

TEACHING COMPUTER SCIENCE AT SCHOOL - CURRENT CHALLENGES AND PROSPECTS

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ABSTRACT

Every young generation needs to be able to control modern computers. Therefore, one of the first and most important tasks of school computer science is to form a clear way of thinking in students.

The form and method of teaching should be aimed at developing the thinking and creative abilities of young students. The challenge is to develop students' thinking and creativity on the one hand, and to give them an interesting and relevant knowledge of the modern computer world on the other.

This article has sufficiently revealed the current problems of teaching computer science in schools, the prospects for their solution. Information was provided on the methods of interaction between the participants of the learning process in the teaching of computer science.

KEYWORDS: school, computer science, information technology, computer science teaching, computer literacy, computer education, internet resource.

INTRODUCTION:

The main difference between the new information environment and the traditional one is that it consists of a small technological system. After all, the integration of information and communication technologies in the educational process of any educational institution is accompanied by radical changes in all other didactic, organizational, economic, theoretical and methodological subsystems of education.

In order to effectively use the opportunities of the information educational environment, the teacher as a consumer must have a full set of technical capabilities for the intended purpose.

Today, everyone is deeply concerned about the future of their child, especially the education he or she receives. By sending their children to school, they will acquire the necessary knowledge in the process of education, all-round development, and the fact that parents are responsible for the upbringing of their children by the school and teachers will determine its future. In this regard, there is a need to reconsider the current position and traditions of the educational process, to improve

the new educational standards of general education.

Nowadays, the interest of researchers and teachers around the world in the relatively young and fast-growing science of computer science is growing. Today, computer science has emerged as a fundamental science. The object of its study is information, its structure and methods of processing it. In recent years, the school course "Informatics and IT" has entered a qualitatively new stage of its development. In particular, the perception of computer literacy has changed. The introduction of computer science in school was initially understood as computer literacy as a programming ability. Now everyone has realized that computer science should not be a programming course. Nowadays, school computer science teacher is one of the most difficult and interesting professions. A computer science teacher has to keep a close eye on the development of computer technology, the emergence of new programs, and changes in techniques and methods of working with them. The expert is constantly faced with the following questions: "What and how to teach? How do you teach a child to navigate the fast-paced world of information technology? "To do this, a teacher needs to constantly improve himself, to meet personal goals and constantly strive to keep abreast of what is happening in the world of information technology and the pedagogical field.

The study of computer science at school contributes to the development of students of modern information and communication technologies. In the current pandemic, practice shows that children apply what they have learned in computer science classes to prepare for other subjects, such as distance communication with teachers, for example, in the process of learning a lesson, of course, directly from the computer, uses information technology. Therefore, a computer science teacher, unlike

other science teachers, should keep students interested in the topic of their lessons.

The benefits of computer-assisted learning are many: students have less time to develop certain skills; the number of exercises to be performed increases; students' performance accelerates; as a result of the need for active computer control, the student becomes a subject of education; students will have the opportunity to model and demonstrate processes that are difficult to observe and observe; it will be possible to provide the lesson with remote resources using communication tools; communication with the computer takes on the character of a didactic game, which increases the motivation of students to learn, and so on.

In the process of computer-assisted learning, learning is organized, managed, and controlled according to the relationship between the student and the computer.

Informatics classes also affect students' creative development. The computer not only monitors the student's work in the classroom, but also helps them discover the benefits and disadvantages of their knowledge, skills, and abilities. In computer science classes, it is important to ensure that students not only develop theoretical knowledge, but also technical knowledge of the subject. The classification of tasks, taking into account the different temperaments of each student, requires observation from the specialist to ensure that the given tasks are interesting for the student. The task helps students to adapt to positive thinking. If they develop an interest in working with computers, they can develop more. Simply put, it is much easier for students who have mastered the use of computers and have the necessary knowledge and skills in computer science to study and master other subjects at school.

Before talking about the problems and prospects of teaching computer science in secondary school, the main problem should be discussed, which is the children's understanding

of the importance of computer science as an academic subject, as well as a clear description of its field of application. Knowledge of the Internet, electronic libraries and books, digital audio-video-photo tools, mobile phones, tablets, pocket computers and communicators, social networks, blogs. it is necessary to form an idea that the radical difference between the schoolboy of about 10-20 years ago and the modern student, that computer science as a science has helped and is helping to achieve great things in the field of science will be.

Based on the above, we can formulate the main problems of teaching computer science:

1. It is no exaggeration to say that school informatics is the youngest and probably the most problematic field of all school subjects (weakness of material and technical base, level of staffing).
2. The tasks solved in the study of computer science, as well as other areas of knowledge relate to physics, mathematics, astronomy, etc., so the study of computer science has a metasubject character.
3. High rates of ICT development lead to the need for teachers to constantly use computer periodicals, Internet resources.
4. Nowadays, children should not only know about the existence of a computer, but also have an idea about it, but work on them, be able to use this technique. Informatics is not about objects or processes, but about the ways, means, and technologies of automating, creating, and processing them. This science provides not only in-depth study of it, but also the practical application of knowledge, skills and competencies to modernize their knowledge, as well as to optimize the learning load. As the object of personal computer learning, basic knowledge and skills such as its devices, operating system, software, data acquisition methods are formed. At the same time, the computer is a learning tool and a means of performing the given tasks.

5. Computer work should not exceed 10-30 minutes (depending on the age of the students).
6. As a rule, the amount of computer equipment is not enough, as a result of which it is necessary to organize the joint work of small groups (2-4 students per computer)
7. In general, all students in the class enjoy going to computer science classes, and this is due to the fact that the computer itself is the impetus for learning the subject. However, the penetration of computers into many areas of human activity is dampening this interest over time.
8. One of the main problems of education for children of primary school age is the drastic change of leadership activities from this game to education.

The formation of educational activities often does not meet the play needs of the child and is very painful for him. At this stage, it is necessary to organize a smooth transition from mainly game-playing activities to education, mainly using didactic computer technology. First and foremost, a computer science teacher needs to learn to teach by playing.

In particular, the above problems are related to the teaching of computer science in the lower grades, because the study of computer science is an integral part of modern general education, to form a new worldview and information world in the younger generation, to understand the computer as a modern means of information processing focused. There are different opinions about the age at which to start teaching children how to use a computer. Modern research by doctors, psychologists, and teachers shows that working with a computer while meeting hygiene and ergonomic requirements does not adversely affect the health of elementary school students. The main purpose of the study of computer science in the lower grades is to form in students the basics of information and communication technologies - competence, many components of which are included in the universal educational movement.

This sets the core values for the content of this course. In terms of the results of meta-subject teaching, as well as the achievement of a high level of continuing education, including the teaching of computer science at the intermediate and advanced levels, the following competencies are the most valuable, which is reflected in the course content:

- The basics of logical and algorithmic competence, in particular the ability to master the basics of logical and algorithmic thinking, to act according to the algorithm and to create the simplest algorithms.
- Learning the basics of information literacy, in particular the methods and techniques of searching, retrieving, presenting information, including the presentation of information in various forms: text, tables, diagrams, chains, aggregates, etc.
- Learning the basics of information and communication technology skills, in particular, the use of computers (and other ICT tools) to solve information problems

In computer science classes, a systematic perception of the world is formed, various natural and social phenomena, the concept of integrated information communication of system thinking is developed, the level of which is mainly determined by the ability to quickly process information and make decisions based on it. 'requires additional capabilities from the antecedents. - You will need to use more and more new methods and textbooks.

The content of the school course in computer science must to some extent meet the current level of development of the science and the requirements of society. Computer technology, first and foremost, the development of personal computers and their software is happening so fast that its expansion in all areas of human activity is so widespread. There are also pressing issues such as the need to train and retrain professionals who are able to teach quality information science to children using

new information technologies, as well as to acquaint children with the complex world of modern computer science.

Solving these problems and unresolved tasks is impossible without improving teaching methods based on the principles of continuity and consistency of computer science teaching.

The emergence of new computer technologies also has a significant impact on the expansion of educational topics in the field of computer science education. Computer technology is evolving so fast that education is one step behind, no matter how hard you try. In particular, the final findings of committees such as ACM and Computer Science found that the following topics were considered important in the teaching of computer science, taking into account the technical changes that have taken place in recent years.

- WWW and its complements
- Network technologies
- Graphics
- Database
- Use of additional software interfaces
- Software reliability
- Security and cryptography

Informatics is increasingly influencing the subsequent development processes of society. It has become a dominant factor determining the overall potential of a society and its development prospects. Informatization of society is the most important component of modern civilization, which is characterized by high levels of information and communication technologies and advanced information structures. Informatics is essentially evolving from technology to a fundamental science of information and information processes in nature and society.

The overall educational and practical significance of the computer science course at school is growing steadily and rapidly. This science has a great humanitarian potential. It plays an important role in preparing the younger

generation for effective work in the information society.

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