

3.14. Level of existing problem solving in area of ecological competence formation of future agricultural higher education institutions' teachers

The study's relevance is due to the growing need of modern enterprises for competent workers who must own the qualities necessary for successful professional activity.

One of the future specialists' significant qualities is the formation of environmental competence.

Environmental competence allows professionals to solve production problems related to environmental and labor safety in the production processes without harming the environment.

From the second half of XX century, environmental problem became one of global problems, challenging in its scale and significance for all the planet.

As in the Neolithic era, humanity is again faced with the question of the biological species *Homo sapiens* conservation due to self-inflicted ecological balance violations, which are irreversible (M.I. Budiko, F.I. Girenok, E.V. Girusov, N.M. Mammadov, N.N. Moiseev, R.S. Karpinskaya, V.A. Kutyrev, V.S. Stepin, I.T. Suravegina, A.D. Ursul, G.S. Khozin, A.L. Yanshin and others).

Preservation and sustainable reproduction of life on Earth is now understood as a specific biosphere function of mankind (V.S. Golubev).

As the experience of recent decades shows, attempts to stop the onset of the global environmental crisis by economic measures are unsuccessful. One of the main reasons of such situation is that the mass consciousness of mankind is based on a consumer attitude to nature in general and to human nature in particular.

Only through education can humanity and society reach their full potential. It is an indispensable factor in changing people's attitudes so that they have the opportunity to assess and address the challenges they face in order to develop values, skills and encourage behaviors compatible with sustainable development [1].

The leading role in implementation of sustainable development, formation of ecological culture is played by higher education. During higher education the fundamental elements of future specialist's worldview are formed and outlined, the value-semantic sphere of personality is actively formed, the methods of practical implementation of ecological imperative are mastered.

Thus, the analysis of the level of existing problem solving in area of ecological competence formation of future agrarian higher education institutions' teachers is an important component of a comprehensive issues' study of obtaining quality environmental education.

The following research methods were used to solve the study` tasks:

- theoretical - conceptual and terminological analysis of literature, comparative analysis, generalization and systematization of scientific areas and educational programs;
- empirical: analysis of research results, statistical processing and interpretation of data.

Acquisition of ecological competence in process of higher education is aimed at completing the ecological culture formation of professionals in various specialties.

The starting point of higher environmental education is the continuation of basic secondary education at the next, higher level in order to form higher environmental culture, deep environmental knowledge and biosphere worldview, training bachelors and masters in all areas of environmental, practical, management, educational and scientific activities.

The formation of competencies became especially important at the stage of civil society formation in Ukraine, accompanied by fundamental changes in the status of individual: expanding the degree of personal freedom and hence - subjective competence, which dictates the need to develop new internal mechanisms of self-orientation, self-regulation and self-realization. These profound modifications reveal the insufficiency of traditional mechanisms of cultural support of activity, necessitate a change in the content and scope of socialization.

The international project "Definition and selection of competencies" (DeSeCo) [2] documents recognize the need to define educational competencies based on a common vision of world` future, which should be based on basic human rights principles, democratic values and goals of sustainable development (that is an integration of environmental protection, economic prosperity and social justice).

As noted by S.V. Alekseev, S.N. Glazachev, E.N. Dzyatkovskaya, A.N. Zakhlebny, A.V. Ivashchenko, L.V. Moiseeva, L.V. Panfilova, G.A. Paputkova, I.V. Petrukhina, L.E. Pistunova, I.N. Ponomareva, O.G. Rogova, G.P. Sikorskaya, N.V. Skalon, E.A. Tomak, etc., in terms of the priority of preserving life, maintaining the stability of the biosphere as a global ecosystems, this competence, of course, has a high socio-cultural necessity and significance.

The essence of specialist` environmental competence concept is considered by scientists from different points of view.

For example, the author Talizina N.F. [3] considers this concept as a higher level of tasks that need to be able to be solved by a specialist, regardless of the training profile both from the standpoint of reducing the negative impact on nature, and from the standpoint of improving the environment.

Scientist Skalon N.V. [4] explains the essence of environmental competence by the abilities of the individual, based on knowledge, values, inclinations and experience, which determine a person's ability to solve environmental problems.

Novikov A.M. [5] considers environmental competence in terms of personal characteristics above the professional level.

A review of the "environmental competence" definitions allows us to conclude that this definition does not have a single point of view and is focused on students in general.

Currently, the most specific definition, focused on graduates of agricultural universities will be:

"Environmental competence" is the timely application of acquired environmental knowledge, skills, experience in professional engineering, mastery of methods for effective solution and prevention of environmental problems, the ability to choose technologies and technical means taking into account the possible environmental consequences.

Education on ecology, nature protection is an important element of future professionals' general environmental training, including teachers in agricultural educational institutions. Such knowledge is mandatory and is a qualification of every specialist, including teachers.

To increase the environmental awareness level, qualification of modern teachers, engineers in the curricula of all higher education institutions of any profile introduced courses: "Actual problems of environmental protection", "Fundamentals of ecology", "Ecology and environmental management" or others. These disciplines study environmental problems in close connection with social, psychological and pedagogical, general education disciplines based on knowledge of history, geography, biology, chemistry, physics and other sciences. This ensures the principle of interdisciplinarity in the formation of environmental competence.

The first ecologically-oriented course "Nature Protection" was taught in Ukraine in the early 50's at Odessa University.

The need for such disciplines for all higher education institutions was discussed in 1959, and in 1961 it was decided to study them optional not only in universities, pedagogical, medical, technical universities, but also in agricultural, legal and economic educational institutions.

Programs of compulsory course "Nature Protection" for pedagogical institutes and faculties of "Biology and Chemistry", "Preschool Pedagogy", "Pedagogy and Methods of Primary Education" were approved in 1970.

Now, such environmentally-oriented courses are compulsory subjects in all higher education institutions for all specialties.

Since the mid-1980s environmental education has been a part of educational practice, but without any positive effect. The main reason is that environmental education of the 80's is focused on herbartic pedagogy, which operates on the principle of educational training. Pupils accumulate ecological information, ecological knowledge, but ecological culture is not formed. As a result, we have an ecologically aware and ecologically uneducated person who, possessing ecological knowledge, shows an asset of ecological vandalism.

The existing at the time educational process in Ukraine needed significant improvement to increase efficiency and integration. Such improvement is possible only on the basis of deep philosophical and psychological-pedagogical understanding of the problem, taking into account socio-cultural functions of ecology in society, holistic structure of environmental knowledge, current level of environmental science, traditions, customs and history, experience of the Ukrainian people in this area, as well as the peculiarities of ecological and economic situation in the country. The key principle of human society and nature interaction in this context should not be consumption and violence, but coexistence.

Therefore, the development of a strategy for environmental education was urgent, as it was previously believed that it is carried out automatically in the educational process.

The issue of environmental education and upbringing in the field of discussions about the legitimacy of environmental education has shifted to the plane of its practical implementation over the last 15 - 20 years. This fact significantly affects pedagogy and modern education system.

Given that there is no single effective system of environmental education in the world, which could be taken as a basis without significant changes, formation of environmental education in Ukraine is based on the own experience of developers, taking into account national characteristics.

Scientific and pedagogical personnel of Ukraine have high-quality works on ecologically sustainable development, medical ecology, ecology of military activity, methodology and content of ecological education and upbringing, ecological ethics and psychology, education and management, etc. Using this experience and in pursuance of the Decree of the President of Ukraine "On the main directions of reforming higher education in Ukraine" a team of specialists in the field of environmental education with the participation of specialists from the Ministry of Environmental Protection developed the Concept of ecological education and upbringing development in Ukraine.

According to the concept, environmental education and upbringing are aimed at acquiring fundamental environmental knowledge and methodology, as well as at professional environmental training, greening of special disciplines and

environmental education. This will ensure the formation of holistic environmental knowledge and thinking necessary for making sound management decisions at the level of enterprises, industries, regions, the country as a whole.

Analyzing the state curricula in ecology, they found a focus on students' environmental awareness formation, the rational use of natural resources, the quantity and quality of which is declining every year.

Successful education of specialists capable of implementing the country's environmental policy is achieved through the use of the competence approach' basic ideas.

Education plays a key role in formation of environmentally competent professionals. Formation of environmental competence in university students is based on well-thought-out principles and is provided by certain organizational and pedagogical conditions [8].

The principles of ecological competence formation of agricultural higher educational institution teacher combine all components of the educational process together. In total these components provide a sufficient level of ecological competence formation of future specialists [7].

The basic principles include:

- the principle of succession: with student' transition to the next year of study, content of the course takes into account all that has been previously learned. With focus on the passed material, the composition and structure of new educational material content is developed. It can be reflected in form of purposes of education continuity, curricula, substantial continuity of disciplines working programs, continuity of pedagogical technologies, forms of work.

- the principle of integrativity: involves the integration (merger) of education process with other processes of learning and development. Due to this, there is a holistic educational impact and integration of environmental disciplines with other disciplines.

- the principle of interdisciplinarity: has the property of generality, being implemented in each discipline. Adherence to this principle will allow graduates of technical universities to easily adapt to the conditions of professional environment. It can be done by greening the content of academic disciplines, introducing elective environmental courses, etc. It involves the transformation of ecology into an interdisciplinary discipline, helps to overcome disciplines disunity and formation of a clearer and more complete picture of environmental reality [6].

- the principle of problem-solving: involves students in problem situations. Such problem modeling helps future teachers to get used to different situations of future activities.

- the principle of cultural conformity: determined by students` system of values, due to the socio-cultural background. Cultural conformity of education content presupposes the formation of students' culture, the ability to act in accordance with requirements of general culture, the formation of a harmonious attitude to oneself, to nature, to society.

Adherence to the proposed principles allows to integrate the environmental component into learning process and better prepare students for future professional activities.

It should be noted that at present, despite the sufficient development of each principle and its impact on the quality of environmental competence, there is no sufficient level of research on their combination and distribution during the educational process.

Thus, the creation of promising educational process models aimed at the formation of students` of technical universities environmental competence. These models effectively combine different principles and methods of formation, as well as take into account its conditions, is a priority area of research.

Creation of a multi-component unified system of continuous environmental education and upbringing in Ukraine is an urgent need not only at the national but also at the international level. After all, environmental problems are characterized by a fairly high degree of cross-bordering, which leads to special and fairly high requirements for filling this system with content.

The single system of continuous complex ecological education is an important and integral part of the complex of ensuring the formation of ecologically safe existence for population of Ukraine. The formation of an ecologically safe environment depends on a huge number of different factors, conditions, etc.

Among the most important factors that can in one way or another affect the formation of a safe ecological state of environmental components or a certain area or even object, is ecological consciousness as an integral reflection of a set of necessary special knowledge, beliefs, behavior and others. This set of characteristics is based on sufficient information and adherence to the main principles of environmental education and upbringing [6].

Current stage the human-nature relationship results in an urgent need of the problem analysis of ecologically oriented consciousness formation. Such analysis in potential will significantly optimize the process of formation of environmental competence in students of agricultural higher education.

In the course of work such problems of ecologically oriented consciousness formation are allocated:

1. The problem of the society-nature relationship.

This implies that in the course of education (this applies to all levels of education, and higher education in particular) are poorly instilled traditional norms and moral principles in relation to nature.

It is necessary to optimize social and natural relations, for example, through labor and socially useful activities, which contributes to gaining experience in environmental activities, inculcating ecological lifestyles, ensuring the real contribution of each student to the study and protection of local ecosystems, promoting environmental ideas.

2. Not formed ecologically oriented consciousness.

A person who has not been instilled with a moral attitude to nature since childhood, becoming a subject of production, will require efforts to instill in him the norms of professional and environmental morality. Norms of moral attitude to nature, becoming an internal need, can play a high role in solving environmental problems.

A proposal to improve the training quality can be further improvement of gradual formation of environmental awareness models - starting with the pre-professional activities of the graduate, including all intermediate levels of education as a complex.

3. Ecophobic consciousness (actions of people leading to the natural environment destruction).

This type of consciousness is formed in applicants for higher education in the conditions of spontaneous socialization, modern development of machinery and technology, increasing economic literacy of people.

4. Poor organization of environmental education in some educational institutions.

Organization of environmental education should be carried out on the basis of strictly thought-out methodological principles and conditions that have a balanced impact on educational process, not reducing the effectiveness of training, but increasing it.

Today, Ukraine is delaying the adoption of "On Environmental Education" law (although the draft law has existed since 2002) as well as development and adoption of the "Concept of Education for Sustainable Development".

It is obvious that environmental education is based primarily on environmental knowledge, designed to form a future employee's system of ideas about environmental problems of today and ways to solve them. Therefore, this problem is the most significant, which requires in-depth and comprehensive study of it.

At the present stage of education reform, a new position should be established regarding the formation of environmental competence as a tool for individual`

socialization, adaptation to life in an urban environment in period of civil and information society development.

This approach to understanding environmental education makes possible presenting it as a new educational field with cross-curricular functions aimed at forming value orientations to the environment: natural and artificial - transformed by human activity, and the inner world of man, his health, spiritual and material needs.

The strategy of this task realization demands accumulation of positive scientific and practical interaction experience between the person and nature, as well as the statement of priority of all forms of life as conditions of existence of mankind. It is obvious that without strengthening of vocational education system, attention to the formation of a harmonious system of universal, civic and professional values, it is impossible to achieve this goal [9].

Thus, the solution of environmental problems is impossible without changing traditional norms and moral principles in relation to nature, the growth of each person` social responsibility for the consequences of their impact on nature.

Over the course of this research the actual developments and tendencies concerning the problems of acquiring ecological competence in the world in general and in Ukraine in particular are studied and analyzed.

The educational process is considered and evaluated in the perspective of student` environmental competence formation both in the process of higher education and in general throughout life.

To date, formation of environmental competence as an indicator of the graduates of agricultural universities quality is gaining momentum. There is a global trend to intensify the development of environmental competence.

However, despite the presence of multifaceted research on this topic in Ukraine, there is an insufficiently developed issue. That is the creation of promising educational process models aimed at forming the environmental competence of students of technical universities.

Methods and models developed by foreign scientists, although reaching a high level of efficiency, are mainly aimed at preschool and school education. Acquisition of ecological competence in the process of agricultural education is somewhat less developed, because ecologically oriented courses within the higher educational institution are developed primarily for ecologically oriented specialties.

It should be noted that the lack of academic environmental education and training is compensated by optional education and cultural and educational activities, as well as a high level of initial environmental awareness gained during school and preschool education.

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