

MECHANISMS FOR IMPROVING ECOLOGICAL COMPETENCE ON THE BASIS OF INDEPENDENT EDUCATION IN THE PROCESS OF PROFESSIONAL INNOVATION OF BIOLOGY TEACHERS

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Annotation.

This article scientifically analyzes the issues of developing ecological competence of biology teachers through the organization of independent education in the process of professional development. The article discusses the interrelation of pedagogical and ecological competencies and proposes effective mechanisms for their improvement based on modern educational technologies.

Keywords: biology teacher, professional development, independent education, ecological competence, innovative technology, pedagogical activity.

Introduction. The deepening of global environmental problems, the priority of sustainable development concepts in the world education system make it an urgent issue to improve the ecological culture of biology teachers. The teacher's qualification includes not only knowledge of science, but also his attitude to nature, socio-ecological responsibility. In this regard, the ecological competence of a biology teacher is an integral part of his professional potential.

The role of independent education in professional development

In the system of professional development of teachers, independent education plays an important role as a type of education based on personal activity and research. Through independent education, the teacher:

- gets acquainted with new ecological knowledge and trends;
- independently analyzes scientific and practical activities;

- gains practical experience in the economical use of natural resources.

According to the educational theories of J.Dewey and A.Bandura, independent learning develops the teacher's understanding, experience, and critical thinking skills, which are key components of ecological competence [1].

The concept of ecological competence and its structure

Ecological competence is an integral quality that includes a person's attitude to nature, ecological knowledge, skills and values [2]. For a biology teacher, ecological competence includes the following components:

1. Cognitive (knowledge) competence: scientific knowledge about ecological systems, the biosphere and the impact of human activity.
2. Practical (operational) competence: practical skills in analyzing and solving environmental problems.
3. Value-moral competence: nature conservation, responsibility, ecological culture and active citizenship.

Main mechanisms for improvement

The following pedagogical mechanisms are effective for developing the ecological competence of biology teachers on the basis of independent learning:

1. Modular independent learning system.

By independently studying modules such as "Ecological Safety", "Biosphere and Sustainable Development", "Bioethics" in advanced training courses, the teacher introduces new eco-thinking into his/her work.

2. Use of online learning platforms.

Participation in environmental courses and webinars in environments such as Moodle, Coursera, Ziyonet, EdX activates the teacher's independent research.

3. Establishing research activities.

Teachers are directed to conduct micro-research, study local environmental problems and develop solutions in the process of professional development.

4. Reflection and portfolio system.

In the process of independent learning, the teacher analyzes the results of his

activities, increases the level of competence through self-assessment [3].

The importance of innovative pedagogical technologies

In modern education, creative and interactive technologies are of great importance in the formation of independent environmental knowledge. Among them:

- “Case-study” (situational analysis) - analysis of environmental problems and offering solutions;
- “Project-based learning” (project-based learning) - development of projects on local environmental problems;
- “Eco-digital portfolio” - there is a system for documenting the teacher’s environmental activities in digital form.

These technologies enrich the content of independent learning and cover all components of environmental competence [4].

Results and conclusion. The analysis shows that the ecological competence of a biology teacher is determined not only by the system of knowledge, but also by his active ecological position. Work on the basis of independent education in the process of professional development gives the following results:

- the teacher's culture of attitude to nature increases;
- the skills of analyzing and applying ecological information are formed;
- the ideas of sustainable development are integrated into professional activities.

Thus, improving the ecological competence of biology teachers on the basis of independent education is a scientifically sound and practically effective direction of the modern pedagogical system.

LITERATURE USED:

1. Dewey J. Experience and Education. – New York: Macmillan, 1938.
2. Huckle J., Sterling S. Education for Sustainability. – London: Earthscan, 1996.
3. Nazarova Sh. Muallimning ekologik kompetensiyasini shakllantirish nazariyasi va amaliyoti. – Toshkent: Fan, 2020.

4. Xalilova M. Interaktiv usullar orqali ekologik ta'lim samaradorligini oshirish. // "Ta'lim va innovatsiyalar" jurnali, №2, 2023.
5. UNESCO. Education for Sustainable Development Goals: Learning Objectives. – Paris, 2017.