



APPLICATION OF PEDAGOGICAL TECHNOLOGIES IN THE COVERAGE OF THE TOPIC OF THE STRUCTURE AND FUNCTION OF DEOXYRIBONUCLEIC ACID AND RIBONUCLEIC ACIDS

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Article history:	Abstract:
Received: 24 th September 2022 Accepted: 26 th October 2022 Published: 30 th November 2022	<p>The study and implementation of interactive methods of teaching biology to the teaching process of the subject "structure and function of deoxyribonucleic acid and ribonucleic acids" in teaching innovative pedagogical technologies.</p> <p>Theoretical and practical analysis of the priority directions of the development of Molecular Biology and genetics, covering the ways of using innovative educational technologies in teaching the topic of the structure and function of deoxyribonucleic acid and ribonucleic acids, developing proposals and recommendations for further improvement of the teaching of the subject in higher educational institution</p>
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Structure and function of deoxyribonucleic acid and ribonucleic acids nucleic acids (NK) Swiss scientist F. It was discovered by Misher in 1869. But the significance of this discovery was not understood for a long time, it was not adequately evaluated. Only from the first half of the 20th century, world biologists began to discuss in detail the issue of what chemical substance provides for the heredity of the signs of an organism. In 1924, the German biologist R.F. Mendel (1865), T. As a result of the studies carried out by Morgan (1911) and their followers, the doctrine was created that the unit of heredity is genes and that they are located on a chromosome. It was later found that the cell nucleus is made up of DNA and proteins. According to the evidence stated in DNA, the genes are located on the chromosome. But based on these facts, it was not logical to conclude that the presence of a connection between the concept of a gene and a DNA molecule at that time was the material basis of DNA genes. Because the function of the DNA molecule, its importance in heredity, had not yet been determined. In addition to chromosomal DNA in addition to Deuteronomy in the amount of 60%, protein substances were studied more perfectly, they were found to be polyfunctional substances. That is why the hypothesis was initially proposed that the substance of heredity was composed of protein molecules. Russian scientist N.K. Kolsov in his 1935 work "hereditary molecules" perfectly formulated the hypothesis that the material basis of heredity is protein molecules. Under the influence of rich new evidence collected in science, a hypothesis began to form that instead of this hypothesis, the chemical basis of heredity was DNA molecules. The structure, function and role of the DNA molecule as a molecular basis of heredity were discovered many years later, only by the middle of the 20th century.

Nucleic acids are molecular compounds that have a very large molecular weight. Hereditary traits in living organisms are related to the activity of nucleic acids, such vital processes as progeny, biosynthesis of proteins. That is why in subsequent years, special attention is paid to the study of nucleic acids.

Nucleic acids were detected 100 years ago by the Swiss scientist Friedrich Misher. These acids were called nucleins (nucleosomes – nuclei) because they were first isolated from the cell nucleus.

Nucleic acids are contained in coup kismi, which has the property of uta acidity. Nucleic acids break down into simple structural units under the action of chemical compounds of Uzi-specific enzymes, acids, workers and Baska. These structural units include purine and pyrimidine bases from nitrogen bases, ribose and deoxyribose from carbohydrate components, and phosphate acid.

Purine basics

Nucleic acids contain two types of purine bases, namely adenine and guanine. The molecule of these compounds is considered a kind of purine composed of pyrimidine and imidazole sac:

Pyrimidine basics

All pyrimidine bases are pyrimidine compound compounds.

pyrimidin

In the composition of nucleic acids, cytosine, uracil, thymine, 5 – methylcytosine are found from pyrimidine bases. Compounds characterized by the combination of nitrogen bases and carbohydrate components are called nucleosides. Purine bases are characterized by nucleosides that take the term "ozine". For example, adenosine, guanosine and xocazo. The nucleoside characterized by its combination with deoxyribose is called deoxyadenosine, deoxyguanosine. Pyrimidine bases are typical of nucleosides and take the cushioning "idin": uridine, thymidine and xocazo. Nucleosides are characterized by nitrogen bases and carbohydrates that combine with each other with glycoside bonds. In this case, the First s – atom of the glycoside garden carbohydrate components is connected to the pyrimidine-based Atom No. 1.

Glycoside bonds break down easily under the action of acids, while in working conditions they remain somewhat stagnant. The structure of some nucleosides is specified in the melody:

When a molecule of phosphate acid is added to the nucleotides, it becomes more complex compounds – nucleotides dressing. Nucleic acids can be obtained by hydrolyzing kilish Orch nucleotides with the help of workers.

The compounds contained in nucleotides are located in the order in the soot: purine or pyrimidine base – carbohydrate component – phosphate acid. The name of the nucleotides they are characterized by cushioning the acid SAP in the name of its base. For example, adenylate acid, guanylate acid and so on .

Nucleotides are an elementary unit in which a molecule of nucleic acids is formed. They are structured in the same way:

Baska nucleotides are also structured to resemble nucleotides in yukori. In its composition, ribose-trapping nucleotides are called ribonucleotides, deoxyribose-trapping nucleotides are called deoxyribonucleotides. The table on the melody shows the nucleotides that are part of DNA and RNA and their kiscarated mark.

Nucleic acid molecules consist of a chain of polynucleotides, which are characterized by polymerization of nucleotides. It is a very large polynucleotide, dressing chains, combining hundreds, thousands, mononucleotide, which is characteristic of each type of acids. So clib consists of cura polyribonucleotides (RNA) and polydeoxyribonucleotides (DNA) in the chemical structure of nucleic acids.

The coldic of nucleotides in a molecule of nucleic acids is coupled with each other in a phosphate acid medium. Phosphoric acid is always bound by the fifth S – atom of ribose (deoxyribose)contained in a nucleotide. This can be done from the scheme in the melody.

The number of nucleotides contained in the carb to the molecular weight of nucleic acids is xar XI. If the average molecular weight of a nucleotide is equal to 330, the polycondensation coefficient of large-molecule DNA will be several tens of thousands. The kischacha structural structure of RNA and DNA strands is shown in Figure 7.

Methods of using pedagogical technologies in teaching. One of the important requirements for organizing advanced modern education at the present time is to achieve a highly effective result in a short time,without spending excessive mental and physical effort.The formation of certain activities,skills and abilities,control of activities,assessment of the level of theoretical and practical knowledge acquired by them on the basis of the delivery of certain theoretical knowledge to students among a short time from today's educator requires high pedagogical skills,a new approach to the educational process.

Today,in developed countries,a lot of experience has been accumulated on the application of pedagogical technologies that increase the educational and creative activity of students, guarantee the effectiveness of the educational process, and interactive methods form the basis of this experience.

Such interactive techniques, in their essence, increase educational and cognitive activity in students of Botany, work them in a small group and team,boldly,freely express personal views on the topic studied,problems, defend their opinions,substantiate with evidence, be able to listen to peers,further enrich their created ideas, of particular importance is the fact that it has the opportunity to encourage the selection of the most optimal solution from the available feedback expressed.The appropriate,targeted,effective application of interactive techniques by the teacher(educator)in the process of education and training provides a wide opportunity for the educational(student,student)to develop the ability to enter into communication,conduct collective activities,logical thinking,synthesize,analyze existing ideas,find logical connections between different views.

Currently,more than 80 interactive techniques in teaching, the essence and application of which are mentioned in the literature.In modern conditions, the most optimal way to increase the effectiveness of education is considered to be the organization of training using interactive techniques.

It is known that the application of innovations and advanced foreign experience in the process of teaching the topic "structure and types of fruits" in Botany and Plant Physiology in higher educational institutions of our country is one of the pressing issues of today.

The correct introduction of pedagogical technologies in the educational-experimental process,the main organizer or consultant of the teacher in this process

leads to activity as such.This requires more independence,creativity and volitional qualities from the student.

The application of any pedagogical technology in the educational process depends on the personal nature of the student who is being taught and who is being taught by the teacher.Therefore,in the educational process of educational institutions, the role and importance of modern teaching methods-interactive methods, innovative technologies-is immeasurable.Knowledge,experience in pedagogical technology and their application in education ensure that students receive educated and mature qualifications.

Innovative technologies are the introduction of innovations and changes in the pedagogical process and the activities of the teacher and student, in the implementation of which mainly interactive methods are used.

In other words, interactive usability of the teacher are a special form of Organization of cognitive and communicative activity, in which educators will be involved in the process of cognition, will have the opportunity to dream and think about what they know and think. The role of the teacher in interactive lessons leads in part to the orientation of students' activities towards achieving lesson goals.

Educational activity is education that provides for the organization of the activity of educators.

Active methods of education are methods of enhancing the cognitive activity of educators.

Interactive ("Inter" - mutual, "act" - to act) – to act among themselves means that it is in the order of conversation, communication. Interactive teaching methodologies are a special form of Organization of cognitive and communicative activity in which educators are involved in the process of cognition and get the opportunity to understand and think about the topic.

Iterfaol education is a dialogue education that carries out a reciprocal action between the educator and the educator.

Interactivity is a fundamentally new phenomenon within the framework of education - due to which the educational person is in active interaction with the subjects of Education.

Student knowledge is monitored and evaluated individually using test questions. The points of the group members are summed up, the group with the highest score is considered the winner.

In conclusion, the effectiveness of the teaching process will depend on the degree of mastery by the teacher of the skills of being able to organize the cognitive activity of students in accordance with the tasks and goals of teaching. When teaching Botany, it is recommended to use local-level pedagogical technologies "Keys", "Insert", "cluster", "Veen diagram", "brainstorming", "work in small groups", "zanziri of terms", "sheet of terms", fast games and various forms of game exercises.

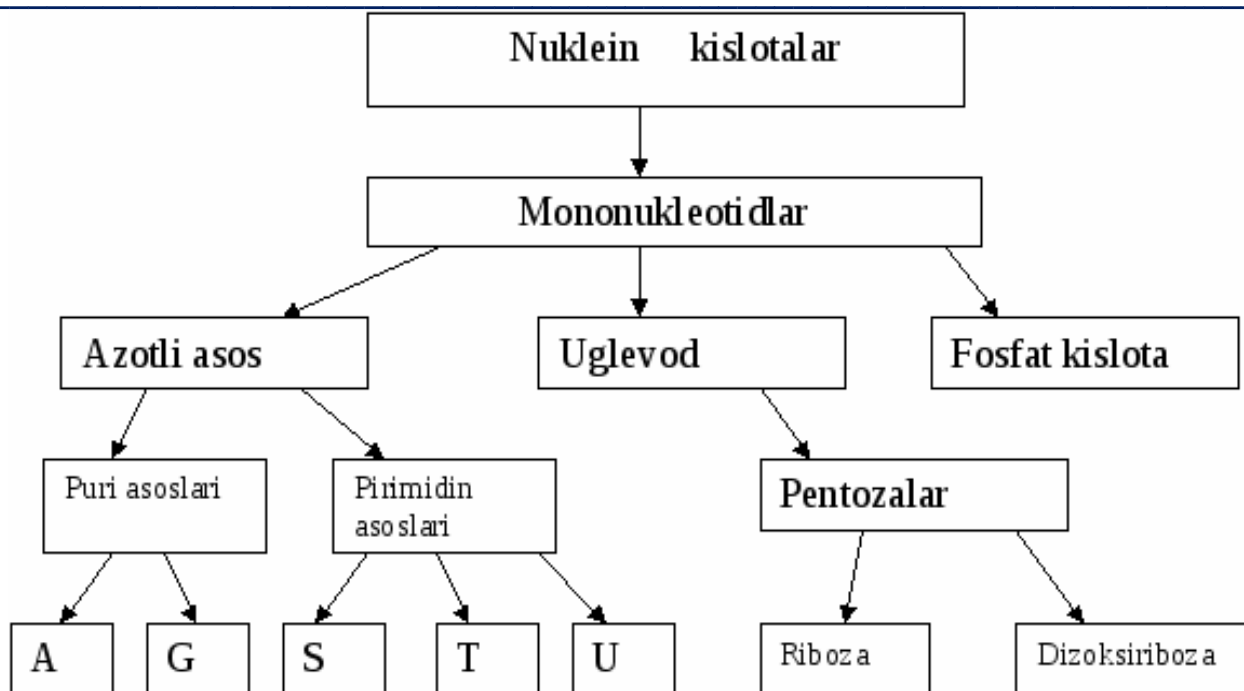
Below we will get acquainted with some pedagogical technologies and some of their elements that are used in the processes of passing science.

TRAINING TECHNOLOGY		GRAPHIC ORGANIZERS
<p>1. Lecture sessions educational technology. 2. Workshop training educational technology. 3. Practical training technology. 4. Independent educational technology. 5. Keys-stadi learning technology. 6. Project educational technology.</p>	<p>1. Brainstorming. 2. Free writing. 3. Based essay. 4. FSMO. 5. Blis-request. 6. Blis-game. 7. Instruction manual. 8. Written and oral round table. 9. Definition of concepts. 10. Drawing up a text based on concepts. 11. Confused the sequence of artificial chains.</p>	<p>1. Cluster. 2. B-B-Bchismasi. 3. T-drawing. 4. Veen diagram. 5. Conceptual table. 6. Insert schedule. 7. Drawing "why". 8. "How?" diagram. 9. Fish skeleton. 10. Categorization table. 11. Lily flower.</p>

1. The full content of the lesson, which is conducted using the Klasster method, is manifested in the eyes of students.

Sample:

1-drawing



2. Method "Assesment"

The purpose of the method: this method is aimed at assessing the level of knowledge, controlling, mastering the indicator and checking the practical skills of students. Through this technique, the cognitive activity of the learners is diagnosed and evaluated in different directions (test, practical skills, exercise of problem situations, comparative analysis, symptom detection).

Procedure for the implementation of the method:

It is recommended to use "assesments" in lecture classes in an individual form for the purpose of studying the existing level of knowledge of students or participants, outlining new information, assessing the level of assimilation of the subject or information in seminars, practical classes, as well as for self-assessment. It is also possible to include additional assignments in the assesment, based on the teacher's creative approach as well as educational goals.

Sample:

Assesment evaluation criteria Table 1

Test	DNA and RNA express by formulas
<p>1. As a result of studying the nucleotide of DNA extracted from natural sources, v scientists identified a number of quantitative patterns.</p> <p>A) US scientist Chargaff and Russian academician A.N B) Belozerskys C) Creek with Watson D) 1935 year Arnon E) 1936 year Krebs</p>	
<p>2.3 different unknown nucleotide DNA malecula if available.A total of 420 t-RNA was spent on protein synthesis from them.2-t spent on protein synthesis from DNA malecula-RNA s number 1-for protein synthesis from DNA 0.75 times less than the number of spent t-Rncs, 3-T, which is spent on protein synthesis from DNA-0.8 times more than the number of RNA, 2-in DNA determine the number of nucleotides.</p> <p>A) 1050 B) 840 C) 630 D) 920</p>	<p>The importance of chemicals in the structure of DNA and RNA molecule.</p>
<p><input type="checkbox"/> The correct answer is 5 points</p>	

Teaching the subject in small groups

Independently and creatively developed training of students on each part prepares the appropriate tasks for mastering the material. Assignments can be as follows.

1-small group assignments.

Didactic purpose of the assignment. To study the structure, composition, significance of nucleic acids in human life.

	Educational assignments on materials that students should master.	Instructions for completing the assignment.
	Having carefully read the text in the textbook, prepare answers to the following questions and complete the tasks.	Work in partnership with students.
1	Determine the structure, composition of nucleic acids.	
2	Нуклеин кислоталарнинг ochlishi va kimyoviy xossalari ni ayting	
3	Why are Nucleic acids called?	Justify your answer
4	What is the importance of Nucleic acids in human life	
5	Why are Nucleic acids called?	

2-small group assignments.

4. Didactic purpose of the assignment. Variety of fruits.

Study of the variety of fruits

Structure, composition of nucleic acids.	Educational assignments on materials that students should master.	Instructions for completing the assignment.
	Carefully read the relevant part of the material in the textbook. Find answers to the following questions and complete assignments:	Work in partnership with a group of students.
1	Determine the structure, composition and property of nucleic acids.	
2	Identify fruits that do not chat.	
3	Explain the structure, composition of deoxyribonucleic acids	
4	Explain the structure, composition of ribonucleic acids.	
5	Compare the structure, composition of deoxyribonucleic acid and ribonucleic acids, determine the general and distinctive sides.	Justify your answer.

3-small group assignments

Didactic purpose of the assignment. The biosynthesis of proteins is due to the fact that its implementation is ximizimi.

	Educational assignments on materials that students should master.	Instructions for completing assignments.
	Carefully read the corresponding part of the text in the textbook. Find answers to the following questions and complete assignments.	Ўқувчилар гуруҳи билан ҳамкорликда ишланг.
1	Explain the structure, composition of deoxyribonucleic acids	
2	Explain the structure, composition of ribonucleic acids	
3	Interpret transcription and translational processes.	
4	Compare the structure, composition of deoxyribonucleic acid and ribonucleic acids, determine the general and distinctive aspects	Base your mind
5	What is the importance of Nucleic acids in human life	

In higher educational institutions, in the process of studying the subject of Biology in the disciplines of genetics and Molecular Biology, a more extensive discussion of the topic of the structure and function of Nucleic acids is carried out. Since higher educational institutions need a new generation of Uzbek literature, which is used to teach biology, there is a need to develop and create literature on the Uzbek language, Latin graphics, where methods of using innovative pedagogical technologies are recommended.

When creating educational technologies in academic disciplines, it is advisable to build on diversity, creativity, innovative approaches, take into account the peculiarities, laws of each subject. In this process, it will be appropriate to approach, taking into account the specifics of disciplines, forms of training, topics;

It would be appropriate for higher education institutions to Re-study the curriculum of the specialty Biology and make additional changes based on new industry innovations.

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