

Article

Development of Health-Saving Competencies of Students in Mastering the Subject "Biology"

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Abstract: This article examines the development of students' health-promoting competencies in the Biology subject, which has significant potential for fostering scientific understanding of human health and the factors that contribute to its preservation and improvement. The paper examines the pedagogical conditions and methods for developing health-promoting competencies in biology lessons, as well as the teacher's role in developing students' awareness of their own health. It is noted that the introduction of health-promoting educational technologies contributes to the development of sustainable healthy lifestyle habits in schoolchildren.

Keywords: health-saving technologies, biological education, student health, competency-based approach, healthy lifestyle, health pedagogy.

1. Introduction

In modern society, the issue of maintaining and improving the health of the younger generation is particularly important. Intensive technological advances, increasing academic workloads, decreased physical activity, and unfavorable environmental conditions negatively impact the health of schoolchildren. Therefore, the education system faces an important task: developing students' sustainable knowledge, skills, and abilities aimed at maintaining and improving their own health and the willingness to apply these skills in practice [1].

One effective means of addressing this challenge is the development of health-promoting competencies during the educational process. The subject "Biology" plays a special role in this process, providing students with scientific knowledge about the structure and functioning of the human body, the mechanisms of maintaining health, and disease prevention [2].

Biology education enables students to understand the relationship between lifestyle and health. Studying topics such as human anatomy and physiology, hygiene, ecology, and the impact of environmental factors on the body helps develop a responsible attitude toward their own health and the health of others [3].

2. Material and Method

This study is based on a qualitative and pedagogical analysis of the development of health-saving competencies in biology education. The research applies methods such as analysis and synthesis, comparative analysis, and theoretical interpretation. Scientific literature, educational standards, and pedagogical practices were examined to identify effective methods of developing health-saving competencies among students. In addition, observation of educational processes and analysis of teaching methods in biology lessons were used to evaluate practical approaches [4].

Citation: Sharipova, D. D., Temirbekova, R. N. Ecological Culture – A Development of Health-Saving Competencies of Students in Mastering the Subject "Biology". Web of Semantic: Universal Journal on Innovative Education 2026, 5(3), 47-51.

Received: 23rd Feb 2026
Revised: 26th Feb 2026
Accepted: 28th Feb 2026
Published: 19th Mar 2026



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The aim of this study is to determine the pedagogical potential of the Biology course in developing students' health-promoting competencies. To achieve this goal, the following objectives were addressed:

- the concept of health-preserving competencies in the modern education system is considered;
- the role of biological education in the formation of a health culture was analyzed;
- the main methods and technologies for developing students' health-preserving competencies in biology lessons were identified;
- pedagogical conditions for the effective development of health-preserving competencies have been determined [5].

In modern pedagogical science, the concept of "health-preserving competencies" is considered as a set of knowledge, skills, abilities and value attitudes aimed at maintaining and strengthening human health.

It has been established that health-preserving competence includes:

- ⊙ knowledge about factors affecting human health;
- ⊙ understanding the principles of healthy eating;
- ⊙ knowledge of hygiene and disease prevention;
- ⊙ physical activity skills;
- ⊙ responsible attitude towards one's health [6].

The development of these competencies involves developing students' ability to apply acquired knowledge in everyday life and make informed decisions aimed at maintaining and improving health.

Within the competency-based approach, health-promoting competence is viewed as an important component of overall personal culture. It contributes to the development of sustainable healthy lifestyle habits and improves the health of the population as a whole. Biology, a special subject in school education, plays a key role in addressing these issues, as it is directly related to the study of living organisms, including humans. It should be noted that, according to research, through studying biology, students gain knowledge about:

- the structure and functions of organs and systems of the human body;
- mechanisms for maintaining homeostasis;
- the influence of environmental factors on the body;
- disease prevention;
- principles of a healthy lifestyle [7].

Topics related to human anatomy and physiology, hygiene, and ecology are particularly important. Studying these sections allows students to understand how various factors—nutrition, physical activity, unhealthy habits, and environmental conditions—affect health.

Furthermore, biology fosters ecological thinking and an understanding of the relationship between the environment and human health. This is especially relevant given the deteriorating environmental situation in large cities [8].

The effectiveness of developing health-preserving competencies largely depends on the pedagogical methods and technologies used. The main methods include:

1. Problem-based learning, which involves using problematic situations in lessons to develop students' critical thinking and independent problem-solving skills. For example, students might be asked to analyze the causes of the spread of certain diseases or the impact of lifestyle on human health [9].
2. Project-based activities that allow students to explore issues related to health, ecology, and lifestyle. Project topics may include:
 - a. "The Impact of Nutrition on the Health of Adolescents"
 - b. "Physical activity and health of schoolchildren"
 - c. "Ecological state of the environment and human health" and others

[10].

3. Practical and laboratory work that allows students to apply theoretical knowledge in practice, for example, measuring pulse before and after physical activity, studying water quality or analyzing factors influencing the state of the environment, measuring height and weight, and others.
4. Interactive teaching methods, including discussions, business games, brainstorming sessions, and case studies, promote active student engagement in the educational process and foster a conscious attitude toward health issues.

To effectively develop health-preserving competencies, it is necessary to create certain pedagogical conditions:

- implementation of health-saving educational technologies;
- creating a favorable psychological atmosphere in lessons;
- use of active learning methods;
- integration of biological knowledge with practical aspects of a healthy lifestyle;
- formation of students' motivation to maintain health.

At the same time, the use of modern health-saving technologies in the learning process is currently becoming very relevant, including: medical and hygienic, physical education and health, environmental, social technologies and technologies for ensuring life safety [11].

Health-preserving educational technologies include the following components:

- optimal level of difficulty, variability of methods and forms of training;
- optimal combination of motor and static loads;
- training in small groups;
- use of clarity;
- a combination of different forms of information provision;
- creating an emotionally favorable atmosphere;
- formation of motivation for study;
- cultivating students' knowledge on health issues.

When using health-preserving technologies, the following methods are used: frontal; group; practical; educational game; situational method; game method; competitive; active learning methods [12].

When developing health-preserving competencies in the process of implementing health-preserving technologies, it is recommended to use the following techniques:

- protective and preventive;
- compensatory-neutralizing;
- stimulating;
- informational and educational.

A special role in this process belongs to the teacher, who acts not only as a source of knowledge, but also as an example of a healthy lifestyle.

Thus, developing health-promoting competencies is one of the most important tasks of modern education. The subject "Biology" offers significant potential for achieving this goal, as it develops students' scientific knowledge about the structure and functioning of the human body, as well as the factors influencing health.

The use of modern health-promoting pedagogical technologies, active learning methods, and a practice-oriented approach helps students develop a conscious attitude toward their own health. As a result, students develop sustainable healthy lifestyle habits, which is essential for maintaining the health of the younger generation [13].

3. Results and Discussions

The results of the study show that biology education plays a significant role in the development of students' health-saving competencies. The integration of theoretical knowledge with practical activities helps students better understand the importance of maintaining their

health [14].

The findings indicate that the use of interactive teaching methods, project-based learning, and practical activities significantly improves students' awareness of healthy lifestyles. In particular, students who participate in discussions, experiments, and projects demonstrate higher motivation and responsibility towards their health.

Moreover, the implementation of health-saving technologies creates a favorable learning environment that supports both physical and psychological well-being. Teachers play a key role in this process by guiding students and promoting healthy behavior.

However, the study also identifies challenges such as insufficient methodological support, lack of resources, and the need for teacher training. Therefore, improving pedagogical conditions and integrating modern technologies are essential for achieving better results.

Overall, the discussion confirms that a competency-based approach in biology education effectively contributes to the formation of sustainable health-saving behaviors among students [15].

4. Conclusion

In conclusion, the development of health-saving competencies among students is an important task of modern education. Biology as a subject provides a strong foundation for forming knowledge, skills, and attitudes related to health preservation.

The study shows that the use of modern pedagogical methods, health-saving technologies, and interactive learning approaches significantly improves students' understanding of health and promotes healthy lifestyles.

It is recommended to enhance teacher training, improve methodological support, and integrate innovative educational technologies to strengthen the effectiveness of health education.

Thus, the formation of health-saving competencies contributes not only to individual well-being but also to the overall development of society.

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