
Information Technologies in the Process of Teaching Computer Science

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Annotation: The article is devoted to informatization and computerization of secondary vocational education as a necessary condition for the development of the modern information society. A number of issues have been identified teaching computer science and information technology.

Keywords: information technologies, educational process, problems of teaching informatics and information technologies.

In the period of rapid informatization of our society, there is a growing need for the education and upbringing of children who are able to live in an open society, able to communicate and interact with all the diversity of the real world, having a holistic view of the world and its informational unity. Therefore, interactive learning becomes important for the development of children. Interactive learning is, first of all, interactive learning, during which the interaction between the teacher and the student takes place.[4]

There are a huge number of interactive learning technologies (work in pairs; rotational (replaceable) triples; carousel; work in small groups; aquarium; unfinished sentence; brainstorming; Brownian motion; decision tree; court on one's own behalf; civil hearings; role-playing (business) game; press method; take a position; discussion, debate). Consider the use of some interactive technologies in more detail.

Students really like this type of work, like "Carousel", when two rings are formed: inner and outer. The inner ring is the students sitting motionless, and the inner one is the students who change every 30 seconds. Thus, they have time to talk about several topics in a few minutes and try to convince the interlocutor of their rightness.[9]

When working with students in grades 6-8, it is more appropriate to start with the simplest forms of group work ("pinwheel", "big circle", "aquarium"). Valuable in these forms is that they allow the child not only to express his opinion, view and assessment, but also, having heard the arguments of his partner in the game, sometimes abandon his point of view or significantly change it.

The simplest form of group interaction is the "great circle". The work is carried out in three stages [4].

First stage. The group sits on chairs in a large circle. The teacher formulates the problem.

Second phase. Within a certain time (approximately 10 minutes), each student individually, on his/her sheet, writes down the proposed measures to solve the problem.

Third stage. In a circle, each student reads out his proposals, the group silently listens (does not criticize) and votes on each item - whether to include it in the general decision, which is recorded on the board as the conversation progresses.

The "big circle" technique is best used in cases where it is possible to quickly determine the ways to resolve the issue or the components of this solution. [2]

"Aquarium" is a form of dialogue when the guys are invited to discuss the problem "in the face of the public." The small group chooses someone to whom it can entrust to lead this or that dialogue on the problem. Sometimes it can be several applicants. All other students act as spectators. Hence the name - aquarium.

Brownian movement involves the movement of students throughout the class in order to collect information on the proposed topic.

Decision tree - the class is divided into 3 or 4 groups with the same number of students. Each group discusses the issue and makes notes on their "tree" (sheet of paper), then the groups change places and write their ideas on the trees of their neighbors.

Often they use such a form of interaction as "Take a position".

A statement is read and the students have to go to the poster with the word "YES" or "NO". It is desirable that they explain their position.

Sometimes in general lessons they use a technique such as a Candle. A lighted candle is passed around the circle, and the students speak out on a specific issue.

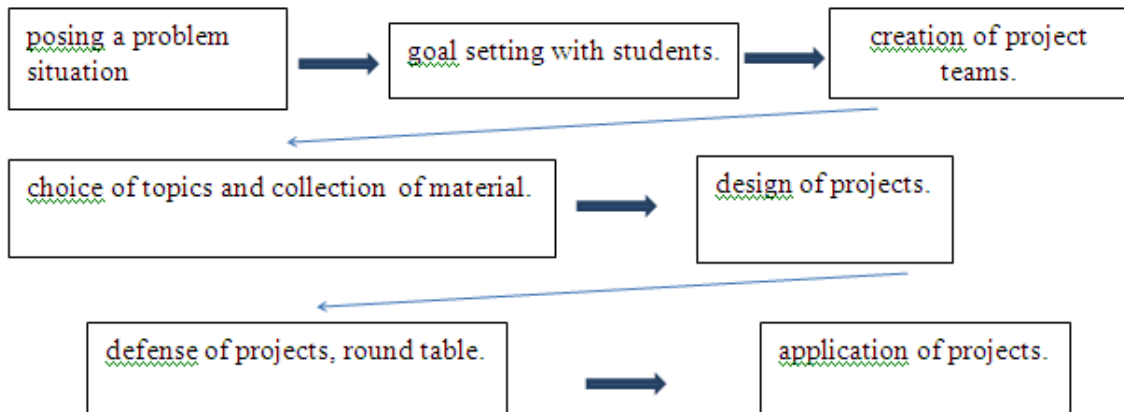
Each teacher can independently come up with new forms of work with the class. Pair work is often used in the classroom, when students learn to ask each other questions and answer them.

The interactive creativity of teacher and student is limitless. It is only important to skillfully direct it to achieve the set educational goals.

In computer science lessons, interactive learning is very successfully carried out. One of the methods of such training is the method of projects. It is in perfect agreement with the principles of modern education, such as: • the principle of learning activities; • the principle of a controlled transition from activities in a learning situation to activities in a life situation; • the principle of a controlled transition from joint educational and cognitive activities and independent activities of a student; previous (spontaneous) development; • creative principle. On the subject of computer science, the project method allows you to implement problem-based learning that activates and deepens knowledge, allows you to teach independent thinking and activity, a systematic approach to self-organization, makes it possible to teach group interaction, develop the creative initiative of students. The project method is always focused on the independent activity of students, individual, pair, group, which students perform within a certain period of time. This approach is organically combined with a group approach to learning. The project method always involves solving some problem, which, on the one hand, involves the use of a variety of methods, teaching aids, and, on the other hand, the integration of knowledge and skills from various fields of science, engineering, technology, and creative fields. The use of this method makes the learning process creative, and the student relaxed and purposeful.[7] When working on projects, a creative working environment reigns, in which any independent work is encouraged, attracting new, unstudied material, when there is intensive self-learning and mutual learning, conditions are created for the self-development of a person's creative individuality and the disclosure of his spiritual potentials.

The topic for project activities in computer science lessons can be almost any section of the school curriculum: from computer viruses to studying a specific program.

At school, in computer science lessons, students are given a learning goal and are given the maximum possible independence to complete the educational project. Students can choose a business partner for project work, a problem area, a task from the proposed ones, which allows you to create efficient groups and take into account the subject inclinations of students. The project is developed over several lessons. Students must constantly coordinate with the teacher for the correct implementation of the project. The stages of the joint activity of the teacher and students can be depicted in the form of a diagram:



Rice.one

Joint implementation of projects leads to the following results:

For the student[10]

- 1) Formed and practiced:
 - skills of collecting, systematizing, classifying, analyzing information;
 - public speaking skills (oratory);
 - the ability to present information in an accessible, aesthetic form;
 - the ability to express one's thoughts, to prove one's ideas;
 - ability to work in a group, in a team;
 - Ability to work independently, make choices, make decisions.
- 2) Expand and deepen knowledge in various subject areas.
- 3) The level of information culture is increasing, which includes working with various equipment (printer, scanner, microphone, etc.)
- 4) The student thoroughly studies the computer program in which he creates a project and even more - programs that help to better present his work.
- 5) The student has the opportunity to realize their creative ideas.
- 6) Relations with the teacher move to the level of cooperation.
- 7) The self-esteem of those children who, for one reason or another, considered themselves unsuccessful, increases.

All of the above gives the student the opportunity, leaving the school, to become a successful, self-developing, self-sufficient person.

For the teacher.

1. Relations with students move to the level of cooperation.

2. The teacher has the opportunity to create a bank of student work that can be used in extracurricular activities, in the classroom, at events.
3. The level of the teacher as an enthusiast, specialist, consultant, leader, coordinator, expert is rising.
4. The teacher ceases to be a “subject teacher”, but becomes a generalist teacher.

All of the above leads to an increase in the professionalism of the teacher.

The next interactive technology is the brainstorming method. The brainstorming method was invented by Alex Osborne (USA) in the 40s of the 20th century.

The brainstorming method is an operational method of solving a problem based on stimulating creative activity, in which the participants in the discussion are asked to express as many possible solutions as possible, including the most fantastic ones. Then, from the total number of ideas expressed, the most successful ones are selected that can be used in practice.

Stages and rules of brainstorming [5]:

Properly organized brainstorming includes three mandatory steps. The stages differ in the organization and rules for their implementation:

Formulation of the problem. Preliminary stage. At the beginning of this stage, the problem should be clearly formulated. There is a selection of students, that is, participants in the assault and the distribution of other roles of participants, depending on the problem posed and the chosen method of conducting the assault.

Generation of ideas. The main stage, on which the success of the entire brainstorming largely depends. Therefore, it is very important to follow the rules for this stage:

The main thing is the number of ideas. No restrictions need to be made.

A complete ban on criticism and any (including positive) assessment of the ideas expressed, since the assessment distracts from the main task and knocks down the creative mood.

Unusual and even absurd ideas are welcome.

You need to combine and improve any ideas.

Grouping, selection and evaluation of ideas. This stage is often forgotten, but it is the one that allows you to highlight the most valuable ideas and give the final result of the brainstorming. At this stage, unlike the second, the assessment is not limited, but, on the contrary, is welcomed. Methods for analyzing and evaluating ideas can be very different. The success of this stage directly depends on how “equally” the participants understand the criteria for selecting and evaluating ideas.

For brainstorming, two groups are usually created:

1. students offering new options for solving the problem;
2. Students processing the proposed solutions.

There are individual and collective brain attacks.

Brainstorming involves a team of several students and a teacher. Before the brainstorming session itself, the teacher makes a clear statement of the problem to be solved. During brainstorming, students express their ideas aimed at solving the task, both logical and absurd. In the process of brainstorming, as a rule, at first the solutions are not very original, but after some time, typical, template solutions are exhausted, and students begin to have unusual

ideas. The teacher writes down or otherwise registers all the ideas that come up during the brainstorming session.

Then, when all ideas are expressed, they are analyzed, developed and selected. As a result, the most efficient and often non-trivial solution to the problem is found.

The success of brainstorming is highly dependent on the psychological atmosphere and the activity of the discussion, so the role of the teacher in brainstorming is very important. It is he who can "break the deadlock" and breathe fresh energy into the process.

Brainstorming in computer science lessons can be used, for example, when studying the topic "Computer network services". Questions to attack might be: Which Web services do you characterize as harmful? What services would you explicitly ban or control? Is there an Internet addiction, what are its causes? Etc.

Debate as an interactive teaching method.

The purpose of the debaters is to convince others that his approach to solving the problem is correct.

Conducting debates is an effective means of teaching students the ability to clearly and logically formulate their position, to find convincing facts and arguments in their support. They also develop a sense of confidence in their ability to influence public opinion.

Debate discussion is used when discussing a complex or controversial issue, the opinions of the participants are already clearly defined and differ sharply from each other.

The purpose of this form is to teach children to express their point of view in a calm, friendly manner. Participants make arguments for or against the idea under discussion and try to convince opponents of the correctness of their position, and not just attack them with attacks.

The speaking time of each participant during the debate is limited and the same for everyone. Deciding on this form of discussion, one must be prepared for the fact that the assessments of many participants will be subjective.

The teacher divides the students into two groups (the number of groups depends on the number of possible points of view on the problem). Students either choose a group themselves or are distributed by lot.

The teacher talks about the topic of the debate and the rules for conducting the discussion: the time for preparation in groups, the total time for the group to speak in the debate. The representatives of the groups speak in turn. Each group is entitled to three performances.

During the preparation, students distribute roles among themselves and decide how best to manage the allotted time. Representatives of one group can ask questions to representatives of other groups, as well as comment on the arguments of their opponents. Groups can use pictures, diagrams, and other visual aids. Group representatives must agree on the order in which they will speak.

The teacher starts the debate, gives the participants the floor, follows the rules.

At the end of the debate, you can conduct a poll among the participants by secret ballot.

Guidelines:

Preparatory work. Help students understand the topic of the debate.

Distribution of roles. Select students to participate in the debate. Divide them into two groups: those who support the resolution and those who oppose it. Make sure that the

participants in the debates know the order of their conduct. Select a representative and his assistant who will monitor compliance with the regulations.

Preparation of class participants. Give participants sufficient time to prepare “constructive arguments”. Help students do this. Ask them to predict what the opposing party's arguments will be and prepare to refute those arguments. Help students understand the benefits of participating in debates.

Room preparation. The chairman and debaters take their places in front of those present, and the group of participants opposing the resolution are placed to the left of the chairman.

Conducting debates. The described mechanism is widespread. But it is possible to use a less formalized procedure or to hold the debate in a different form.[11]

The chairman briefly formulates the problem under discussion and the proposed resolution, sets the time limit for speeches.

The Chairman gives the floor to the first speaker from the group supporting the resolution. The order of speaking must be determined in advance.

Then the representative of the opposite group speaks.

The chairman gives the floor to the representatives of the groups in turn until all participants in the debate have taken the floor.

Then each participant is given the opportunity to refute the arguments of opponents and respond to their criticism. No new arguments can be made here. The controversy is always started by representatives of the group opposing the resolution. The procedure is the same as in the previous step.

Students can at this stage state their reasons for taking a particular position on the resolution. The teacher could write these reasons on the board. Students can answer questions about the reasons, but do not proceed to prove the correctness of their position. [17]

Everyone should point out those arguments that, despite being contrary to their views, made them think or sounded especially convincing.

At the end of the debate, students should evaluate the consequences of implementing the position of the opposite side. Debates, as well as the project method, can be widely used in computer science lessons. During the debate, questions about software, methods for solving problems, comparing programs of the same direction, etc. can be considered. Thus, interactive technologies can and should be used in the process of teaching computer science. [28]

Literature:

1. Abdullayev, S. S. (2021). INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT), THEIR DEVELOPMENT AND IMPROVEMENT IN MODERN EDUCATION. Экономика и социум, (4-1), 21-24.
2. Atadjanov, J. M. (2018). Developing Professional Pedagogical Mastery of Future Initial Classes Teachers. Eastern European Scientific Journal, (2).
3. Farkhodovich, T. D. (2022). The Problem of Forming Interpersonal Tolerance in Future Teachers. International Journal of Innovative Analyses and Emerging Technology, 2(4), 12-15.

4. Halimovich, T. T., Mamirovich, I. S., Muminovich, K. A., Solizhonovich, A. S., & Valerievich, S. Z. (2020). Monte Carlo method for constructing an unbelised assessment of diffusion problems. *European science review*, (1-2), 7-12.
5. Han-Woo, C., Khan, V. S., Yilmaz, E., Omelicheva, M., Hyo-Joung, K., Chai-Mun, L., & Chung-Rok, P. (1999). *International Journal of Central Asian Studies*. Institute of Asian culture and development.
6. Inomzoda, A. A. (2021). " Improving The Teaching Of" Education" On the Basis of Multimedia Technologies"(On the Example of Primary Classes). *Texas Journal of Multidisciplinary Studies*, 2, 88-90.
7. INTER, FIBER LENGTH IN. "An International Multidisciplinary Research Journal." *An International Multidisciplinary Research Journal* 41.43 (2017).
8. Jo'rayev, V. T. (2019). The advantage of distance learning courses in the process of education. *Scientific Bulletin of Namangan State University*, 1(9), 220-224.
9. Jo'rayev, V. T. (2020). The Role And Advantages Of Distance Courses In The Innovative Educational System. *The American Journal of Social Science and Education Innovations*, 2(10), 434-439.
10. Jurayev, V. T. (2020). PEDAGOGICAL SOFTWARE IN THE PREPARATION OF FUTURE TEACHERS OF INFORMATICS IN AN INNOVATIVE ENVIRONMENT. *Theoretical & Applied Science*, (4), 182-185.
11. Kholikova, D. (2020). INTELLECTUAL ACTIVITY OF CREATIVE THINKING VERBAL TEST "UNUSUAL USE". *PEDAGOGICAL SCIENCES*, 22.
12. Kholikova, D. M. (2021). DEVELOPMENT OF INNOVATIVE THINKING SKILLS IN HIGHER EDUCATION STUDENTS. *Theoretical & Applied Science*, (6), 549-552.
13. Mashrabjonovich, O. J. (2019). TECHNOLOGY FOR THE DEVELOPMENT OF PEDAGOGICAL REFLECTION. *European Journal of Research and Reflection in Educational Sciences Vol*, 7(12).
14. Mukhtoralievna, Z. S., & Madaminkhonqizi, S. M. (2022). Methods of Mnemonics in Pedagogical Work with Elementary School Students. *International Journal of Culture and Modernity*, 13, 44-52.
15. Nurmakhamatovna, O. Z. (2022). PEDAGOGICAL TECHNOLOGIES AIMED AT EDUCATION IN JUNIOR SCHOOLCHILDREN VALUE ATTITUDE TO THE FAMILY. *Gospodarka i Innowacje.*, 22, 45-49.
16. Ortikova, Z. (2019). TO DEVELOP STUDENTSCREATIVE THINKING. *Scientific Bulletin of Namangan State University*, 1(9), 224-229.
17. Sobirjonovich, S. I. (2021). Didactic Interaction as Whole Integral Education. *International Journal of Discoveries and Innovations in Applied Sciences*, 1(7), 80-83.
18. Sobirjonovich, S. I. (2021). Professionalism as a Factor in the Development of the Pedagogical Activity of the Future Teacher. *Journal of Ethics and Diversity in International Communication*, 1(7), 76-81.
19. Sobirjonovich, S. I. (2021). Speech Education for Children from 1 To 3 Years of Age. *International Journal of Innovative Analyses and Emerging Technology*, 1(7), 135-141.
20. Sobirjonovich, S. I. (2021). Teaching Preschool Children in a Second Language. *International Journal of Culture and Modernity*, 11, 406-411.

21. Tukhtasinov, D. (2018). DEVELOPMENT OF LOGICAL THINKING OF PUPILS OF 5-9TH GRADES IN THE LESSONS OF MATHEMATICS. Zbiór artykułów naukowych recenzowanych., 209.
22. Zokirova, S. M. (2020). Ta'limda axborot texnologiyalarining vujudga kelish tarixi. Молодой ученый, (18), 586-587.