



METHODS OF TEACHING COMPUTER SCIENCE AS A PEDAGOGICAL SCIENCE

Raxmatov Alisher Shirinboyevich, Raxmonov Ixtiyor Xusanovich
Teacher of Jizzakh state pedagogical university

Abstract

this article reveals the methodology of teaching computer science as a pedagogical science. Many subject knowledge and methods of activity (including the use of ICT tools), mastered by students on the basis of computer science, are used both within the educational process in the study of other subject areas, and in other life situations, become significant for the formation of personality qualities, i.e. focused on the formation of meta-subject and personal results. Throughout the entire period of the formation of school informatics, it accumulated experience formation of educational results, which are currently commonly referred to as modern educational results.

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In 1985, the subject "Fundamentals of Computer Science and Computer Engineering" appeared at the school.

The following scientists studied the methods of teaching computer science: A.I. Bochkin, I.G. Semakin, M.P. Lapchik, V.V. Malev, etc. In the late 60s - early 70s of the XX century, French scientists introduced the term "informatique" (informatics), formed as a derivative of two French words – "information" (information) and "avtomatique" (automation). A.P. Ershov claimed that this term is being introduced into the Russian language "...as the name fundamental natural science that studies the processes of transmission and processing of information. With this interpretation, computer science turns out to be more directly related to philosophical and general scientific categories, and its place in the circle of "traditional" academic scientific disciplines becomes clearer." Computer science studies what is common to all the numerous varieties of specific information processes (technologies). These information processes and technologies are the object of computer science. The subject of computer science is determined by the variety of its applications. Various information technologies functioning in different types of human activity, having common features, at the same time differ significantly from each other. Together with the introduction of the general education subject "Fundamentals of Computer Science and Computer Technology" to the school, the formation of a new field of pedagogical science began – the methodology of teaching computer science, the object of which is computer science education. The course of methods of teaching computer science appeared in the universities of the country in 1985. In 1986, the publication of the methodical journal "Informatics and Education" began.

An important role in the development of the methodology of teaching computer science was played by didactic studies of the goals and content of general cybernetic education, accumulated by the national school

even before the introduction of the subject of computer science practical experience in teaching students elements of cybernetics, algorithmization and programming, elements of logic, computational and discrete mathematics, etc. [1].

Considering that the first experiments in teaching cybernetics-computer science were conducted already in the mid-50s of the last century, the development of a comprehensive approach to computer science education has a total of almost half a century of history. The theory and methodology of teaching computer science is currently developing intensively; the school subject of computer science has been almost two decades old, but many tasks in the new pedagogical science have arisen quite recently and have not yet had time to receive either a deep theoretical justification or a long-term experimental verification. In accordance with the general goals of teaching, the methodology of teaching computer science sets the following main tasks:

- to determine the specific goals of studying computer science, as well as the content of the relevant general education subject and its place in the curriculum of secondary school;
- to develop and offer the most rational methods and organizational forms of training aimed at achieving the set goals to the school and the teacher-practitioner;
- consider the whole set of computer science teaching tools (textbooks, software, hardware, etc.) and develop recommendations for their application in the practice of the teacher.

The methodology of teaching computer science is a young science, but it is not formed from scratch. Being an independent scientific discipline, in the process of it has absorbed the knowledge of other sciences, and in its development it relies on the results obtained by them. These sciences are philosophy, pedagogy, psychology, age physiology, computer science, as well as generalized practical experience of methods of other general secondary school subjects.

As N.V. Sofronova notes, "teaching computer science at the modern level is based on information from various fields of scientific knowledge: biology (biological self-governing systems such as humans, other living organisms), history and social studies (public social systems), the Russian language (grammar, syntax, semantics, etc.), logic (thinking, formal operations, truth, lie), mathematics (numbers, variables, functions, sets, signs, actions), psychology (perception, thinking, communication)" [2].

Computer science has a large and increasing number of interdisciplinary connections, both at the level of conceptual apparatus and at the level of tools. Many subject knowledge and methods of activity (including the use of ICT tools), mastered by students on the basis of computer science, are used both within the educational process in the study of other subject areas, and in other life situations, become significant for the formation of personality qualities, i.e. focused on the formation of meta-subject and personal results. Throughout the entire period of the formation of school informatics, it accumulated experience in the formation of educational results, which are now commonly referred to as modern educational results. In the content of the computer science course of the basic school, it is advisable to focus on the study of the fundamental foundations of computer science, the formation of information culture, the development of algorithmic thinking, to fully realize the educational potential of this course.

A computer science teacher needs to navigate the problems of philosophy (worldview approach to the study of the system-information picture of the world), philology and linguistics (programming systems, text editors, text recognition systems, computer translation tools, systems artificial intelligence), mathematics, physics and economics (computer modeling), painting and graphics (graphic editors, design, multimedia systems), etc. A computer science teacher should be a widely erudite person who constantly improves his qualifications and level of knowledge.

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