and processes and necessary to act in a qualitative and productive way in relation to them.

V. I. Baidenko proposes to understand the competence-based approach as a method of forming the results as signs of readiness of a student/graduate to demonstrate appropriate competence (Baidenko, 2006). Competence-based approach brings to the first position not awareness, but

the ability to solve problems arising in the course of learning and understanding of natural and social phenomena, mastering modern techniques and technologies, relationships with other people, in everyday life during the performance of social roles, etc. The purpose of the competence-based approach is to organize the educational process aimed at acquisition of key competences.

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CONCLUSIONS

Based on the analysis of academic and methodical literature on the subject of research, the structure of informatics competence as a component of the professional competence of future computer science teachers has been revealed, which includes the methodological, informational-technology, model, algorithmic, computer components. A model for the formation of informatics competence in future computer science teachers in the process of studying computer mathematics has been built and is shown on the example of the Maple computer mathematics system, how its use in the educational process helps to increase the level of informatics education of future computer science teachers.

It has been substantiated that each of the stages of the formation of informatics competencies involves the assimilation of a certain level of knowledge, the formation of skills and experience

and work with computer mathematics systems, subject to the introduction of computer-oriented forms of organization of the educational process, traditional and innovative teaching methods and tools. It has been proved that a high level of formation of informatics competence can be achieved in the process of an individual and productive process of solving applied problems using computer mathematics systems. Based on this, a system of applied problems for the Computer Mathematics has been developed in order to form the components of informatics competence.

The study does not purport to be the complete solution to the difficulties involved in developing informatics competences for future computer science teachers. Further research, in our opinion, requires such issues as the improvement of computer oriented methodological systems for teaching computer mathematics to future computer science teachers and the creation of an educational-methodical complex for Computer Mathematics for the successful mastery of related academic disciplines.

REFERENCES

1. Нуралиев, У. А. (2021). Информатика ва ахборот технологилари фанини ўқитишда инновацион технологиялардан фойдаланиш тамойиллари. Экономика и социум. ЭКОНОМИКА, 990-993.
2. Нуралиев, У. А. (2021). Исскуственный интеллект в образовании. Academic research in educational sciences, 2(11), 1563-1575.