

## **DEVELOPMENT OF BIOLOGICAL LITERACY OF STUDENTS BASED ON A COMPETENCE-BASED APPROACH**

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**Abstract.** The article examines the content of such concepts as “biological literacy”, “natural science literacy”, “functional literacy”. Functional literacy is considered as a person's ability to use the knowledge acquired throughout life to solve life problems in various spheres of human activity. Natural science literacy, as one of the components of a student's functional literacy, involves the development of the ability to use knowledge in the field of natural sciences to solve life and professional problems. The competence of learning ability is considered as one of the fundamental ones, which requires independent and detailed consideration of the concept of “biological literacy of the student”. As an integral part of natural science literacy, biological literacy is the ability to apply biological knowledge, adapt to changes, take responsibility for decisions made, predict the consequences for preserving human health and nature.

**Keywords:** competence of learning ability, biological literacy, natural science literacy, functional literacy

High-quality biological education is one of the main issues that is in the center of attention of modern society in many countries. The importance of biological education for modern humanity is determined by the influence of discoveries and new scientific developments in biological sciences at the present time. Many negative processes due to the fault of a biologically illiterate person have become irreversible.

Teaching biology based on a competency-based approach is aimed at developing students' abilities to independently apply knowledge, skills and abilities to solve

personal, professional and social issues, to independent learning and improving knowledge.

One of the main fundamental competencies of a student's personality is the ability to learn. This competence should be aimed at developing a creative personality, capable of independently solving various problems, thinking critically, being able to use information, replenishing knowledge, defending their beliefs, self-developing, and applying knowledge in practice. It is this competence that underlies biological literacy [6]. And this requires an independent and detailed consideration of the concept of "biological literacy of a student". In the requirements for the results of general education, specified in educational standards, in general education institutions more attention is beginning to be paid to the development of functional literacy in students. Functional literacy is a person's ability to use the knowledge acquired during life to solve life problems in various spheres of human activity, to solve real life problems, the ability to look at things or phenomena from different points of view, to find the optimal solution to a non-standard situation. Natural science literacy is one of the components of functional literacy, it implies the child's ability to take an informed public position on issues related to natural sciences. It is also expressed in an interest in natural science facts and ideas [2].

Natural science literacy involves students' ability to use knowledge of natural science subjects to solve life situations and problems using scientific methods of cognition, their understanding of the structure and functioning of the surrounding world and assessment of changes brought about by anthropogenic activity and based on observations and results of research activities, and, as a result, making appropriate decisions to prevent or minimize these changes, their demonstration of an active civic position in solving issues in the field of natural science and continuing self-education in the natural sciences [1].

The main component of natural science literacy is biological knowledge. The issue has become especially relevant in recent decades, when our civilization has faced

manifestations of a systemic crisis in the social and economic spheres. The low level of environmental culture and environmental awareness of specialists has led to the emergence of a large number of environmental problems, and the departure from a conscious healthy lifestyle has led to a deterioration in the health of society [3]. The problem that aggravates all the others is the impending global ecological crisis, which has reached the last biosphere boundaries, caused by the wasteful consumption of natural resources and the destruction of the habitat of all living things, which threatens the existence of humanity, the health and life of man himself. Man strives to provide himself with comfort, but forgets about the consequences of his activities, which disrupt the homeostatic balance in the environment. Therefore, one of the main tasks of a biology teacher is to develop biological literacy in schoolchildren.

Biological literacy is the most important tool for achieving a more balanced development of society. Biological literacy is the basis for maintaining health, a natural scientific worldview that determines the understanding of the existence and development of life on the planet at the biosphere level. According to this characteristic, biological literacy is defined as the ability to independently apply biological knowledge, adapt to changes, take responsibility for decisions made, predict the consequences for the preservation of life as a phenomenon, nature, and human health [7].

Biological literacy is necessary for every person, since many professions require basic biological knowledge. Economists, lawyers, administrators, politicians and other specialists who do not have the necessary knowledge in the field of biology are responsible for making socially and biosphere-significant decisions at all levels up to the state. They can promptly prevent many environmental problems and not bring the biosphere to a state of crisis.

Biological literacy has educational, developmental, and humanistic potential. The dominant factor in its formation is not knowledge, but its creator - a person, a cognizing personality. The totality of the data presented in the study allows us to assert that in the information society, biological literacy not only ensures the effectiveness of activities,

but becomes a factor in preserving life as a phenomenon, the environment of its distribution - nature, a factor in the education of moral and ethical values, the worldview of the individual, a factor in safe professional activity in the field of making socially and biosphere-significant decisions, it allows us to see changes in nature, the sphere of ensuring basic human needs and to better adapt, maintain health and survive in changing conditions [5].

Biological literacy: the ability to use scientific research to think creatively about problems with a biological component, communicate these thoughts to others, and integrate these ideas into the decision-making process. Thus, biological literacy is necessary for all citizens in everyday and professional life, since scientific research, including technical and humanitarian, requires biological knowledge.

A biologically literate specialist should see not only the social system (home, enterprise), but also the natural one - the nature of the region, the planet in a complex of natural connections, geographical indicators, population health, natural resources, and so on.

A biologically literate person, learning and mastering the world, should be able to predict his activities and their consequences; apply biological knowledge in everyday and professional life, ensuring personal safety, the safety of all humanity, maintaining health, supporting vital resources for existence.

In everyday life, biological literacy ensures the formation of a civic position in socially important issues, a culture of health preservation, a competent understanding of scientific biological information, from the point of view of ethics, health, life safety. The above problems explain the need to identify biological literacy as an independent concept in teaching biology.

Thus, biological literacy is the ability of each of us to determine and understand the role of biology in the world in which we live, to express reasonable biological judgments and to use biological knowledge in such a way as to satisfy the needs inherent

in a comprehensively developed person. And all this is aimed at developing the natural science and functional literacy of the individual.

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