



IMPLEMENTATION OF THE PEDAGOGICAL TECHNOLOGY OF PROFESSIONAL-PERSONAL ECOLOGICAL EDUCATION IN TECHNICAL UT

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ВНЕДРЕНИЕ ПЕДАГОГИЧЕСКОЙ ТЕХНОЛОГИИ ПРОФЕССИОНАЛЬНО-ЛИЧНОГО ЭКОЛОГИЧЕСКОГО ОБРАЗОВАНИЯ В ТЕХНИЧЕСКОМ УТ

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ABSTRACT

In this article, the acquisition of ecological knowledge and skills for professional activity, the acquisition of practical knowledge of ecology and environmental protection, the advantage of laboratory training, the training, education, development, self-education of individuals and the population aimed at the formation of norms of behavior and special knowledge and issues such as the experience-gathering process, aspects of laboratory practicum design, practice-oriented training stages, population ecology and pedagogical technology of professional-personal ecological education in technical higher education institutions are highlighted.

KEY WORDS: *Professional-personal ecological education, ecological awareness, human ecology, ecological outlook, laboratory practice.*

Аннотация. В данной статье рассматривается приобретение экологических знаний и навыков для профессиональной деятельности, приобретение практических знаний по экологии и охране окружающей среды, преимущество лабораторного обучения, обучения, воспитания, развития, самообразования личности и населения, направленное на Освещены формирование норм поведения и специальных знаний, а также такие вопросы, как процесс накопления опыта, аспекты оформления лабораторных практикумов, практико-ориентированные этапы обучения, экология населения и педагогическая технология профессионально-личностного экологического образования в технических вузах.

Ключевые слова: Профессионально-личностное экологическое образование, экологическое сознание, экология человека, экологическое мировоззрение, лабораторная практика.

INTRODUCTION

During the years of independence, a complete legal and regulatory framework was created in the field of ecology, environmental protection and rational use of natural resources. In particular, the Constitution of the Republic of Uzbekistan, the laws "On Nature Protection", "On Education" and the National Personnel Training Program, as well as a number of other documents form the legal basis of the environmental education system. It is worth noting that in Article 4 of the Law of the Republic of Uzbekistan "On Nature Protection" the obligation to teach ecology in all types of educational institutions has been strengthened to achieve the goals of nature protection [1]. Undoubtedly, it is important to increase the environmental culture of the population, especially the young generation, in order to achieve environmental purity and prevent environmental problems [2].

In the environment of globalization, it is impossible to acquire theoretical knowledge without practical skills in ecology and environmental protection. They are interrelated and serve as a guide for the future engineer's work [3].

THE MAIN PART

In the conditions of the global ecological crisis, which is characterized by the existence of sharp conflicts in the relations between society and nature, between man and nature, when the issue of survival before humanity arises, it is necessary to develop the forms of dialogue between human thinking and nature in the form of a deep moral restructuring of the entire way of life and behavior of humanity. there is a need to redirect. In this context, the need to form a "new" ecological consciousness is increasing, and one of the sources of its



emergence is a philosophy that promotes and establishes new ecological and cultural values. "New" ecological consciousness and "new" universal ecological values (preserving the diversity of ecosystems, treating the Earth as a unique ecosystem, treating living creatures with care and respect, treating nature as a part of nature, etc.) and accordingly The "new" ecological worldview is formed in the emergence of new directions of value, in numerous attempts to build a philosophy of ecology [4,5].

Ecological education is a purposeful, continuous and complex process of teaching and educating children and adults with the aim of forming their ecological consciousness (S.D. Deryabo and V.A. Yasvin, 1996), which includes: formation of ecological ideas of a person; development of a person's subjective attitude to the natural world; formation of "new" environmental values of a person; development of appropriate standards for nature-oriented practical activities (nature management, nature protection, interaction with the natural world during other activities) [6]. The term "ecological education" was introduced in 1970 at the conference of the International Union for Conservation of Nature.

Yu.D. Zheleznov presents general, in our opinion, universal methodological principles for environmental education in the form of an application to environmental education of students:

- Environmental education based on the worldview should express the rise to the highest morality and responsibility of a person to mother nature;

- It is necessary to study the definition of man as a holistic phenomenon of nature in cosmic, biological, social and spiritual unity on the foundation of educational philosophy;

- Ecological education (means training in a specialty - A.G.) should be considered as a stage in mastering the totality of being and realizing the absolute necessity of Society and Nature [7].

B.T. Grigoryan defines man as the universal force of nature, the inheritor of its integrity, and says that man is no longer a purely natural force, but realizes and develops his universality as a social and spiritual being directly in natural determination. The development of ecological and humanitarian ideas of a person takes place within the framework of interaction and communication with nature.

X. Vittorio concretizes this problem, conducts an analysis in terms of the relationship between ecology, economy, politics and ethics, and raises the question of a fundamentally new type of civilization development. When talking about the development of new strategies of ecological nature necessary for the sustainable development of modern civilization, the author considers the individual as a part of a self-developing system, in which a person does not oppose the object (nature), but interacts with it. Knowledge of the prohibitions of certain interactions, which have potentially fatal consequences, has a special place in their work [8].

N.F. A distinctive feature of Reimers' work is his philosophical approach to the environmental problems of our time. In his

opinion, there is simply not enough time to confirm the processes of self-management in the stabilization of the relationship between society and nature. Therefore, the field of management of the interaction of society and nature should be in the first place. In fact, the uncoordinated interaction of man and the biosphere from an ecological point of view today may have the most negative forecasts for the future.

From the point of view of human ecology, ecological education is the most important means of forming the inner world of a person, it is "the development of fundamental problems in the field of human ecology, the creation of new educational technologies, as well as the change of the existing education and enlightenment system, from the traditional, intellectually oriented educational paradigm to the nature and social environment of a person. "Transition to the paradigm of ecological education, which allows to form knowledge and understanding of the ability and skills of optimal interaction with nature, its physical and spiritual nature, methods of natural regulation of one's somatic and mental health" can exist when the condition is fulfilled ("Human ecology. Culture and education in modern conditions from the conclusion to "interaction" / Doctor of Medicine S.V. Kaznacheev, Doctor of Philosophy N.V. Nalivaiko et al. - Volume II - Part I. Novosibirsk, 1998) [9].

As we mentioned, the main object of modern ecological problems is the inner world of a person with its "pluses" and "minuses" compared to the universal evolution of nature (Y. D. Zheleznov). From the point of view of human ecology, ecological education (including ecologicalization of the educational system) is considered the most important means of shaping the inner world of a person (and not only as a factor regulating his attitude to nature).

It (ecological education) is only "developing fundamental problems in the field of human ecology, creating new educational technologies, as well as changing the existing education and enlightenment system, from the traditional, intellectually oriented educational paradigm, to give a person the ability and skills of optimal interaction with nature and social environment, his physical and "transition to the paradigm of ecological education, which allows to form knowledge and concepts about the methods of natural regulation of one's spiritual nature, one's somatic and mental health" can come forward when the condition is fulfilled [10].

Considering the problems of further development of human civilization, N.N. Moiseev said that humanity should change the paradigm of development, move to another evolutionary channel.

In the study, one of the forms of acquisition of environmental knowledge and skills for further professional activity is considered - a practice-oriented module, which includes the following stages: acquisition of the basic knowledge and skills of working with the tool base, the importance of the possibility of preventing negative impact on people and the environment during professional activity understanding; formation of



readiness to solve environmental problems using modern technologies; development of a systematic view of environmental problems, formation of the ecological culture of a specialist.

The practical significance of the research problem is to develop methods of effective use of information technologies in order to develop creative activity and independence during laboratory training in the "Industrial Ecology" training course. This method makes it possible to increase cognitive activity and independence of students in laboratory classes, and to develop engineering-ecological thinking.

The very meaning of the word "laboratory" (Lat. Laboro - work) is associated with the use of mental and physical efforts in order to find previously unknown methods of solving scientific problems [91].

Laboratory work is a method of teaching, a type of independent activity, during which the student performs experiments, measurements, and elementary research that confirm the learned theoretical rules [128].

A practice-oriented module is a collection of a number of laboratory studies integrated into a whole by a certain sign.

Practicum is a form of organizing training sessions, in which students organize and perform experiments under the supervision of a teacher [11].

The following can be stated as the purpose of conducting laboratory work: practical assimilation of the scientific and theoretical rules of the subject being studied by students; learning research, and then acquiring instrumental knowledge in order to solve real experimental and practical problems. The components of the module allow to study the interaction of man and nature in the course of production activities, to determine the level and nature of the impact. They make it possible to develop a non-indifferent attitude towards the state of the environment, a personal feeling of environmental problems.

The advantage of conducting laboratory training is to combine theoretical, methodological, practical knowledge and skills in a single educational-research process; the peculiarity of the laboratory practicum is the organization of independent work of students under the guidance of the teacher. Methodologically correctly organized laboratory exercises help to develop students' thinking, strengthen practical activities and develop the ability to observe, measure, plan, mutual support and mutual control.

Working in the laboratory requires creative initiative, independence in decisions, and deep understanding of learning material.

Working in the laboratory forms an attitude to the environment based on the need for personal participation in the acquisition of knowledge and skills, in solving existing environmental problems and in their prevention.

Professionally oriented ecological module, whose tasks are aimed at the implementation of concrete practical activities, is considered the most effective form of organizing training based on the independent work of students.

The goal of the laboratory training is for students to learn the scientific and theoretical rules of the studied science, to acquire the latest experimental techniques in the field of relevant science, to instrumentalize the acquired knowledge, that is, to turn it into a means of study and research, and then to solve real experimental and practical problems, in other words - theory and is to establish a connection between practice [12].

On the basis of existing equipment, a practically oriented module for the course "Industrial Ecology" was developed and introduced into the educational process, which included eight cases, each of which was designed for training lasting 2-4 academic hours. A unique laboratory complex is designed for students of technical specialties, taking into account their specialization.

The Following Aspects were taken into account when designing the Laboratory Practicum:

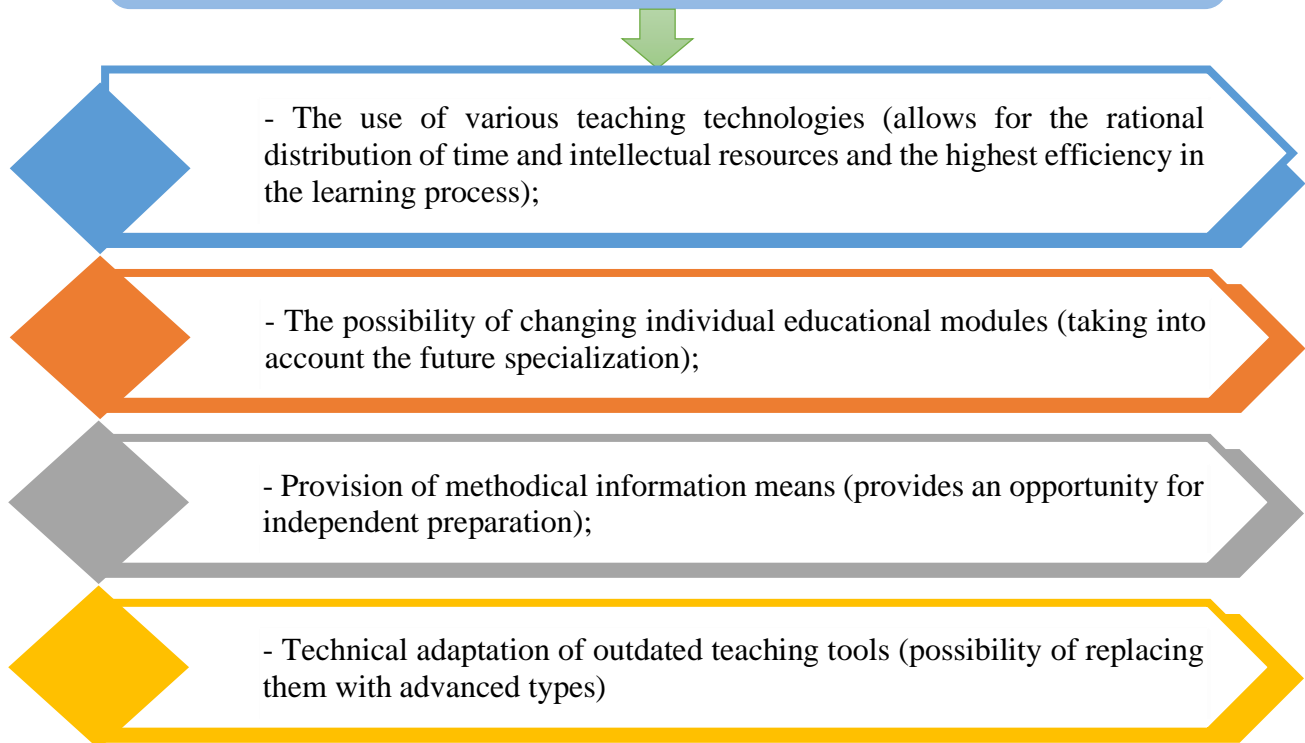


Figure 1: Scheme of Educational Research Solution

During practice-oriented lessons, students practically master the scientific and theoretical positions of the studied subject, acquire instrumental knowledge to solve educational research, and then real experimental and practical problems.

The following are the main tasks set in the process of designing the laboratory practicum: experimental verification of laws, mastering the measurement methodology and acquisition of experimental skills, learning the principles of operation of measuring instruments.

The use of information technologies in teaching allows to effectively engage students in active cognitive activities for understanding and strengthening the educational material, applying knowledge in the process of solving problems. In order for the developed teaching technology to provide the goals set in practice, the students' motivation, learning, information, mastery of normative materials, ability to master given volumes of information are taken into account. Elements that provide connection to the educational process with the future professional activity were also deleted. New information technologies easily entered the educational process and did not

affect the educational standard and educational content determined by the state programs.

Effective use of modern means of teaching, a comprehensive approach to the organization of the educational process, its implementation in practice allows a broader approach to solving the problems of implementing environmental education.

Before completing practice-oriented tasks, students study the necessary theoretical materials from lecture notes and textbooks, familiarize themselves with the content and procedure of work. During the performance of laboratory work, students will have the opportunity to perform all stages of laboratory work individually by designing their experimental research activity. The work is carried out in a group of 2-3 people, taking into account individual wishes. The completed task is formalized in a special notebook, specifying the topic and the purpose of the training. The results of the work are presented in the form of tables or calculations.

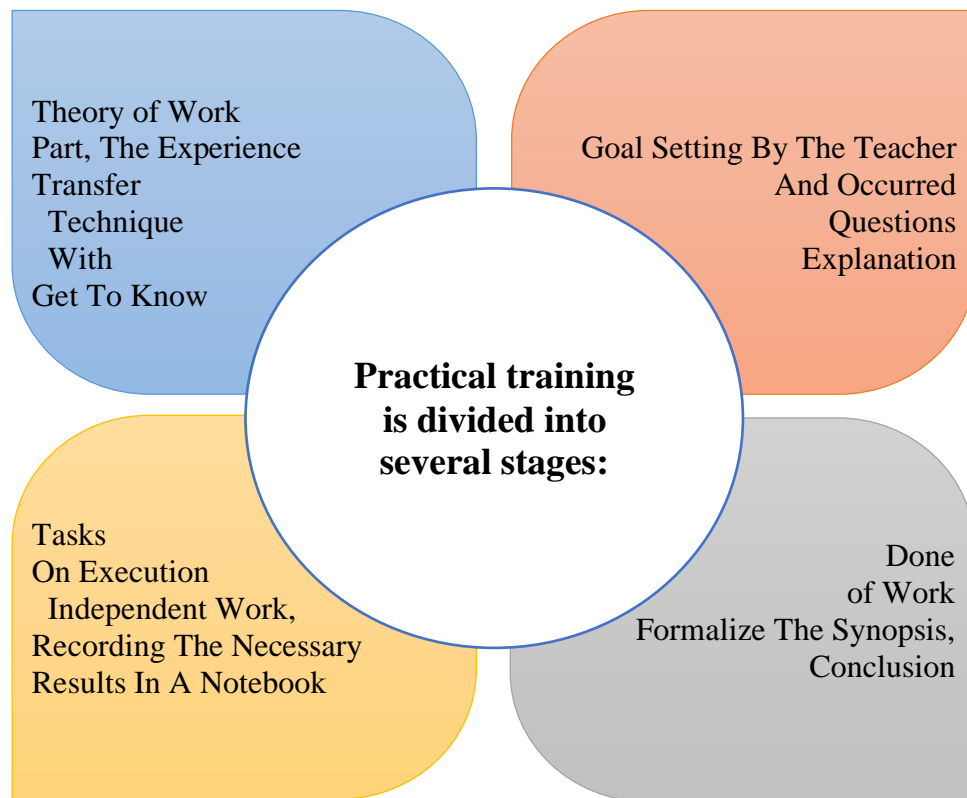


Figure 2: Schematic of Practice-Oriented Training

The completion of each laboratory work is intended for 2 hours of study time.

As an example, let's consider one of the works that allows us to study the change in population growth by modeling the process.

The doctrine of population or population ecology is one of the main branches of modern ecology. The term "population" was borrowed by biologists from demographers, including this concept long before the emergence of population ecology. In demography, it is used in the sense of defining the population of the whole country (or part of it), or the population of any settlement. From the ecological point of view, a population is understood as a group of representatives of a species living together, united by a unit of life activity. Self-reproduction of living material takes place within the population, which ensures the survival of the species due to the inheritance of adaptive qualities, is the beginning of new populations and processes of species formation [51].

The Conclusion in the process of preparing students of the "Labor protection and technical safety" educational direction for professional activities based on innovative technologies, technical higher educational institutions acquire ecological knowledge and skills, acquire practical knowledge of ecology and environmental protection, the advantage of laboratory training, behavior - they should have professional ecological competence about the process of teaching, training, development, self-education and experience gathering of individuals and population aimed at forming behavioral standards and special knowledge, aspects of laboratory practicum design, stages of practice-oriented training.

Suggestions

1. To correctly determine the pedagogical and organizational conditions for the formation of professional readiness of future engineers, taking into account the ecological and psychological characteristics and the possibilities of mastering;

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