



 Research Article

THE MAIN CONCEPTUAL APPROACHES TO THE CREATION OF A MODERN COMPUTER SCIENCE CURRICULUM IN A SECONDARY SCHOOL

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ABSTRACT

This article discusses the issues of developing the concept of a computer science course and the use of ICT tools in solving educational tasks, determining some of the main components of this process: goals, objectives, patterns, principles, conditions, content, development of the intended result, criteria and indicators.

KEYWORDS

Concept, self-improvement, principles of learning, education, ability, self-esteem, formation, upbringing.

INTRODUCTION

According to the encyclopedia, based on the Latin meaning of the word "conceptio" (understanding, system), this concept is a certain way of

understanding and interpreting any phenomena, the main point of view, the leading idea of their development, illumination; it can be interpreted

as a guiding plan, a constructive principle. In modern pedagogy, the term "concept" can be considered as a system of interrelated views on certain phenomena and processes; the concept is the main idea of any theories; the general idea can also be considered as the main idea.

The "educational concept" is considered as a generalized system of rules or views, tasks, principles, components, factors, as well as characteristics of the activities of teachers and students in the process of its implementation. All pedagogical concepts of education, regardless of the content and orientation, include the ultimate goal of learning and interpret it as the acquisition by students of a system of knowledge and practical exercises necessary for successful practical activity. The concept is a uniquely structured set of ideas and statements that summarize existing practices and predict the future.

In accordance with these definitions, the modern concept of teaching computer science and information technology includes the implementation of the content of teaching computer science, the leading idea, purpose and methods of their reflection in the content of the educational process of computer science,

understanding the purpose and role of computer science in the modern education system. To date, there are several concepts for the development of computer science courses that have been developed and are currently being developed and supported by a certain group of experts.

According to E.A.Akitina, the creation of a comprehensive concept of teaching any subject, including computer science, includes the following ten stages, i.e. the first stage is a description with sufficient accuracy, the reasons and goals of updating the concept, the main directions of updating (structural changes, new aspects of content, ways to change organizational forms, etc.), the second stage is the formation of educational goals taking into account current and achieved results, the third stage is the establishment of communication between computer science and other academic subjects, in particular, the place and role in the unity of training courses consists of possible ways to establish interdisciplinary connections.

We tried to discuss various modern approaches to designing a computer science course through the prism of the aspects under consideration. Our main goal is to create a teaching and learning

methodology and introduce it into the course of computer science and information technology.

Systematic and socially-personality-oriented approaches formed the basis for the development of the concept.

In V. Dahl's explanatory dictionary, "system" is considered as an arrangement of parts of a whole, a fixed device, a sequence of something in a connected order [2]. In the dictionary of E. N. Bogdanov, the "system" appears as a whole, as a compound made up of parts, it is a set of elements that are in relationships and connections with each other and with the environment, forming a certain integrity and unity [3].

In the science of local government, a system is understood as a set of interacting elements that make up a whole education and have new characteristics compared to its elements. According to V. P. Simonov's research, all systems, despite their diversity, have a certain type, organizational structure and characteristics that characterize them.

The structure is distinguished by the following: objects (subjects) - parts or elements, attributes (properties of structural objects), relationships or

interactions (uniting the system into a whole), the presence of hierarchical levels.

The main features of the system include:

- integrity (interdependence of system components, internal unity);
- compatibility (integration, connection) or incompatibility with other systems;
- stability (feedback);
- adaptation (adaptation to the environment, reaction to the environment and impact on it);
- self-improvement, learning ability.

According to N.V. Kuzmina's research, one of the types of social system is the pedagogical system, a set of interrelated structures and functional components: subordinated to the goals of education, upbringing and training of the younger generation and adults.

Let's consider the functional components of the pedagogical system:

1. The purposeful component of the process includes all the variety of goals and objectives of pedagogical activity, from the general goal of

comprehensive and harmonious personal development to specific tasks of forming individual personality qualities. The pedagogical system is a system of activity, any activity is aimed at achieving a certain goal;

2. The content component reflects the meaning given to the overall goal and each specific task, which is carried out on the basis of certain principles and methods;

3. The activity component is understood as the mutual cooperation of the teacher and students, without which the final result cannot be achieved;

4. The analytical and productive component of the pedagogical process reflects its effectiveness, flowability, describes the results achieved in achieving the goal.

The methodological model developed and recommended by us determines the patterns that provide the most general trends of the modern educational process:

- activities that ensure the formation of knowledge, views, needs, experience, feelings, will, norms of behavior of all participants in the educational process when teaching computer science;

- the unity of education and training, organically continuing, leading to success and mutual effectiveness;
- the unit of learning and communication, the nature of communication of all subjects of the educational process, the style of behavior, information exchange, interaction, group relations;
- the intensity of learning and self-education, in which self-education accompanies education and at the same time becomes its result.

The course of computer and information technologies is methodologically relevant in solving educational tasks and is based on the following principles:

- the unity of the content of educational activities in the continuous course of computer science is ensured by the presence of cross-cutting directions of types of education (directions of the educational process) at all levels of education. These directions are organizational ideas in the educational process. They form stable units in setting goals and determining the content of the course. The set of directions forms a general

model of the content of the educational activity of a continuous computer science course.

The integration of the computer science course with school subjects determines the level of solving the relevant tasks in the types of education and, as a result, the evolution of the information environment and the school education system in the joint development. The content of training and education in the course of computer science is based on the following approach: the formation of information culture is carried out in connection with the formation of environmental, legal, civil and other types, educational facilities differ from the system of knowledge of the corresponding scientific field. When determining methods, it is advisable to reflect their use in various types of practical activities based on the use of information and communication technologies in the content of educational work and in this regard is considered one of the most important selection criteria. The methodical system of computer-information training is also unique in terms of solving educational tasks, the general principles of university education and the principles of humanistic (developmental) learning. The general principles are as follows:

- reflects the modern achievements of science, computer science teaching, as well as in the field of education of children and youth;
- continuity is considered as a system of basic ideas that need to be implemented in the process of designing a computer science teaching system at school;
- consistency - as the need to form a holistic view of the unity and conditionality of surrounding phenomena;
- Pedagogically appropriate combination of general, differentiated and individual education and upbringing of schoolchildren.

The principles of humanistic (developmental) education include:

- the principle of social activity;

The purpose and methods of education are not passive assimilation of certain norms and values, but social activity, the ability to act socially. The student's natural activity should be directed to the social sphere, and only thanks to this orientation will "independent activity" be realized.

- the principle of social creativity;

The action performed by a child should be his free choice, free creative self-expression, not under pressure, including from the collective, but to perform it "by himself".

- the principle of interaction between the individual and the team;

In pedagogy, the principle of A. S. Makarenko about the unity of the collective of students and teachers is the main one. The content of joint activities should be meaningful (personal and social), it should correspond to the real and unspecified values of children and adolescents, include a system of norms, rules of behavior, symbols, rituals, etc., satisfying the basic communicative needs of a teenager.

- the principle of educational development;

L. S. Vygotsky emphasizes that the "zone of immediate development" exists not only in education, but also in upbringing. Today, a student forms and expresses a thought, makes a decision, performs a socially significant action with the help of a team, advice and support of a teacher, tomorrow he will become a person capable of forming his own opinion, making his own decisions, acting responsibly is the goal. The

student's personal development involves participation in collective activities (not fulfilling the requirements of others, but mindless imitation of the actions of others).

- the principle of motivation;

The act of education should be an answer to a problem - a student's personal problem, a collective, social, state, world problem. If the situation in which a child goes to an "educational event" is surrounded by a strong barrier of psychological protection and expectation, it is impossible to start his education, the ineffectiveness of such education is obvious...

- Problematic principle;

Learning begins with finding a problem together with students, finding ways to solve it, or, if a solution is found, discussing it, evaluating its correctness.

- the principle of individualization;

When carrying out educational activities, the teacher should rely on the idea of what this student can be like as a person. It is impossible to train everyone together and at once. Feedback in

education should come from the personality, not from external signs of behavior.

- the principle of the integrity of the educational process;

Education is not a set of disciplines, but the formation of a single and integral image of the child's world, education cannot be divided into separate sections: on the one hand - moral education, on the other - patriotism, on the third - legal. therefore, using the usual pedagogical abstractions, we understand that the real educational process is an integral phenomenon that we must understand.

- the principle of unity of the educational environment;

The child lives in a large and complex world, he is a member of formal and informal social groups and communities, he is a member of the "family" and is considered an object of constant upbringing by parents and relatives, therefore it is believed that his educational process is carried out only by the school, and he is a child. It is wrong to believe that it can provide comprehensive personal development. According to Yu. I. Vygotsky, life itself brings up a child. "Education

is life; in the right life, children grow up right." The educational environment includes the world of mass communications, its own "subculture" of children and adolescents and the learning environment created by the "parent environment".

- the principle of reliance on leadership;

Learning at different age stages should correspond to the nature of the leading activity of this stage, as well as "independent activity", reflection, psychological capabilities and limitations associated with the behavior of the child and the age characteristics of his activity. In teaching computer science at school, it is customary to distinguish three propaedeutic (initial course), basic (basic course) and indicative (specialized courses) stages [4].

We agree with A. V. Mogilyov's opinion about the logic of creating an elementary computer science course: tool (environment) → activity → information map of the world → information culture [106]. The formation of educational activities using computers (taking into account the tasks of teaching and upbringing), and then the formation of ideas about the information image of the world (information, information

process) is a necessary condition for the formation of information culture.

The main objective of the basic course (grades V-IX) It is the solution of educational tasks based on the integration of the course of computer science and information and communication technologies with preparatory subjects; It also consists in the formation of skills for creating educational and other information resources and their conscious use in educational and practical activities to solve socially significant tasks. The basic course lays the foundations of the information worldview and information culture in general, forms the moral potential of the student in relation to the use and application of information. Among the general directions of the main content, the priority subjects are "Information modeling", "Social Informatics", "Information processes".

The main purpose of the computer science course at the highest level of education is to prepare for further professional activity and continuing education. Computer science at this level is studied within the framework of the relevant educational directions, but the educational process in the chosen direction is unchanged, and the solution of the corresponding tasks is carried

out in the learning process at the basic and profile levels.

In a general education school, the main objects of education are information systems and information technologies and, accordingly, the main tasks in educational activities are their application to solve socially significant tasks, the formation of a developed environmental and information-legal culture, citizenship and patriotism, as well as to develop student self-awareness:

- skills and desire to demonstrate and realize their abilities;
- to develop the creative abilities of a student striving for high achievements in any or several types of activities;
- formation of ethical forms and methods of self-affirmation and self-awareness;
- positive self-esteem, self-confidence, developed reflection.

Computer science is essentially a worldview and system-forming science and, of course, plays an integrating role in updating the content of education, including the achievements of other

fundamental natural and mathematical sciences and humanities.

The requirement to ensure the consistency and consistency of teaching using information and communication means to ensure the educational process implies the need for educational work in order to ensure consistency and consistency in the formation of the necessary qualities of the student's personality.

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