pISSN:2349-5707 Volume:12,Issue 10,October-2025 eISSN:2349-5715

FROM THE SUBJECT " ZOOLOGY OF ARCHITECTS " THEORETICAL , LABORATORY TRAINING INTEGRATED IN CASE ORGANIZATION REACH AND TRANSFER METHODOLOGY

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Abstract. This article provides methods used in theoretical and laboratory classes in teaching the subject "Vertebrate Zoology" in higher educational institutions. It also highlights methods for the effective use of practical and demonstration materials in zoology lessons.

Organizing laboratory exercises in biology lessons The biology curriculum includes laboratory exercises to consolidate the knowledge acquired by students and develop biological, practical, and academic skills through their application in practice.

To conduct laboratory exercises at the required level, the teacher:

1. Determine the didactic purpose of laboratory exercises;

2. Prepare the equipment necessary for laboratory training;

3. Identify ways to organize students' cognitive activity in laboratory training and design the course of the training on this basis;

4. Preparing instructions for students' tasks that will be necessary during the process of conducting experiments and observations;

5. The laboratory exercise should identify ways to formalize the information prepared by students on their assignments.

6. Analyze the progress of the laboratory exercise and the results obtained, and make appropriate changes if necessary.

The biology curriculum also includes practical exercises to develop students' academic and practical skills. In order to increase the effectiveness of these practical exercises, the teacher should pay attention to the following:

• Determine the place of practical exercises included in the curriculum in the perspective and calendar-thematic plan and in the educational process;

• Determine the didactic purpose of practical training;

• Prepare the equipment necessary for conducting practical training;

• Determine ways to organize students' cognitive activity in a practical session and design the course of the session on this basis;

• Prepare instructions for students' tasks that will be necessary during the process of conducting experiments and observations;

• Analyze the progress of the practical training and the results obtained, and make appropriate changes if necessary. In conclusion, at the beginning of the academic year, a biology teacher should draw up a perspective plan for the planned and systematic implementation of teaching the subject, determine interdisciplinary connections, excursions and extracurricular activities, and draw up a thematic calendar plan on this basis. In this thematic calendar plan, he should

pISSN:2349-5707 Volume:12,Issue 10,October-2025 eISSN:2349-5715

determine lessons, extracurricular activities, laboratory and practical training, and organize and conduct lessons and training at the required level.

In zoology laboratory classes, it is considered that in order for students to gain an understanding of the morphological and anatomical structure of animals, it is not enough to show only wet and mounted preparations and conduct lessons using tables, and it is advisable to directly dissect live animals on the topics and introduce their external and internal structure more thoroughly. Representatives of the subclasses of the chordate type, such as the cephalopods and larval chordates, and representatives of the classes of the grouper and ciliated fish belonging to the subclass of vertebrates, are not found in the fauna of our republic. However, in the state educational standard and the curriculum for vertebrate zoology, it is planned that students will study the morphological and anatomical structure of the above-mentioned animal representatives in laboratory classes. Therefore, students study the morphological and anatomical structure of the “Lancetnik” representative of the cephalopod subtype, the “Ascidia” representative of the larval chordate subtype, the “River lamprey” representative of the vertebrate subclass, the “Spiny shark” representative of the ciliate fish class, using wet materials fixed in alcohol or formalin, micropreparations, and color tables reflecting their structure. If, during the lesson, the animal species indicated in the topic is not available, any other animal species related to the topic can be used: For example, if there is no carp, then a humpback whale, a white amur or a humpback whale; if there is no pigeon, then a pheasant, a crow, a chicken; if there is no rabbit, then the external and internal structure of a rat, cat, and other living animals can be studied by dissecting it. In this case, only the systematic position of the animal shown in the topic is changed. The manual describes the procedure for dissecting a living animal related to the topic in each laboratory exercise and the methods for its consistent study. Drawing a picture of the object being studied is the most necessary part of laboratory exercises in vertebrate zoology. Before drawing, it is necessary to carefully study all parts of the animal's structure. Students keep a separate album for drawing animals in laboratory exercises. When drawing, it is necessary to paint different organs in the animal's body in different colors using colored pencils or felt-tip pens. The same organs of different vertebrates are painted in the same color (for example, the digestive organs - in brown, the excretory organs - in green, the nervous system - in yellow, the circulatory system - in red).

The theoretical part of the laboratory work provides the process of studying the theoretical materials for performing laboratory work and reveals the content of information related to the equipment necessary for performing laboratory work, the purpose of the work, the procedure and stages of performing the work, and scientific and theoretical issues to consolidate one's knowledge after completing the work.

Zoology classes approach the study of the animal world from a historical perspective. Their study begins with the simplest unicellular organisms and ends with the most highly structured apes belonging to the mammalian class. Students should have a scientific understanding of how each organism or taxonomic group studied is more complex than its predecessor and arose later from a historical perspective.

The concepts that form the basis for the formation of a scientific worldview in zoology lessons are:

– the fact that animal organisms, like all other living things, are made up of cells;

– similarity of cell structure and function in all organisms

– the presence of species among animals that have a structure and nutritional characteristics similar to plants;

pISSN:2349-5707 Volume:12,Issue 10,October-2025 eISSN:2349-5715

– the development of all animals begins with a single fertilized egg cell;

– any organism repeats the historical development of its species during its embryonic development;

– similarities between different systematic groups indicate that they descended from a common ancestor;

– the current system of the animal kingdom reflects the kinship between different systematic groups of animals;

– similarity of the larval stage of closely related systematic groups; – existence of wild ancestors of domestic animals;

– animal biodiversity and its causes;

– the laws of the distribution of animals on Earth.

To date, as a result of pedagogical experiments conducted in biology teaching methodology, theories such as "Development of Biological Concepts", "System of Teaching Forms in Biology", "Teaching Methods in Biology", "Development of Ecological Concepts in Biology", "Material Base System of Biology Teaching", "System of Methodological Preparation of Student Biologists for Work at School in Pedagogical Universities" have been developed and put into practice.

In conclusion, the general methodology of teaching Biology covers issues such as the purpose, task, content, principles, methods, tools, forms of teaching all biological subjects, the history and stages of teaching biology. Specific methodologies focus on the content of a particular subject, such as the organization and equipment of lessons, extracurricular activities, extracurricular activities, excursions, practical and laboratory classes, etc.

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