

## Chapter 17

# Applied Zoology for Forming of Research Competence at Students of Biologists

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### **ABSTRACT**

*This chapter about how to involve students of biologists in research work, using benefits of applied zoology. The first part of the chapter provides the overview of such questions as research activity of students, methods and conditions of its forming, feature for students of biologists. The second part is devoted to the step-by-step organization of research activity according to levels of readiness of students. Much attention in this part is paid to questions of applied zoology: directions and objects of researches; structure and content of laboratory works, scientific and practical and research projects; uniform approach to use of techniques of researches in field and laboratory conditions. For assessment of results of researches and formation of research competence of students such methods as rating system, a portfolio, methods of expert estimates are offered.*

### **INTRODUCTION**

According to the estimates of Food and Agriculture Organization of the United Nations (2017) modern society, especially the developing countries, is facing acute problems of stable food production and farming, medical care, wilderness protection, etc. Training of specialists, focused on research and development in various fields of applied zoology, is one of main conditions for solution of these and many other problems.

Training of professional biologists must be performed at universities ready to train competitive specialists adapted to constantly changing conditions and having capability to researcher's inquiry. To develop vigorous research activity of students, the most successful universities use different modern educational technologies and infrastructural resources.

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Understanding and use of modern algorithms of research work organization of students will allow training, in future, professional biologists capable of continuous self-development, self-education and generation of scientific ideas.

## **BACKGROUND**

Study of the problem of future specialists' is research activity training demands consideration of such questions as research competence, methods and conditions of developing it, distinctive features for biologists.

Having studied various treatments, the author offers the following definition: "Research competence is an ability of an individual to apply his/her knowledge, experience, values, considering his/her bents, to solve research problems and tasks". Detailed consideration of research competence provides an opportunity to divide it into 4 groups of abilities stated in Table 1 (Kleshcheva, 2014). It is possible to allocate the following groups of abilities: organizational, communicational, intellectual and informational.

After consideration by the author of points of view on structure of research competence of students of biology existing in scientific literature, similar groups of abilities which initial forming is performed

*Table 1. Structure of research competence*

Nº	Groups	Main characteristics	Detailed Characteristics
1	organizational abilities	goal-setting planning organization control regulation analysis	ability to put and accept the purposes and tasks of cognitive or professional activity; ability to plan, to control, estimate actions according to an objective and conditions of its implementation; definition of the most effective methods of the solution of an objective; ability to agree about distribution of functions in joint activity; the understanding of the reasons of success of cognitive or professional activity and capability is constructive to work in failure situations; development of initial forms of a cognitive and personal reflection.
2	information abilities	search collecting processing transfer interpretation	information search in different sources: work with educational, reference and additional books; selection and group of materials for a certain subject, structuring information; drawing up theses, making an abstract, citing, summarizing; information representation in different forms: use of sign and symbolical methods of information representation for creation of models of bodies of interest and processes.
3	intellectual abilities	on the problem resolution of creative, search, research character	formulation of a problem and definition of methods of its decision; identification of essential signs of an object; main logical actions of comparison, analysis, synthesis, generalization, classification, establishment of analogies and causes and effect relationships(cause-effect relations); operating by concepts, judgments, proof components.
4	communicative abilities	actively and competently to use speech means and means of information and communication technologies for the solution of communicative and cognitive tasks	drawing up texts of different types in an oral and written form; ownership of different forms of oral public statements; ability to express the thoughts, to listen and understand others, readiness to conduct dialogue; is reasoned to state the opinion and assessment of events; readiness to structurally resolve the conflicts by means of a compromise and cooperation.

Source: Kleshcheva, 2014

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