Methodological Features of Improving the Teaching Methodology of Vertebrate Zoology in Higher Education Institutions

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ABSTRACT

This article pays special attention to the methodology of teaching biology. The article presents opinions and comments on the goals and tasks of vertebrate zoology. In addition, the opinions of scientists on the methodology of teaching vertebrate zoology were expressed.

Keywords: methodology, working with information, skills, competence, knowledge, concepts, vertebrate zoology

In the process of teaching biological sciences, it shows the need to determine the methodological foundations of research in accordance with the task of comprehensively solving the problem of methodological preparation of students.

The enrichment of the zoology program does not allow filling the educational process with tasks aimed at forming students' methodological skills. It is known that in the process of studying zoology, the development of students' methodical knowledge and skills is carried out together with the acquisition of materials related to zoology. For this reason, it is necessary to develop a specific mechanism for the systematic integration of biological and methodological components.

In order to determine what the scientific and methodical components have in common, it is appropriate to take a holistic look at the process of teaching zoology and to determine the specific aspects that distinguish it from other scientific disciplines of pedagogical higher education. This allows to find the place of zoology in the methodical training system of biology teachers, to determine its contribution to this process. A holistic approach to building a model of zoology serves as a leading methodological approach that serves to generalize methodical training based on zoological knowledge. This is a general philosophical approach, and its practical application requires clarification at various methodological levels.

The course of vertebrate zoology has a complex nature in terms of content, it includes morphological, physiological, ecological, systematic, paleontological, zoogeographic, phylogenetic concepts. Concepts studied in zoology allow systematic development of general biological concepts such as "cell - the structural unit of life", "organism-a whole", "unity of the structure and function of organs", "metabolism", "evolution of the organic world". The course of zoology is closely related to the practical activities of a person.

Teaching zoology is an integrative feature of the content, firstly, it shows how the development of the biological life of the movement of matter ended, and secondly, what the biological form of the movement of matter began, what biological laws caused its emergence. Accordingly, the requirement of methodical training in the process of studying zoology is to teach students to use biological content to generalize their knowledge of biological sciences. In this case, the generalization becomes a strategic direction in

the construction of the zoology course, which serves as a method of constructing a methodical system of teaching zoology in pedagogical HEIs and as an object of special mastery. This method allows solving a number of psychological-pedagogical and methodical tasks.

These are the following:

1. Generalization determines the structure of the content of zoology, going from general to specific. Determining the basic and important allows defining the range of knowledge and skills that the teacher should convey to his students in school among the wide range of biochemical content. The level of clarification of generalized knowledge depends on the level of preparation and age of students, methods, forms and means of organizing the educational process, class specialization and other conditions .

2. The creation of science content in accordance with the principle of meaningful generalization is determined by the structure of educational activities for students' mastery of this content. The main operations in the implementation of generalization are abstraction (separation of the main and significant), modeling (building a model of an object based on knowledge of its significant characteristics) and clarification (explaining specific cases based on knowledge of general laws) [1; p. 57].

3. Content-based generalization defines a system of teaching tools - all kinds of models that record the basic and important characteristics of a biological object, allowing to study their expression in different conditions.

4. Generalization develops students' systematic theoretical thinking and is considered one of the developmental teaching technologies at school.

5. Generalization is an important way to establish interdisciplinarity in higher education and at school. In its implementation, it is required to involve methodological concepts common to a number of disciplines. In this way, generalization helps to develop a holistic view of the world in the mind of the student and pupil.

6. Generalization is the basis of the integration of the ecological component into the content of the zoology course, because biological knowledge has a generalizing nature by its nature. On this basis lies the understanding of the general interrelationship and influence of all processes in the universe. Therefore, when introducing zoological content into the system of human biological imagination, it should be raised to the necessary maximum level of generalization.

During the students' study of zoology, it is necessary to take into account the specificity of methodical training when creating a system of their methodical training.

Although this quality is of great importance for the evolution of social systems, it does not determine the evolutionary process. For social evolution, the spiritual and intellectual development of the next generation is more important than the previous ones, and social progress can take place. That is why pedagogues play a special role in the spiritual, moral and aesthetic education of the growing generation, and in the delivery of creative and cultural experience. As a result of the involvement of evolutionary relationships in the construction of the content of the zoology course, the future pedagogues will achieve a deep understanding of the social role of the teacher in modern society, personal responsibility for the quality of the professional choice and professional training.

Currently, interactive educational technologies include: interactive methods ("Case-study", "Bliss-survey", "Modeling", "Creative work", "Relationship", "Plan", "Conversation", "Competition -competition" etc.); strategies ("Brainstorming", "Boomerang", "Gallery", "Zig-zag", "Zinema-zina", "Muzyorar", "Rotation", "T-table", etc.); graphic organizers ("Fish skeleton ", “BBB”, “Conceptual table”, “Venn diagram”, “Lily flower”, “Insert”, “Cluster”, “Why?”, “How?”) and others[3; p. 27]. Development of modern pedagogical technologies, active and interactive methods, knowledge, skills and competences of teachers for the formation of competencies in the teaching of biological science; improving the skills of organizing biology lessons based on modern requirements, issues occupy a special place.

The teacher must first know whether the technology or its method is suitable for the

subject being studied. In the process of solving problems and exercises in biology, the teacher is recommended to use local pedagogical technologies "Case-study", "Cluster", quick games and various forms of game exercises.

In teaching biology, the use of the "Cluster" ("Networks") method has an important place in order to systematize the acquired knowledge of students and ensure its stability.

The word "cluster" means "family tree" in English. This local technology prepares the ground for the development of analytical and critical thinking skills, making it possible to understand the connection between ideas, theories, laws and concepts that are mastered and mastered by students. The construction of this method is carried out in the following order:

Concepts in the content of biology are performed by writing (drawing) on the middle of the blackboard or paper, the laws and concepts related to the topic are interconnected, conclusions are drawn about the topic studied or being studied [100 ; 41st c.].

In classes using the "Cluster" method, students are divided into small groups of equal numbers, after the didactic purpose of the study assignment and the procedure for its completion are explained to them, they gather their thoughts within the allotted time and defend the Cluster they have created. an opportunity to prove their opinions is created, the best and most reasonable cluster is determined, and the winners are encouraged.

If the science teacher uses this method several times in the course of the lessons, in the next lessons, the students themselves will try and strive to cover the topics independently through the "Cluster" drawing [2].

"Case-stadi" - case stadiyes is taken from the English language and means process or situation.

Based on the educational content of the case-study, the problematic processes expressed in structured biology questions and exercises are used to guide the students to understand the problem and to search for options for its appropriate solution. based on problem-situation analysis.

In conclusion, it should be noted that interactive educational technologies improve the quality and efficiency of education, establish mutual cooperation between the teacher, student, group of students, as well as the team. and has great potential in creating the necessary conditions and environment for achieving spiritual unity, striving towards a single goal, realizing the inner potential of each learner, and manifesting as a person. Interactive methods, which are the most important structural element of interactive education, ensure a certain level of effectiveness in the implementation of educational goals. Most importantly, when choosing interactive methods, teachers should pay attention to the studied topic, problem or issue that needs to be solved. In addition, if the age, psychological characteristics, worldview, and life experiences of students are taken into account when using interactive methods, the effectiveness of the lesson will increase and improve.

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