

ON THE ISSUE OF CONTINUITY IN TEACHING INFORMATICS AND INFORMATION TECHNOLOGIES

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Abstract. *The article discusses the pedagogical aspects of the issue of development and implementation of a model of continuity in the teaching of Computer Science and information technology with a view to forming a unity in the system of the «school-university», which contributes to the formation of a high-level information and communication competence of students. Summing up the results of experimental work, we can conclude that the presented theoretical model of continuity in teaching computer science and information technologies in the "school-University" system allowed us to prove the effectiveness of this model in practice, to get a significant increase in the level of information and communication competence of school pupils and students in the experimental group.*

Keyword. *Continuity in the school-university system, computer science, information competence, information culture.*

"Civilization is steadily moving towards building a new society - an information society, where the decisive role will be played not by natural resources and energy, but by information and scientific knowledge — factors that will determine both the overall strategic potential of society and the prospects for its further development. Already, the fundamental dependence of our civilization on the abilities and qualities of the individual that are laid down in education has fully manifested itself" [3,6]. In particular, the formation of a scientific worldview, deep knowledge in the field of computer science and computer technology, the acquisition of computer experience. All this is formed during the study of the disciplines "Computer Science" and "Information Technology" (hereinafter IT).

Today's base interaction between the school and the university should be as two equal partners whose efforts are aimed at solving common problems that arise in the process of teaching computer science and IT to students. Therefore, timely raise the question of the need to ensure continuity in teaching computer science and IT in the school-university system.

In methodological terms, in the continuous course of computer science and IT the continuity of teaching principles is traced[2, 38].

1. The unity of the content of the continuous course is ensured by the end-to-end directions present at all stages of training, which, in turn, are divided into content lines. These lines are organizing ideas of the educational field or stable units of content that form the framework of the course.

2. The content of continuing education is based on the combination of two approaches: the selection of the main objects of study and methods of basic science is taken as a basis. "The allocation of the main objects is carried out in such a way that the knowledge system of the relevant scientific field is sufficiently fully reflected in the end-to-end computer science course (during all stages of training)" [4,25].

"Today informatics — this is a general education subject, and it is necessary to approach it from a systematic position dictated by the specifics and tasks of the university teachers of general secondary education, professional higher education research Institute, "from elements to a deep system of knowledge", according to A. A. Kuznetsov, S. A. Beshenkov, S. A. Rakitina [4,28].

Considering the problem of continuity in teaching computer science and information technologies, it is necessary to analyze the issues of continuity of informatization of the entire education.

It should be noted that the analysis of the content of school and university textbooks on computer science and IT in recent years has shown that the entire course can be divided into four areas:

1. *Ideological* (keyword - information, collection, processing, storage and transmission of information.) "School and university computer science courses currently indicate that computer science should be more ideological in nature" [35,32]. 2. *Practical* (the key word is computer, computer technology). The computer is considered as a universal information processing machine, as a tool for working with information. Pupils and students study the huge possibilities of using computer technology, master the work in the local and global network to gain communication skills. 3. *Algorithmic* (keywords - algorithm, model, program). In this direction, students form an idea of algorithms, ways of their presentation and execution, programming skills are studied, at the university the student deepens this knowledge and applies them in practice. 4. *Research* (the key word is creativity). The content and methods of teaching in this direction form independent, creative, research qualities of completing tasks, both for pupils and students. To characterize the learning objectives of computer science and IT in different goThe authors used various concepts: the formation of "computer literacy", "information competence", "information culture" in students.

Prokudin D. E. under "computer literacy" means the ability to effectively use computer technology in all areas human activity, considering computer literacy as one of the components of defining the characteristics of learning and pointing out its main features:

- broad outlook in the field of popular computer programs and computers, knowledge of their capabilities;

- ability to choose the best software for a specific application works;
- ability to make a reasonable assessment of the quality of a particular software product. security features;
- understanding your computer's priorities and limitations;
- reading computer literature, etc. [8,2]

According to S. D. Karakozov, "Information culture - this is sovoa combination of an informational worldview and a system of knowledge and skills that ensure purposeful independent activity to optimally meet individual needs using the Internet.use of both traditional and new information technologies" [5,43]. Further, S. D. Karakozov notes that the structure of the information culture includes: They enter:

- competence in understanding the nature of information processes;
- humanistically oriented information sphere of the individual (motives, needs, goals, aspirations, worldview);
- developed information reflection; a person's tracking of his / her activities in the appropriation of information culture and awareness of the internal changes that occur in him / her [5, 45].

"Information and communication competence - this "new literacy" modern information civilization, it expands traditional literacy is a prerequisite for modern education.in the world. "Information and communication competence becomes the property of the student, his personal experience and cultural component his life" [6].

In the course of the study, the most significant components of the information and communication competence of students and pupils were identified, interconnected on the basis of continuity and integrativity. All components are characterized by relative independence, although it forms a single whole with other components.

The content component (information-theoretical component) is the basis for the formation of a systematic approach to the information analysis of the surrounding world, worldview, the development of mental activity of pupils and students. *The technological component (operational and technological component)* provides the skills to perform both individual operations and gain experience working with standard computer programs, information technologies. *The activity component (value-behavioral component)* is practical skills in various fields of activity related to information and communication issues, independent use of computer programs for training and self-study, in the process of studying other disciplines, topics, in professional and life activities. *Motivational component (motivational-target component)* - determines the internal position of the student, his goals, the desire to understand and study the material, psychological readiness to deepen and improve and apply the knowledge gained.

The formation of information and communication competence of students in the process of teaching computer science and IT should go in a comprehensive manner, with the constant development of trainees in all components, to form a systematic approach to working

with different types of information, information analysis of the surrounding world, the presence of a number of complex tasks skills and abilities:

- to choose and formulate goals, to carry out the task statement (as a literate person can read and write freely);
- to find information in various sources; use automated systems for searching, storing and processing information;
- to distinguish the main and secondary in information, to organize, systematize, structure data and knowledge;
- to see the information as a whole, to analyze the information;
- to widely use information and communication technologies in the process of learning, self-study, in life and professional activities. Practical experience, analysis of scientific literature, conversations with teachers, students, pupils suggests that the level of information and communication competence of pupils and students depends on the process of teaching computer science and IT at school and university.

In this article, we investigated how pupils and students relate to the process of learning computer science. A survey was conducted 50 students 1 - courses of the Mathematical faculties of Karakalpak State University, as well as 30 pupils out of 10 th and 11 th grades of the #50 th school in Nukus city (application forms "For students" and "Attitude to computer science training"[7]). The application forms included the following questions: about the period of studying computer science at school; about the availability of about using your computer at home; about your Internet skills; about using your computer educational programs; on the continuity of teaching in school and university course of computer science (for students); on the application of the acquired knowledge for self-education, in the process of learning other disciplines, etc. Thus, to date, there is no continuity of the need to teach computer science in the "school-university" system.

The answers received indicate that most pupils and students are with great desire study computer science, new information technologies, and are ready to improve their knowledge.

We conducted a survey of computer science teachers in order to determine their attitude to the problems of teaching computer science and the formation of information and communication competence of pupils and students. In the questionnaire for teachers, we have included questions of an educational and methodological nature. For example, what principles of teaching computer science and information technology, in their opinion, should be used; is the principle of continuity relevant in modern teaching of computer science and information technology in the school-university system and others.

Based on the analysis of the questionnaires of computer science teachers, it can be concluded that today there are conditions for the implementation of the continuity of relations between the school and the university. By continuity in training, they understand: consistency

of curricula of various stages of education at school, at university, consistency of goals, objectives, methods, means, forms of education.

As a result of the conducted research on the problem of ensuring continuity in teaching computer science and IT, it was revealed that 80% of teachers have difficulties in implementing continuity in the process of forming information and communication competence at the school-university stage.

Continuity in the "school-university" system involves the development of a unified system of invariant part of curricula. At the same time, within each stage of training, a variety of programs should be provided for students with different levels of training, different abilities and knowledge, different levels of psychological maturity. A consistent strategy of variability allows you to remove psychological barriers, differentiate and individualize the learning process as much as possible, adapt it to the characteristics of pupils and students.

Thus, continuity presupposes the development and adoption of a unified system of goals and content of education from primary school to university, but at each stage of training, content-target lines of invariant curricula are formed. So, the study of the current state of the problem of continuity in teaching computer science and IT in schools and universities allows us to state that, to date, a wide range of scientific issues in this area remains open.

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