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DIDACTIC BASES FOR THE USE OF LEARNING TECHNOLOGIES IN BIOLOGY LESSONS IN VIII–IX GRADES

Abstract. The article notes that in the modern world the future of any country is measured by the level of education in this country. The development of education is an integral part of the development concept of each country, that is, education is one of the main priorities of the state. At present, the education system of the independent Azerbaijan Republic is based, along with other principles, on democratic and humanistic principles. Thanks to interactive teaching methods, students develop the ability to think independently, express their attitude to the opinions of others, and be able to justify their own judgments. This lays the foundation for independence and flexibility of thought. The use of modern teaching technologies in biology lessons not only equips students with biological knowledge, but also allows them to independently extract and assimilate more information, acquire new abilities and qualities through the development of logical, creative and critical types of thinking. Interactive teaching methods increase the interest and motivation of students in the lesson, and even the weakest student is stimulated to learn and act with the help of such teaching. Mastering teaching technologies is the basis of pedagogical excellence. In the modern period, the use of new technologies and teaching methods requires a fundamental change in the activities of the teacher, his pedagogical work, work style and, as a result, the style of work of students. The main purpose of this article is to study the application of teaching technologies, which occupy a leading position in the global education system and are considered the most optimal learning experience, and to study the didactic foundations for their use in teaching biology in secondary schools in Azerbaijan. The author notes that the

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didactic basis for the use of electronic textbooks in teaching biology in grades VIII–IX of secondary schools is teaching in accordance with the program sequence of lessons and integrated learning with various situations in the pedagogical process. The didactic basis for the use of electronic textbooks in teaching biology in grades VIII–IX of secondary schools plays a leading role in conducting biology lessons using modern methods and in determining the content of biological education.

Key words: pedagogical process; didactics; biology; modern teaching technologies; pedagogical thinking; creativity; teacher-student cooperation.

INTRODUCTION / ВСТУП

Formulation of the problem. After gaining independence, the changes, innovations and rapid development that took place in most areas of our republic did not bypass the education sector. Throughout history, mankind has developed through education, and the development of our modern era depends on the content of education. Education, being one of the most unique and urgent problems in the global world, always illuminates the promising path for the development of the personality of a citizen with its decisive role in the development of society and its achievements.

The 21st century is the age of intelligence and information and communication technologies. In order for our future students to meet the standards of the 21st century, classes in general education schools must be organized using new teaching technologies. The use of subject curricula, pedagogical technologies – electronic textbooks, multimedia technologies, ICT, the expansion of innovative methods is one of the main requirements of today. In this regard, this study is devoted to the study of a very topical problem. This problem lies in the definition of the "Didactic basis for the use of teaching technologies in teaching biology in grades VIII–IX of a general education school".

To date, the application of new pedagogical technologies and modern interactive methods has been accelerated in the general education schools of the republic. Their use in teaching biology enriches learning, makes the lesson an interesting and attractive field of activity for each student, plays an important role in raising the intellectual level of the student, developing his logical, creative and critical thinking.

Analysis of major research and publications. There are a number of works and studies by many prominent educators, scientists and methodologists related to teaching technologies and their application in the educational process.

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Among Azerbaijani scientists, A. Hasanov [8], G. Akhmedov [3], A. Agayev [1], Y. Kerimov [9], F. Rustamov [14], Z. Veysova [5] and others have very clearly training and their classification. The textbook "Teaching Methods" by a brilliant teacher, Professor Y. Kerimov [9] highlights traditional and interactive teaching methods, teaching principles and technologies and didactic issues related to them, as well as the functions of teaching methods.

In his book "Modern Educational Technologies" I. Podvlasiy [13] analyzed the essence and classification of pedagogical technologies and expressed his opinion on a brief description and application of widely used modern educational technologies.

AIM AND TASKS / МЕТА ТА ЗАВДАННЯ

This understanding of the relevance of the work made it possible to formulate the ***purpose*** of this study. It consists in the use of educational technologies – pedagogical innovations, technical teaching aids in teaching biology, revealing the essence of modern teaching methods and studying the possibilities and methods of applying biology in teaching VIII–IX classes.

The tasks arising from the purpose of the study are as follows:

- identify possible and necessary teaching technologies and present their essence when teaching biology in grades VIII–IX;
- identify the possibilities of using information and communication technologies, electronic resources and multimedia tools in teaching biology in grades VIII–IX;
- analysis of programs and textbooks, scientific, pedagogical, methodical literature from the point of view of the problem;
- by experiment, check the conditions stated in the hypothesis;
- to develop a didactic system of work on the use of teaching technologies in grades VIII–IX of educational institutions.

THE THEORETICAL BACKGROUNDS / ТЕОРЕТИЧНІ ОСНОВИ ДОСЛІДЖЕННЯ

Compliance with the didactic foundations of the use of teaching technologies in teaching biology in grades VIII–IX of secondary schools leads to a more effective, lively, emotional construction of the educational process. Thus, the construction of the pedagogical process on a didactic basis ensures the successful implementation of the teaching, educational and developmental functions of learning. Didactics is a field of pedagogy about education and learning. Since the learning process is based on a psychological concept, it is also

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called a didactic system. Didactics introduces the essence, content, principles, organizational forms, patterns of activity and development. In a word, the subject of didactics is the educational process.

"One of the main pedagogical requirements for the didactic basis for the use of teaching technologies in teaching biology in grades VIII–IX of a general education school is to teach students to think, increase their intellectual, creative abilities and activity by studying biological processes, and form real cognitive motivation" [11].

Applying innovative teaching methods in biology lessons, students become full participants in the educational process. They acquire biological knowledge not in finished form, but through active search and discovery.

The didactic basis for the use of teaching technologies in biology lessons in grades VIII–IX creates a number of opportunities for the teacher. Examples of this are the organization of the conscious activity of students in the process of education and upbringing, the creation of the opportunity to follow events and processes in the micro- and macroworld in a short period of time. When using teaching technologies and ICT tools in biology lessons in grades VIII–IX, the stages of the lesson should be specified in advance. Thanks to the study of biology, schoolchildren from an early age develop an attentive and careful attitude not only to themselves, but to all living things in general, love for nature.

"The didactic basis for the use of multimedia technologies in teaching biology in grades VIII-IX of a general education school is to ensure the educational process within the framework of modern standards. The use of modern technical teaching aids in biology lessons depends on the purpose and content of the pedagogical process, as well as on the level of training and age of students" [4].

The use of modern teaching methods in biology lessons plays an important role in meeting the changing needs and requirements of our state and society in the field of education. After all, active learning provides the teacher with the creation of a cognitive problem situation and stimulates an active research position among students. Thanks to the interactive teaching methods used in biology lessons, students develop the ability to think, express their point of view, express their attitude about the opinions of others on any issue, thereby laying the foundation for independence and flexibility of thinking.

One of the elements that make up the didactic basis for the use of teaching technologies in teaching biology in grades VIII–IX of a general education school is the cooperation of a teacher and a student. Changing the relationship between the teacher and students, the psychological environment in the process of

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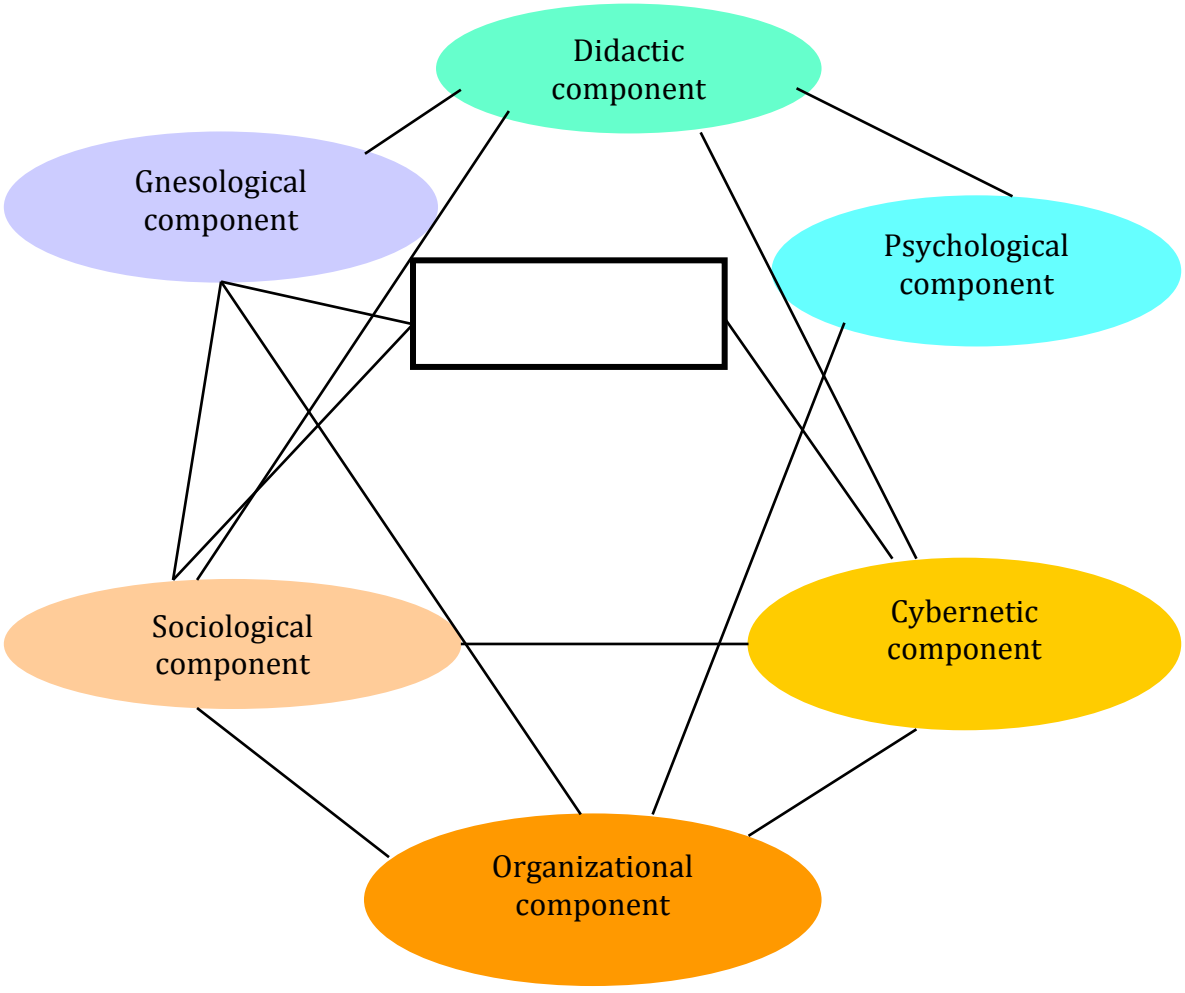
teaching biology in grades VIII–IX is the main didactic condition for the use of teaching technologies.

Applying teaching technologies in teaching biology, the teacher-student relationship should be built on the basis of a collaborative pedagogy. To improve the relationship between teacher and student, it is necessary to humanize self-education. The teacher-student relationship must be evaluated humanely, in accordance with the law on the rights of the child. After all, the role of humanistic education is great in shaping the younger generation, in its development as a person. The teacher must protect the rights of students and take care of them. Otherwise, educational work with students will be one-sided. The well-known teacher-scientist I. Podlasiy in his work "Research on the patterns of the didactic process" gave the following classification of the patterns of learning [13].



Pic. 1 Classification of learning patterns

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Together, these components form the entire pedagogical process. I. Podlasy noted that "that the sociological component of the system, along with the relationship of the teacher and student with the participants in the learning process, also reflects more specific social relations" [13]. "Establishing teacher-student relationships based on collaborative pedagogy using teaching technologies when teaching biology in grades VIII–IX of a secondary school leads to the improvement of teacher-student, teacher-parent, teacher-management, student – student" [8].

In biology lessons, implemented through interactive learning, the main responsibility lies with the teacher. The teacher, first of all, must be creative. One of the necessary conditions for ensuring a happy future for our people is the presence of a creative, modern, competitive teaching staff that meets the standards of the 21st century. Indeed, as a result of the correct and effective organization of modern education, students develop self-development skills.

RESEARCH METHODS / МЕТОДИ ДОСЛІДЖЕННЯ

The study used a number of **methods:**

Theoretical analysis. The scientific, methodological and pedagogical literature on the topic was analyzed, the concept of "learning technologies" was investigated, and the results obtained in the process of questioning, reflecting the experience of teachers related to the problem, were studied.

Interview. An interview was held between biology teachers and students of grades VIII–IX on the use of educational technologies in teaching biology, and an exchange of views took place.

Observation. It was carried out at the biology lessons of VIII–IX grades of general education schools, the lessons were monitored.

RESEARCH RESULTS / РЕЗУЛЬТАТИ ДОСЛІДЖЕННЯ

Based on the foregoing, we came to such a result that "It is very important for biology teachers to know the content, essence of didactics and what issues it covers. Since, with the help of the didactics section, the teacher understands the essence of complex learning issues when using teaching technologies in biology lessons in grades VIII–IX of a general education school and organizes the pedagogical process at the required level. The tasks ahead in the lessons of biology cannot be solved without referring to the didactic basis" [6]. Because in modern times, not only a biology teacher, but any teacher, regardless of the subject he teaches, cannot predict in advance the effectiveness of any principle, method, methodological approach, teaching technologies. The main goal of

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didactics is to organize the educational process in biology lessons in grades VIII–IX based on the relevant patterns and effective assimilation of the content of biological education by students.

The didactic basis for the use of teaching technologies in teaching biology in grades VIII–IX of a general education school is the conduct of lessons in accordance with the program sequence and in combination with various situations. Every biology teacher should be distinguished by high competence and professionalism. Along with the study of biological information, the subject teacher must teach students how to assimilate, involve them in research work to solve various situations. Naturally, this process must be planned by the teacher in advance, and new biological information must be taught in a complex manner with past knowledge. In this case, students can choose the most favorable option from alternative paths. Thus, as a result of the competent position of the teacher, students have the opportunity for both choice and development.

"The didactic basis for conducting biology lessons with teaching technologies in grades VIII–IX includes instilling in students the collection of biological information, ways to systematize it, the ability to present and work with visual aids. After all, the teacher should not be content with teaching only the content of his subject. One of the important conditions for the success of students in the educational process is their understanding of the purpose of the subject being studied, the place and role of individual sections" [2].

CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH / ВИСНОВКИ ТА ПЕРСПЕКТИВИ ПОДАЛЬШИХ ДОСЛІДЖЕНЬ

The main conclusions that follow from this study are as follows:

- Determine the didactic basis for the use of teaching technologies in teaching biology.
- Check the level of effectiveness of teaching technologies in teaching biology in a secondary school.
- Study the results and identify new directions for development.

According to the results of the pedagogical experiment, interactive teaching methods, which play a leading role in improving the quality of the educational process, have a number of advantages:

- Interactive teaching methods increase students' motivation to learn.
- Prevents student fatigue.
- Biology lessons organized using active learning methods allow students to become more independent, which helps them to study and understand the topic in depth.

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- The biology teacher acts as a facilitator in the teaching he/she conducts using active learning methods.
- The advantage of biology lessons conducted using new teaching methods is that at the end of the lesson, students objectively evaluate themselves.

Prospects for further research in this direction. The didactic basis for the use of teaching technologies in biology lessons in grades VIII–IX of educational institutions is associated with a number of didactic tasks of the teacher.

Every biology teacher should **know**: the legal regulations of our state on education; modern achievements of biological science; age and individual psychological characteristics of students; pedagogical and psychological sciences; rules for the use of modern pedagogical technologies; interdisciplinary and intradisciplinary integration.

Every biology teacher should **be able to**: respect the personality of the student; skillfully use the teaching, educational and developmental functions of learning; love your profession develop the interests and inclinations of students.

The pedagogical activity of each biology teacher should include the following tasks:

1. Constructive.
2. Communicative.
3. Organizational.
4. Diagnostic.
5. Gnostic.
6. Creative.

Based on the foregoing, we can conclude that if the organization of lessons in secondary schools using teaching technologies and innovative methods is fully ensured, then students' motivation to study biological knowledge will increase. Thus, you can get a quality education that meets modern requirements and international standards.

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ДИДАКТИЧНІ ОСНОВИ ВИКОРИСТАННЯ ОСВІТНІХ ТЕХНОЛОГІЙ НА УРОКАХ БІОЛОГІЇ У VIII–IX КЛАСАХ

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Анотація. У статті наголошується, що у сучасному світі майбутнє будь-якої країни вимірюється рівнем освіти у цій країні. Розвиток освіти є складовою концепції розвитку кожної країни, тобто освіта одна із головних пріоритетів держави. На даний час систему освіти

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незалежної Азербайджанської Республіки засновано поряд з іншими демократичними і гуманістичними принципами. Завдяки інтерактивним методам навчання в учнів розвивається здатність самостійно мислити, висловлювати своє ставлення до думки інших, уміти доводити власні судження. Це закладає основу для незалежності та гнучкості мислення. Застосування сучасних освітніх технологій під час уроків біології не тільки озброює учнів знаннями, а й дозволяє їм самостійно добувати і засвоювати більший обсяг інформації, набувати нові здібності та вміння з допомогою розвитку логічного, творчого і критичного типів мислення. Інтерактивні методи навчання підвищують інтерес та мотивацію учнів до уроку, і навіть найслабший учень за допомогою такої освіти стимулюється до навчання та діяльності. Опанування освітніми технологіями є основою педагогічної майстерності. У сучасний період застосування нових технологій, методів навчання потребує кардинальної зміни діяльності вчителя, його педагогічного стилю та принципу роботи, як наслідок, стилю роботи учнів. Основною метою статті є вивчення застосування освітніх технологій, які займають головну позицію у світовій системі освіти та вважаються найоптимальнішим досвідом освіти та дослідження дидактичних основ їх використання у процесі викладання біології у загальноосвітніх школах Азербайджану. Автор зазначає, що дидактичною основою використання електронних підручників у навчанні біології у VIII–IX класах загальноосвітніх шкіл є навчання відповідно до програмної послідовності уроків та інтегроване навчання з різними ситуаціями в освітньому процесі. Дидактичній основі використання електронних підручників у навчанні біології у VIII–IX класах загальноосвітніх шкіл належить провідна роль проведення уроків біології сучасними методами й у визначенні змісту біологічної освіти.

Ключові слова: педагогічний процес; дидактика; біологія; сучасні освітні технології; педагогічне мислення; креативність; співпраця вчителя та учня.

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