# INNOVATIVE APPROACHES TO TEACHING INFORMATION TECHNOLOGY IN EDUCATION

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**Abstract:** In this article, innovative approaches, methods, technologies and solutions to current problems are reflected in the teaching of information technology in education .

**Key words:** collaborative learning, modeling, traditional educational technology, non-traditional educational technology.

**Аннотация:** В данной статье отражены инновационные подходы, методы, технологии и решения актуальных проблем преподавания информационных технологий в образовании.

**Ключевые слова:** совместное обучение, моделирование, традиционная образовательная технология, нетрадиционная образовательная технология.

We all know that the 21st century is the era of globalization, the age of technology . Today, science and technology are developing rapidly, which requires teaching using new technologies. It is an urgent issue that every pedagogue, knowing that he is a responsible person, increases the efficiency of the lesson and makes effective use of new technologies in raising the young people who are our future to be highly cultured and knowledgeable.

Today's demand is pushing education to look for new approaches that lead to quality changes, and the approaches (methods) in its study are also changing. The result of practical application of new knowledge in education leads to the creation of new education based on innovations. Progressive development of the education system in our republic, radical renewal and reform of the personnel training system is one of the most important tasks of the state. In order for the student to be able to apply the acquired knowledge in practice, he can strengthen it in time, he knows how to use it in learning other concepts, and the systematization of the acquired knowledge leads to ensuring the effectiveness of education. Cognitive activity of the student means: - collecting all the information on the subject being studied; - processing of collected information; - activity consisting of three stages, such as the application of learned information (data), is understood. The main task of the subject of informatics is to introduce students to
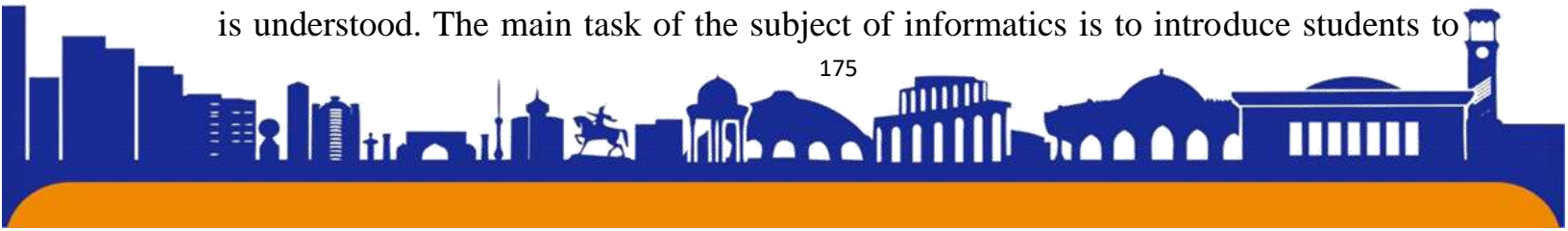
some general ideas of modern informatics, to reveal the practical application of informatics and the role of computers in modern life. Therefore, to increase the effectiveness of teaching "Informatics", wide use of pedagogical and information technologies in the organization and conduct of training sessions, development of software suitable for the content of training, and their introduction into the educational process is one of the main tasks. Taking into account the relevance of these tasks, it is necessary to study and analyze the state of use of game technologies in the teaching of "Informatics", develop the methodology of their effective use, and appropriate methodological recommendations. The basis of the use of game technologies is the activating and accelerating activity of students. According to the research of scientists, the game is one of the main types of activity together with work and study. According to psychologists, the psychological mechanisms of playful activity rely on the fundamental needs of a person to express himself, stabilize his place in life, self-control, and realize his potential. and part of it is organized as (introduction, reinforcement, exercise, control). The games are aimed at different goals . They are used for didactic, educational, activity development and socialization purposes. The didactic purpose of the game is aimed at expanding the range of knowledge, cognitive activity, application of knowledge, skills and abilities in practical activities, development of general education skills and skills, development of labor skills. The educational goal of the game is to cultivate independence, will, certain approaches, points of view, cooperation in forming a spiritual, aesthetic and worldview, collectivism, the ability to join a team, and communication skills. Taking into account didactic principles, it is necessary not only to give students a strict scientific statement of facts, but also to use various interesting methods of teaching. For example, the well-known and popular crossword game naturally arouses interest among students.

According to the definition in the dictionary, its term means "cross" - crossed, "ward" - word, and was first discovered at the beginning of the 20th century . Over time, its types increased, and chainwords, chaincrosswords, crosschainwords, circular 10 crosswords, diagonal crosswords were invented. Each of them differs in the form of the arrangement and connection of words. The form of inquiry in the form of a crossword puzzle is always an interesting and attractive method for students. When this form of independent creative activity is used, not only strong students, but also weak students actively participate in the lesson.
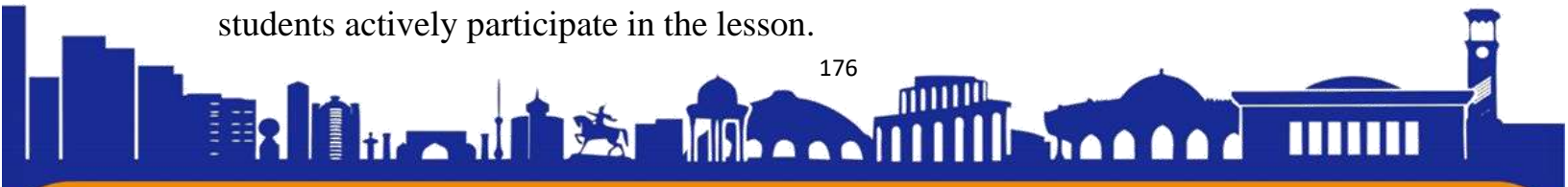
of other forms of entertainment in the lessons, such as rebuses and puzzles, is also effective. When using these interesting methods, the teacher plans a purposeful organization of the lesson, that is, prepares crosswords, rebuses, puzzles in accordance with the content of the subject. Determines the purpose of the lesson and projects the expected result. Rebus, crosswords are among the game technologies. The word "rebus" is derived from the Latin language, which means "to express not by words, but by pictures." This is a puzzle created by combining a word or term with pictures, notes, letters. Rebus is one of the most common and popular games. It is possible to cover proverbs, parts of poetry, a phrase or a word. It was first used in France in the 15th century. The first collection of rebuses was published in France in 1582 by Etenome Taburo. Later it spread to England, Germany, Italy. The first rebuses in Russia were published in 1845 in the magazine "Illustration". A rebus is a scramble for words in a fun character. For example: - The number of apostrophes in the left part of the picture corresponds to the number of letters to be deleted from the left side of the name of the picture; - The number of apostrophes at the top right of the picture corresponds to the number of letters to be deleted from the right side of the picture name; - To erase the letters between the words, these letters are written on the picture and crossed over; 11 - Replacing the symbol in the word: "2=d" means replacing the letter 2 with the letter "d", and "r=p" means replacing each "r" symbol with the "p" symbol; - You can create a new one by changing the position of the characters in the name of the picture; - By putting the picture upside down, the word is also read upside down.

Today, educational technologies can be conditionally divided into two types:

1. Traditional

2. Unconventional

Traditional educational technology - intended for a certain period, the educational process is more focused on the teacher , using the traditional form, method and set of educational tools. - is to achieve the goal of education.

Non-traditional educational technology - designed for a certain period, with the student at the center of the educational process , a modern form of teaching, active teaching methods and a set of modern didactic tools is intended for educational work. is to aim and achieve a guaranteed result. Unlike traditional educational technology, non-traditional educational technology creates conditions for the development of students' cognitive abilities, special attention is paid to their independent work,
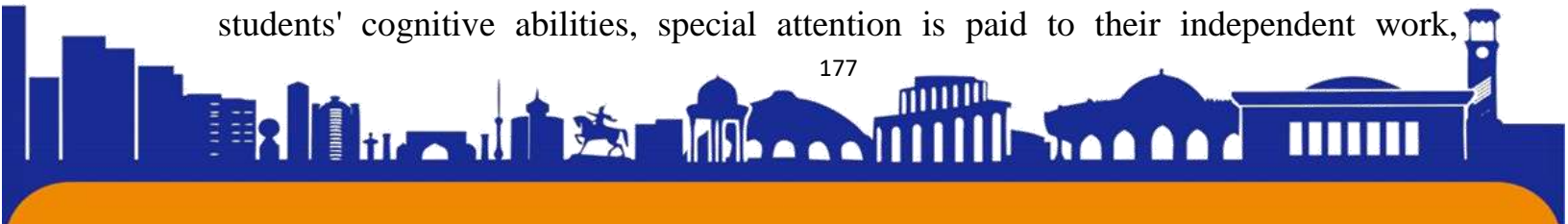
cognitive activities have a searching and creative character. The structure of the lesson will be variable . In turn, non-traditional educational technology is divided into three :

- Collaborative learning
- Modeling
- Research (Project)

teaching and learning based on the organization of sequential use of skills and competences under the direct leadership of the student, which ensures the re-productive activity of acquiring , absorbing, strengthening the knowledge of students. It consists of methods that allow students to learn by working in independent groups. These can include methods such as working with a book, educational discussion, round discussion, brainstorming, working in small groups, and debate. Modeling is the creation of a condensed and simplified view of events and processes that occur in real life and society in the audience, and provides for the personal participation of students in them and learning through activities. Its main goal is to increase the effectiveness of the educational process by providing students with direct participation in acquiring knowledge, not just listening. These can include methods such as business games and role-playing games. Below we will touch on the system of methods for educational technologies in detail (Fig. 3.5). Research consists of a set of methods that enhance and encourage students to understand and solve problems, independent learning. The purpose of the research is to arouse students' interest in asking questions and searching for answers during the lesson. Teaching in it ensures direct participation of students in the process of practical research. These include methods such as the problem situation, the design method, independent research, and the reference text . Traditional and non-traditional educational technologies in computer science education. Pedagogical tasks of "Informatics" science are determined by its unique contribution to solving the main tasks of the general education of a person.

1. formation of students' knowledge about informatics and development of their thinking.

2. Forming a scientific outlook. In solving this important task, the entire pedagogical team participates in the process of teaching all educational subjects.

3. Education in the spirit of national ideology. preparing students for practical activities, work, and continuing education.
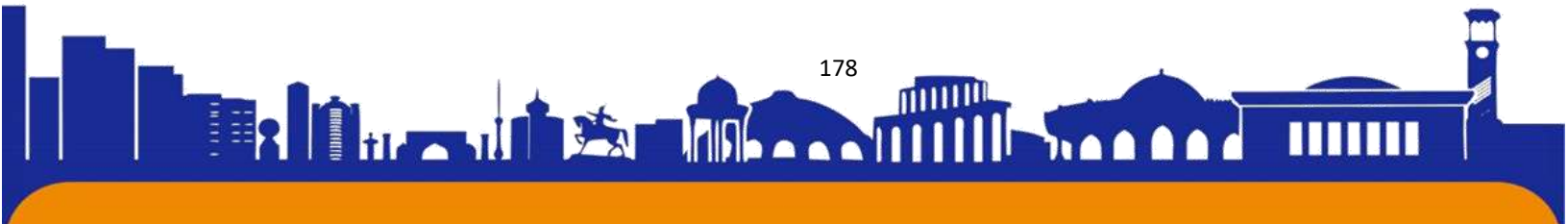
None of the above issues should be solved in isolation. They should be implemented as a whole and closely related to each other. it is possible to train students ' thinking and create a scientific worldview only on the basis of solid mastery of the basics of informatics. On the other hand, it is possible to achieve a deep understanding of computer science as a science by teaching students to think logically. In addition, in order to achieve the correct solution of the task of preparation for practical activities in the process of teaching informatics, it is necessary to increase the scientificity of the informatics course. Only if they can make correct and deep conclusions, the students can take a critical and creative approach to solving each problem , do not lose themselves in front of new problems and can work effectively in different conditions. Also, practical work expands students' outlook and enriches it with new facts, and also increases the level of knowledge in informatics, ensures that it is deep, complete and solid. In the educational process of general secondary education, new pedagogical technology, educational programs, development of organizational and management functions in general democratic principles, consideration of students as individuals, democratization of the educational process, socialization, school as a social institution determines the main directions of general education schools, considering the introduction of rights expansion.

Includes pre-school education, general education, secondary special education, vocational education and further education stages and is intended for non-experts in informatics and software. The science of "Informatics" is based on a system of regulations and views that are new to our pedagogy: - the entire "life cycle" of personnel must be taken into account; - teaching of informatics subjects should reflect changes in the content of education, taking into account the current state of the world and development prospects;

- it is necessary to abandon the need to teach programming to non-experts in informatics and software;

- teaching of subjects in the field of informatics should be built on the basis of the principle of didactic series;

- it is possible to extend the period of novelty and relevance of the content of the educational courses being developed only on the basis of emphasizing the principles of information processing;
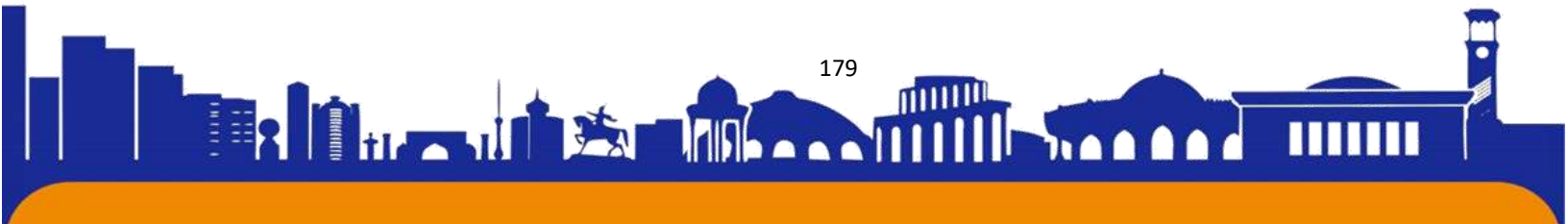
- focus on guaranteeing the qualities of training, upbringing and development of the individual ;

- redistribution of study time resources in favor of development of students' thinking, organization of educational creative activities.

The important elements of the innovative pedagogical process are self-management and self-mobilization of the individual. One of its most important directions is the development of students' cognitive activity , which leads to the activation of students' academic work and professional specialization. The axiological approach to innovative activity means that a person devotes himself to the process of creating new things, pedagogical values created by him. It is up to the teacher and the student to choose the technology to achieve the result according to the goal, because the main goal of both parties is clear: to achieve the result. it is necessary to work with a computer, perhaps a film, handouts, drawings and posters, various literature, information technology will be needed, it depends on the teacher and the student.

There are different styles of teaching, and there are also different types of lessons. Traditional methods of teaching take place according to the following plan-scenario:

1. Organizational part - greetings, checking attendance, cleanliness of the blackboard, making sure that there is a chalk, cloth , etc.

2. Asking the topic covered - The teacher raises the question, "What topic did we cover in the previous lesson, what examples were given at home?" 4-5 students will be asked about the topic. They usually don't answer in front of the board, so they take their homework notebooks with them to show the teacher. The teacher listens to the students' answers and sees the homework, evaluates them. Students' answers are commented on.

3. Presentation of a new topic. Before that, the topic title is written on the board. At the same time, some teachers write in which paragraph of the textbook, on how many pages, which exercises are given as homework, on one side of the board (usually in the upper right corner). Then the presentation of a new topic begins.

4. Consolidation of a new topic. The teacher asks questions about the topic and uses exercises to determine how the students understand the new topic, whether the goal of the lesson has been achieved or not, to strengthen the main idea and "points" of the topic . In this, experienced teachers use different methods to increase the activity of the class, to absorb the subject in the mind of the student. For example, handing out
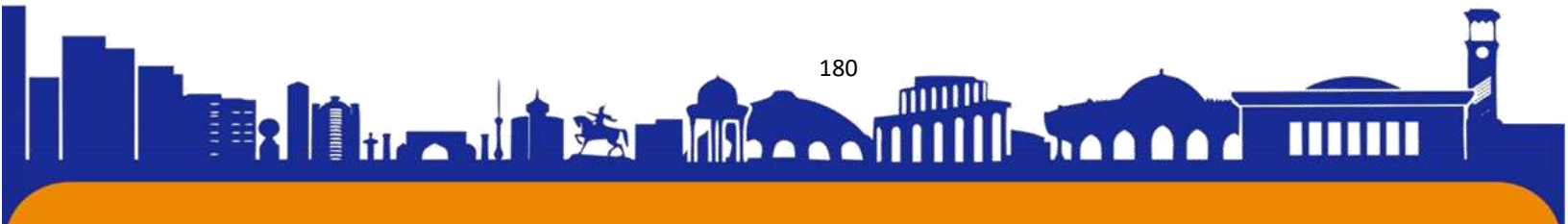
handouts, dividing students into groups, giving each group a previously prepared task , etc.

During the exercises, the teacher goes around the class, observes who is working and helps if necessary. "Do you have any questions?" he asks.

5. Completion of the lesson, assessment of students' knowledge. The teacher analyzes the performance of the exercises and the answers. Identifies the areas of the topic that "did not reach" the students. It re-explains and interprets these "places". Pupils who actively participated in the blackboard, answered the questions, completed the task are evaluated. A review of many teachers' daily lesson plans shows that teachers provide time allocations for each of the above steps. This is especially useful for young learners. It is natural to have some restrictions on the specified time. Next time, we will hear phrases like "new technology" of teaching , non-standard - non-traditional method of teaching, in particular, interactive method. These methods were invented by advanced teachers themselves and are used by many teachers. Many manuals on modern teaching methods have been published. The results of the experiments conducted in order to find an answer to the natural question "what percentage (percentage) of it is remembered when working on a genre" received the name "pyramid of understanding" . According to him, the statement of the subject;

- 10-20% of it only when listening;
- if he hears and sees instructional materials on the subject, 30-50% of it;
- 60-90% of it will be remembered if he hears it , performs practical training on the topic, talks about the topic to his friends, explains it.

Of course, each teacher's experience, knowledge, availability of additional literature, wealth of his personal library, to a large extent, "tells" him in which method to pass the subject. Let's briefly dwell on the non-traditional, activating ways of teaching. Practical exercise is organized in order to acquire the ability to apply the theoretical knowledge, rule , and formula described in the topic in practice, in the course of exercises . Practical exercises are performed in almost all mathematics lessons. Independent work - when a certain group (block) of topics is finished, to consolidate them into a single system, in order to strengthen students' independent practical work, to engage in activities, to create the skills of working with a textbook, a set of problems. For example, an independent work on algebraic fractions may concern four amalgams.

A sheet with independent work can be given to each student separately. The teacher prepares it in advance. Communication of students in pairs - when solving a problem related to a topic, the student explains what he is doing to the student sitting next to him (paired with him). For example, one student in a pair explains to his partner all the work and considerations leading to the analysis of the condition and question of the problem to its complete solution. He, in turn, explains the solution to the problem to the first student, that is, students in pairs take turns to perform the task (role) of the teacher. Teaching students by working in groups - in which students in the class were divided into groups. There can be 5-6 students in each group. Tasks should be clearly and unambiguously assigned to groups. Pupils in the group share their opinions on the assigned task and come to a common opinion. A student presents this idea to the class on behalf of the group.

The teacher explains and evaluates the activity of the groups. In such work, students: learn each other, respect each group's point of view, opinion; they learn to justify their thoughts and judgments and convey them to many people . The teacher prepares a list of topics and tasks in advance. Role-playing games - dramatization of a situation suitable for the topic, performance in roles. The script should be structured in such a way that it helps the performers on the stage to learn and acquire skills. The teacher thoroughly considers which topics are suitable for staging; they make a list and the best students get together to write a script. Mathematical dictations are one of the current control forms of assessment of student knowledge. In addition to regular exercises, it is determined to what extent the student has mastered concepts related to a certain set of topics . Competitions are aimed at checking and evaluating the knowledge and skills acquired on a certain group of topics. This event will be held in the form of a question-and-answer competition, a quiz, mathematical wall newspapers ( journals), a contest of abstracts written on the topic (concrusi). Conferences - can be held quarterly, they can also be considered as a kind of interim control. In this, students present their independently written work to the class in the form of a lecture. Works will be dedicated to certain topics. It is also possible to conduct a school informatics conference of students on several acceptable works from each class.

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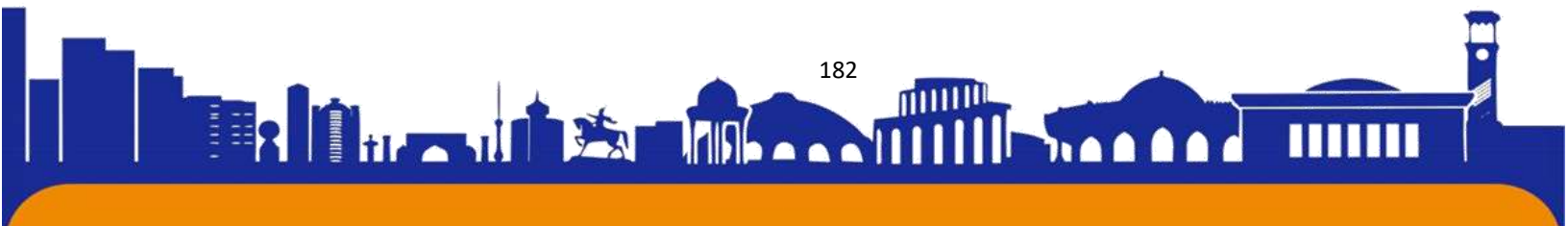
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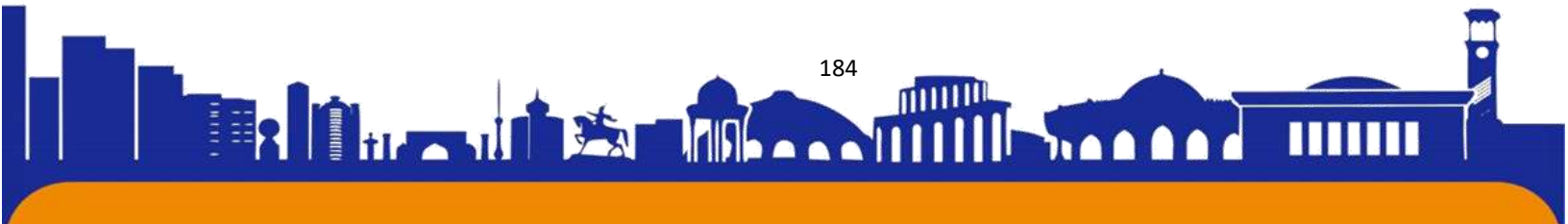
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