WEB OF SYNERGY:
International Interdisciplinary Research Journal
Volume 2 Issue 6, Year 2023 ISSN: 2835-3013
https://univerpubl.com/index.php/synergy

Active Methods of Teaching Biology

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Article Information

Received: April 26, 2023
Accepted: May 26, 2023
Published: June 27, 2023

Keywords: *Methods Of Teaching.*

ABSTRACT

Interactive is derived from the English word interact, which means to act in cooperation. Interactivity means that the student works in cooperation with the student or communicates with the computer in an interactive mode.

Interactive teaching is, first of all, dialogic teaching, solving problems in cooperation by all participants in the process of communication.

The main essence of interactive teaching is that during the teaching process, all students become active participants in the learning process, they understand the discussed problems, the development of events and phenomena, understand problematic situations, look for ways to solve them, and recommend the most optimal option. Students' cooperation in the learning process based on studying the educational material, recommending different options for solving the problem allows each student to add his share for the success of the group, share ideas, information between them. and prepares the ground for the exchange of experience. Since this cooperation takes place in a friendly, comfortable social-psychological, mutual support environment, students not only acquire new knowledge, but also develop their own cognitive activities, raise it to a higher level, and allow to enter into cooperation.

In the process of using interactive methods in the teaching process, it requires the organization and management of students' interaction, in which students collaboratively search for a solution to a problem that is common, as well as important for each student. mutual understanding, cooperation, and harmony emerges between them. In classes using interactive methods, one student is not allowed to dominate, he is not allowed to express his opinion.

When interactive methods are used, students acquire the skills of critical thinking, analysis of information sources and situations, solving complex problem situations, analyzing the opinions of their peers and drawing reasonable conclusions, participating in discussions, and communicating with other people.

Interactive teaching methods have the following features:

Communication, which is an important vital human need, is used at all stages of the teaching process. In the process of teaching, students are given equal opportunities to show their strength, knowledge, and talent. A socio-psychologically favorable environment is created in the cooperation of students in small groups, and the ground is prepared for gradual and effective participation in communication.

In order to actively participate in communication, students understand that it is not enough just to hear, but to analyze what they have heard, to think, to make their thoughts reasonable and understandable. In collaboration with the students, they should perform the assigned tasks at the required level by working in small groups, analyze the obtained results, check their correctness, present them and achieve recognition by other groups.

The group of active methods used in the teaching of biology includes problem-search methods of teaching, logical methods, methods of independent work, methods of motivating and justifying student activity, control and self-control methods.

Active methods require active cognitive activities based on the activation of knowledge and skills of analyzing individual objects, phenomena and laws in the process of creating problem situations, working in cooperation in small groups of students, solving problems, finding answers to complex questions. Therefore, it is important to use problem-based research and logical methods in the teaching of biology, together with oral presentation, demonstration and practical methods, which are reproductive methods of teaching. For this, the teacher should understand the specific features of these methods, the methodical techniques included in them, and acquire the skills to use them effectively. Problem-based research methods serve to actively master the educational material by applying the previously acquired knowledge and skills in new situations to problem situations created in a consistent and goal-oriented manner during the lesson. This group of methods prepares the ground for students' intellectual development, development of creative and independent thinking skills, analysis of problem situations and finding the optimal way out of them, and getting the goal right.

When using the problem-research interview method belonging to the group of problem-based research methods, problem situations are first created, a chain of previously prepared problem questions is described, students are encouraged to think logically together with the teacher, create and prove educational hypotheses, problem-solving during the conversation it is possible to find answers to questions. In the problem story method, the teacher creates problem situations in the process of learning a new topic, in cooperation with the students, it is possible to find answers to problematic questions in the process of the story, to create and prove educational hypotheses, and based on the answers of the students, problems are solved.

When using the problem-practical method, problematic tasks are created, experiments are conducted on this basis, educational hypotheses are formed for solving problem situations, and educational-research experiments are conducted, and problems are solved by describing educational conclusions and generalizations.

In the following years, classes using problem-based methods were given a new name ("Storm of thought" by B.R. Kadirov), ("Brain attack", "Clash of ideas", "Battle of ideas" by V.M. Karimova, F.A. Akramova), ("Brain attack" by J.G.Yoldoshev) naming became a painting.

A lesson using the problem-based method ("Brainstorming") is organized based on the following stages:

I - stage. *Forming equal number of small groups of students who are psychologically close to each other.*

II - stage. *Distribute educational assignments consisting of problematic questions to small*

groups and introduce them to the didactic purpose of the assignment.

III - stage. *Directing students' cognitive activity to solving educational problems.*

IV - stage. *Listening to students' information on solving problem situations.*

V - stage. *Educational debate and discussion between small groups.*

VI - stage. *Making a general conclusion.*

In "Brainstorming", students apply the previously acquired knowledge in new situations, expand and deepen their knowledge, acquire methods of mental activity. These methods include creating problem situations, creating a chain of problem questions, creating problem assignments and conducting experiments, creating learning hypotheses for solving problem situations, proving learning hypotheses, comparing objects, conducting logical reasoning, educational research includes methods of conducting experiments, describing learning conclusions and generalizations. A group of logical methods of teaching. This method determines the direction of the content of the educational material, students' ability to distinguish the main idea, analyze, compare, generalize the studied object, acquire the methods of mental activity, develop abstract thinking, establish cause-and-effect relationships. makes it possible to understand.

The group of logical methods of teaching includes inductive, deductive, analysis, separation of the main idea, comparison, and generalization methods. In the inductive method, students' attention is first attracted to the study of specific facts, and then directed to draw general conclusions from the specific. In the deductive method, students first learn general laws, and then they are taught to draw conclusions from the general to the particular.

Pupils understand information with the help of analysis method, identify similarities and differences of the studied objects, divide the studied objects into their components, determine the beginnings, causes and consequences between them. The method of separating the main idea has become important, separating and sorting the main idea in the educational material, separating information into logically completed parts, separating the main idea and secondary ideas, separating key words and concepts, the main idea prepares the ground for drawing conclusions about.

Using the method of comparison, students learn to identify comparative objects given in educational tasks, to identify the main features of objects, to compare, to identify similarities and differences, to formalize the results of comparison with conditional symbols. In the process of solving problems, the method of generalization prepares the ground for identifying typical facts in the educational material, comparing them, making preliminary conclusions, imagining the dynamics of the development of the phenomenon, formalizing the results of generalization using conditional symbols, and drawing a general conclusion. These methods are appropriate:

a) ***inductive method*** - *methods of problem statement of particular facts, directing students' activities to draw general conclusions from particulars, giving problematic tasks;*

b) ***deductive method*** - methods of explaining general laws, directing students' activities from general to specific conclusions;

c) ***analytical method*** of understanding information, identifying the similarities and differences of the studied objects, dividing the studied objects into components, methods of determining the beginnings between them;

d) ***the main idea*** - the separation method of separating and sorting the main idea in the educational material, separating information into logically completed parts, separating the main idea and secondary ideas, separating key words and concepts, concluding the main idea release methods;

e) ***method of comparison*** - methods of identifying comparative objects, identifying the main

features of objects, comparing, identifying similarities and differences, formalizing the results of comparison with conditional symbols;

f) method of generalization - it includes the methods of identifying, comparing, preliminary conclusions, imagining the dynamics of the development of the phenomenon, formalizing the results of generalization using conditional symbols, drawing general conclusions.

The group of independent work methods includes methods of independent work on textbooks, additional educational literature and exhibition tools. one of the unique features of the independent work method is that the students perform the educational tasks without the direct control of the teacher. The method of independent work envisages the organization and management of independent learning activities of students. In this method, the results of independent observations and experiments on textbooks, additional educational literature, exhibition tools, problems and exercises are considered as a source of knowledge. Like all methods, the method of independent work has an educational, educational and developmental function.

As an educational task, it can be noted that it ensures students' independent acquisition of knowledge and skills, deepening, strengthening and repetition of knowledge. They are especially valuable in students' practical learning skills and mastery of skills, because skills without independent action cannot be raised to the level of skills of an automated and creative nature.

Its task in the educational direction helps students to develop independence, cognitive activity, spirituality, taking an active life position, hard work and human qualities. Its task in the developmental direction is to help students develop their scientific outlook, thinking, skills and abilities, and to train their will.

The methods of independent work include giving independent work assignments, developing independence in educational activities, developing educational work skills, organizing independent work according to the model, and giving creative assignments. The group of methods of motivating and justifying the activity of students in teaching creates positive justifications that provide students with enthusiasm and activity in acquiring new educational material through pedagogical stimulation in the educational process. These methods prepare the ground for the development of students' interest in learning, mental activity, the need to acquire new knowledge, communication culture, self-control and management, and evaluation skills. Also, explaining the social importance of education creates conscious discipline, duty and responsibility in students.

The methods of increasing interest in reading, didactic games, educational discussions, forming the duties and responsibilities of students in education belong to them, and they are as follows:

a) methods of increasing interest in reading, creating a positive feeling in students, using interesting analogies, the effect of surprise, creating the joy of learning, encouraging and reprimanding students.

b) didactic game method, the method of choosing a game plot, creating game situations, choosing educational games, motivating students.

c) the method of educational debates is to create a situation that causes educational debates, to create scientific debates. The method of guiding students to success, expressing their opinions, correcting mistakes in their answers, encouraging students.

d) the method of forming the duties and responsibilities of students in studying includes methods such as explaining the social importance of education, explaining the personal importance of studying, setting educational requirements, encouraging and reprimanding in teaching.

Methods of control and self-control in teaching. Supervision is one of the integral parts of the

educational process. The regularity and consistency of supervision encourages students to do active mental work, prepares the ground for the development of responsibility, duty, attention, memory, self-control and evaluation skills. The completeness, truthfulness, extensiveness, and regularity of the control, like all methods, allow to implement the functions of these methods, such as educational, educational, developmental and differential approach to students. Examples of this group of methods are oral and written control, control using laboratory and practical work, self-control, cross-check sheet and test control methods, and the following:

a) oral and written control methods are a way to teach students to logically and coherently express knowledge, to develop speech, to identify typical errors in student answers and to eliminate them.

b) control methods with the help of laboratory and practical work to determine educational and practical skills, to determine students' skills in working with educational equipment and tools, to determine and evaluate the quality of completed assignments, depending on the content of the work, objects and correct selection of tools, completion of the work and formalization of the result, method of determining the correctness of the obtained results.

c) methods of self-control, a short plan on the educational material, making questions, distinguishing the main idea, finding answers to questions, solving problems and checking them according to the sample, comparing them, netting the obtained results deafness testing method.

d) a chapter in which control methods are studied with the help of a cross-check sheet, creating control questions by topic, methodological correctness of questions, logical sequence, accuracy of monitoring students' knowledge, a broad view laziness style.

e) the chapter on methods of control with the help of tests, from such methods as the creation of control tests on the subject, methodological correctness of test questions and answers, logical sequence, truthfulness and comprehensiveness of control of students' knowledge consists of.

Control and self-control methods in teaching, like all methods, have an educational, educational and developmental function. The teacher provides the educational task of supervision by inviting all students to listen to the answer of their friend, to correct mistakes and shortcomings in the answer, to make corrections and additions. Due to this, in this process, the acquired knowledge of students is systematized, repeated and strengthened. The educational task of supervision is manifested in the provision of motivation of students, the formation of responsibility and duty in education, and the formation of feelings. The developmental function of control is evident in students' acquisition of stable attention, memory consolidation, self-control and evaluation skills.

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