



HISTORY OF THE DEVELOPMENT OF THE SCIENCE OF BIOLOGY TEACHING METHODOLOGY

Azamov Samandar

Student of Bukhara State Pedagogical Institute

E-mail: a32534016@gmail.com

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ABSTRACT

This article is devoted to the history of the development of biology teaching methodology, the emergence, development and formation of the main teaching methods. This article describes the historical process of teaching biology and its regulation, changes in the educational process, the use of pedagogical principles and technologies in teaching, and successful pedagogical methods used by students in learning biology. provides information. This article describes the historical development of biology teaching methodology and many important methods and techniques in teaching students about science

INTRODUCTION

Biology teaching methodology is one of the important subjects that includes effective learning and teaching methods of biology in the educational process. This discipline deals with the development of methods, strategies and tools used in the study of biology and their practical application. The history of the development of biology teaching methodology is a long and complex process, which includes the evolution of different periods and teaching methods.

From the very beginning, the methodology of teaching biology was formed under the influence of various pedagogical approaches and scientific discoveries in its development. Ancient scientists such as Aristotle and Galen preserved the early knowledge of biology for centuries. In the Middle Ages, biological knowledge was mainly taught within the framework of religious teachings, but during the Renaissance, scientific approaches began to have a wider scope.

The biology of the new era, especially the late 18th and early 19th centuries, together with the evolutionary theory and genetic discoveries, brought great changes to the methodology of teaching biology. During this period, scientists such as Charles Darwin and Gregor Mendel introduced new theories and experimental methods to biology. In the late 19th and early 20th centuries, the development of modern pedagogical approaches and technologies further improved biology teaching methods.

Today, biology teaching methodology is enriched with modern educational technologies, interactive learning tools and online resources. This creates an opportunity for students to learn biology in a more interesting and understandable way. At the same time, the development of biology teaching methodology also includes current issues such as global environmental problems and preservation of biological diversity. Scientific research on this topic and new methodological approaches constantly enrich the teaching process.

Natural science was introduced to schools as a subject at the end of the 18th century. The first textbook in this field was written by VFZuev. His textbook consists of sections such as "Inorganic Nature", "Plant World", "Animal World". The first section is about soil, salts, rocks, fossilized organisms, fuels. In the plant world section, the cellular structure of plants and the classification of various plants are given. The zoology department tells about the appearance and lifestyle of some animals.

The VFZuev textbook contains information on ecology, in addition to the morphology and system of plants and animals. The textbook also discusses the use of natural visual aids.

A.SH.Teryayev's botanical textbook, published in the 19th century, was not comprehensible to students because it was completely copied from the "Philosophy of Botany" by Carl Linnaeus, the founder of the science of systematics.

In Russia during the years 1828-1852, in the field of public education, natural science was removed from the school curriculum.

But later, starting from 1853, such subjects as "general understanding of nature", "botany", "zoology", "mineralogy", "human anatomy and physiology" were taught again in schools. The volume of textbooks written on these academic subjects is extremely large, and because the educational materials in it are very complicated, they did not arouse any enthusiasm among the students. Only because the textbook of botany written by VIDal has rich information on ecology and nature conservation, it was able to make students interested in this subject in a comprehensible manner.

Teaching of natural science in schools and its methodology. In the second half of the 19th century, after CH.Darwin's teaching on the evolution of the organic world was published, scientists ANBeketov, KATimiryazev recognized that the main task of school natural science is to develop and educate students' logical thinking. ANBeketov notes that natural science is important in the development of students' independent logical thinking. He emphasizes that it is extremely important to use visual aids and conduct experiments in the teaching of natural science. ANBeketov's ideas in the field of teaching are reminiscent of the views of the German naturalist pedagogue August Lüben (1804-1873). In his textbook dedicated to natural science, it is emphasized the educational importance of this science, in particular, the need to develop the skills of students to conduct research in independent work and excursions. According to the method of A. Luben, students should first familiarize themselves with the individual representatives of the organic world as examples of local objects. It is recommended to practice with natural plants as much as possible, and with well-made images of animals in other cases. Pupils should learn independent educational materials based on the plan proposed by the teacher, in which the direction from simple to complex, from the known to the unknown, i.e., the inductive method should take the main place. However, the lack of visual aids in schools prevented the introduction of A. Luben's advanced methodical instructions.

The fact that A. Luben's textbook focused only on the morphology and systematics of plants naturally did not satisfy the pedagogical community. This, in turn, indicated the need to solve new pedagogical problems corresponding to the content of natural science.

The activity of the naturalist pedagogue AYGerD (1841-1888) was focused on solving these problems. According to Aygerd, the biggest shortcoming of Lüben's natural science is that its content is not in accordance with the requirements of the time. Aygerd is considered a major methodologist of natural science of the 19th century. According to him, the main goal of school natural science is to provide students with developmental knowledge and to promote their independence in learning.

Demonstration of experiences in classes, excursions, and practical training are important in the activity of AYGerD. According to the scientist, the aim of teaching natural science is to introduce the diversity of organisms, to explain that their life depends on light, temperature, humidity, air and other organisms, to understand the interrelationship of cause and effect in

nature. should consist of AYGerD was influenced by Darwin's theory of evolution and introduced the principle of evolution into his textbooks. He is a school natural science course: 1. Inorganic world; 2. The world of plants; 3. It is emphasized that it should be composed of educational subjects such as "Animal world", "Man", "Earth history". Thanks to the activity of AYGerD, the methodology of teaching natural science was recognized as a separate scientific branch of pedagogy.

The state of biology teaching methodology in the 20th century. VVPolovstov made a great contribution to the methodology of teaching biology in the 20th century. In 1907, he published the book "Basics of General Methodology of Natural Science", in which he explained the system of knowledge related to methodology. Polovstov emphasizes that the content of the educational material included in the textbook should be based, first, on the unity of form and function, secondly, on the study of plant and animal life in relation to their living environment, and thirdly, on the study of organisms that provide rich biological information. In this process, the scientist shows that trainings and excursions are extremely important. VVPolovstov for the first time reveals the similarities and differences between science and educational science and emphasizes the need to conduct research in this field. In the history of the methodology of natural science, VVPolovstov is highly regarded as a scientist who promoted ecological knowledge.

Since 1917, the science of natural science has been called the science of biology. During this period, Moscow and Petersburg Methodists tried to raise the level of biology education, to reveal its educational and educational value. During the 1920s and 1930s, the main problem of teaching biology was the introduction of the unity of theory and practice. In order to do this, knowledge and skills, i.e. educational material, are not divided into academic subjects, but are divided into current topics, taking into account the seasons, for example¹⁴ "Nature", "the connection between the village and the city", "Life on Earth and Physico-chemical basis of vital processes", "Planting and plant care" were divided into such topics. Such complex programs naturally could not provide students with systematic knowledge, therefore, study of educational material on the basis of the laboratory method began to be promoted. As a result, instead of classroom lessons, students began to observe nature and conduct experiments. The main goal of the laboratory method curriculum was to study the labor, nature and society complex. These comprehensive curricula were aimed at bridging the gap between academic subjects taught in schools. But it quickly became clear that such complex educational programs cannot provide students with systematic knowledge. Therefore, starting from 1931, by the decision of the government, primary and secondary schools were reformed and it was emphasized that the main organizational form of education should be classes. From that moment on, botany, zoology, human anatomy, physiology, and Darwinism were included in the school curriculum, and curricula and textbooks were created for these subjects and introduced into school life.

However, until 1964, knowledge in school textbooks shed light on the development of biology in the 1930s and 1940s. However, according to the scientific principle of didactics, school subjects should express the further achievements of science according to their content. Biology textbooks released in Russia and Uzbekistan are among the achievements of biology the main reason is that during the years 1935-65, a serious ideological struggle continued in the science of biology. A group of scientists led by Academician TD Lysenko did not recognize the scientific achievements made in foreign countries and rejected them as the discoveries of bourgeois scientists, which are ideologically contrary to our worldviews, so that the latest achievements of biological science can take place on the pages of textbooks. Only in October 1964, academician Lysenko, after the collapse of the cult of personality, introduced genetics, ecology, stetology, biochemistry, molecular¹⁵ biology, and similar subjects to the contents of all biological programs and botany, zoology, human anatomy, physiology, general biology

textbooks in the school. recent achievements are included. Along with the new textbook, manuals on their teaching methodology were also published.

Among these, prof. "Biology Teaching Methodology" M.1962, prof.BVVsesvyatsky's General Teaching Methodology of Biology" M.1960, NMVerzilin and VMKorsunskaya's "General Biology Teaching Methodology" M.1983, prof. "General methodology of teaching biology" M.2003, published under the editorship of INPonamaryova, can be included.

CONCLUSION

The history of the development of biology teaching methodology is a long and complex process, enriched with different periods and approaches. This subject has been formed under the influence of various pedagogical and scientific approaches since the early stages. From antiquity, through the Renaissance, New Age biology, and the modern era, there have been significant changes in the way biology is taught.

In antiquity, scientists such as Aristotle and Galen tried to preserve the basic knowledge of biology, but in the Middle Ages, this knowledge was mainly taught within the framework of religious teachings. During the Renaissance, scientific approaches gained a wider scope and gave a great impetus to the development of biological science. In modern biology, the discoveries of Charles Darwin and Gregor Mendel caused major changes in biology teaching methodology. The modern era has further improved the methodology of teaching biology with the development of pedagogical approaches and technologies.

Today, biology teaching methodology is enriched with modern educational technologies, interactive learning tools and online resources. This creates an opportunity for students to learn biology in a more interesting and understandable way. At the same time, current issues such as global environmental problems and preservation of biological diversity occupy an important place in the methodology of teaching biology.

In general, the history of the development of the science of biology teaching methodology is aimed not only at providing students with biology knowledge, but also at developing their scientific thinking skills, increasing environmental awareness, and preparing them to solve life problems. The constant development and updating of this science plays an important role in the preparation of future generations.

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