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ECOLOGICAL EDUCATION OF ECONOMICS STUDENTS BY MEANS OF ENVIRONMENTAL TECHNOLOGIES

The article deals with a relevant issue of environmental education of economics students, which in the global context is considered as a key part of the process of optimizing environmental protection and achieving sustainable development of every country and the world as a whole, and in the pedagogical one, it is the basis for the ecological culture formation in a personality. The role of environmental technologies in the training of future specialists for environmental and economic activity has been revealed. Unfortunately, traditional teaching methods of natural sciences are weakly in line with modern requirements and need to be improved. The purpose of the research is to provide theoretical substantiation and experimental verification of scientific and methodological bases of application of environmental technology in economics students' environmental education. Future economics experts' environmental and economic competence involves motivational-value, informational-cognitive, operational-activity components. The respondents' levels of environmental and economic competence were examined by means of a specially selected methodical toolkit. Experimental work was aimed at identifying the students' attitudes towards the content and quality of their training in terms of environmental and economic activity and the degree of interest in such activities. Besides, the possibilities of using new environmental technologies in the training of economics students have been examined during the research.

Keywords: *ecological education, students, environmental technologies, ecological knowledge, ecological-economic activity.*

Introduction

Under conditions of market economy, there is an urgent need to review priorities in the training of specialists in the field of economic management, to increase the efficiency and quality of training specialists with a new type of thinking, literacy and competence in decision-making. One of the most important points in the training of a new type of specialists is the environmentalization of education, since environmental goals are becoming decisive in terms of production and economy today.

The system of ecological education includes the following tasks: environmental education, the formation of ecological culture, the culture of ethical behavior in nature, the implementation of environmental activities.

Modern foreign studies prove that environmental education is a continuous process starting from primary school (B. B. Prabawani, I. Musfirowati Hanika, A. Pradhanawati, 2017) up to studying at a higher educational establishment (Michael B. Nunez, Michael A. Clore, 2017).

Environmental education is focused, first of all, on the formation of a system of students' knowledge (ideological ideas, concepts, representations, scientific facts, etc.), as well as the development of a combination of

intellectual and practical skills. Education through the environment involves the use of the natural environment as a basic and indispensable means of training, upbringing and development of an individual, which necessitates the use of practical methods for working with students with wide-ranging techniques for the study and protection of their immediate environment. Education for the environment clarifies the goals and objectives of environmental education, is focused on the formation of a careful and responsible attitude towards nature by students.

The modern theory of ecological education needs methodological guidelines. Founders of environmental education (Zverev, 1991; Zalebny, 1975) did not distinguish its methodological aspects. There is a need for their special consideration, first of all it concerns the content of environmental education and its methodological organization. Within this framework, there are two main trends. Some experts consider it necessary to implement a subject "Ecology", since ecological education is not equivalent to biological, although they are in close interconnection. Others argue that the "ecologization" of all educational subjects is more effective, since environmental problems are global, interdisciplinary. At present, this approach is increasingly gaining support (Deryabo, Yasvin, 1996).

Though there are more discussions about the orientation of environmental education concerning the question of what should be on the spot: the environment, or the nature. In the first case, ecological education should be aimed at the formation, firstly, of systems of representations of the world of nature as a set of specific natural objects (and their complexes), and secondly, subjectively significant attitude to natural objects that are unique and have self-value, thirdly, strategies and technologies of non-pragmatic interaction with them (Nunez et al., 2017).

It is the first commitment in environmental education to “nature as an environment” that has received the greatest development in the world and support at the international level. However, more and more professionals have recently come to the conclusion that without the emphasis on environmental education in the “world of nature”, it is impossible to solve the problem of the ecological crisis in a comprehensive way (Ivashchenko, Panov, Gagarin, 2008).

Consequently, in the global context, ecological education is regarded as a key, central part of a broad public movement to optimize the use and conservation of nature and to achieve more sustainable development of individual countries, states and the world as a whole.

In a pedagogical aspect, ecological education is considered as a topical socio-economic, psycho-pedagogical and humanitarian-ethical issue, the essence of which is the process of formation of ecological culture in a person, whose main feature is a responsible attitude to nature. This problem has an interdisciplinary character and requires interaction of different national cultures, the unification of efforts of main educational disciplines, and the attraction of opportunities of the social environment.

According to N. Dushechkina, the need to address ecological and economic problems in the current conditions of society’s development radically changes the requirements for the results of environmental education of students in general (Dushechkina, 2015).

Ensuring ecologically safe economic development, based on the consideration of environmental and economic interests at the same time, can be provided only by specialists of a new type, possessing a certain ecological culture, new ethics of interaction with the environment (Duussart, 1990; Pisarenko, 2004; Usova, Bobrov, 1987).

When studying at a higher educational institution, a student gradually turns from the subject of study into the subject of management of other people and production, as well as economic structures. In terms of higher education, the professional-significant qualities of the students’ personalities are formed, which will later determine their professionalism and competence. It is fully related to the system of environmental education of students.

However, despite a great number of works on the issue, its many aspects have not yet been addressed both theoretically and in practice. Thus, there are contradictions between the traditional forms of teaching and methodological support, and the need for environmental technology training, between absolute priority given to struc-

tures and forms of constructing teaching materials for students and the need for practice in their innovative structures with enhanced functional capabilities.

The relevance of these challenges, as well as the urgent need for educational practice, led to the need to address the issue, which is formulated as follows: what are the pedagogical and methodological conditions for ensuring effective training of specialists in environmental and economic activities?

Aim and Tasks

The paper aims to substantiate theoretically and check in an experimental way scientific and methodological bases of application of environmental technologies in economics students’ environmental education.

The research tasks are as follows: 1) to reveal the role and peculiarities of ecological education in economics students training; 2) to justify environmental technologies making it possible to use local material in the training, quickly change the information base, make changes in accordance with environmental realities; 3) to disclose the structure of future specialists’ ecological-economic competence; 4) to carry out experimental work on verification of scientific and methodological bases of application of environmental technologies in economics students’ environmental education.

Research Methods

Structure of the concept under research

Methods of research depend on the tasks that are aimed at achieving the goal of environmental education of a future specialist by means of environmental technologies. Its necessity is substantiated by practical and pedagogical considerations. First, in this way, students have an opportunity to realize the received amount of environmental knowledge and skills in practice by taking part in the analysis of environmental safety of actually operating enterprises and non-productive ones. Secondly, this gives each student an opportunity to feel personal involvement in solving socially significant environmental problems, to understand their essence, sources of occurrence and prevention measures, and thus to form environmental and economic competence.

In our opinion, specialists’ environmental and economic competence determines their ecological and economic knowledge and skills, methods of ecological-economic actions, operations and constant focus on their implementation; includes understanding attitude of environmental and economic objectives and tasks, ways of their implementation, definition of conditions, means, technologies of nature protection activities, assessment of their capabilities in their correlation with future difficulties and the need to achieve a certain result in the implementation of environmental programs.

Let us determine the composition and structure of the specialist’s environmental and economic competence.

We believe that the structure of an experts’ personality is based on motivational and valuable attitude to profession, which implies profound understanding of values of nature for a man and the society: economic, political,

hygienic, cognitive, aesthetic, moral, developing, etc., awareness of the value of nature and the value of environmental orientation.

The development of the motivational-value component of environmental and economic competence is determined by the information-cognitive component which involves the formation of the worldview and the place a person in it. The main ideas of the component are the idea of co-evolution, an ecological imperative determined by the content of environmental and economic activity (Gluukhov, Lisochkin, 2000; Zakhlebny, Suravehina, 1975).

The operational and activity component of a specialist's environmental and economic competence involves possessing necessary methods for obtaining and processing ecological-economic information, methods of measuring economic parameters of natural resource management systems and assessing environmental damage. This component is determined by the depth and volume of knowledge gained, the completeness of environmental and economic skills (Zuev, 2007; Kavtaradze, 1990).

The structure of environmental and economic competence is shown in Table 1.

Table 1.

Structure of Economics Students' Environmental and Economic Competence

Components	Indicators
Motivational and value	Value orientations in the field of environmental management
	System of motives
Information and cognitive	Worldview ideas
	System of environmental and economic knowledge
	Knowledge of social ecology
Operational and activity	System of environmental and economic skills
	Readiness for this kind of activity

Thus, the functional indicators of components of environmental and economic competence are as follows: motives of environmental and economic activity as a result of comprehension of the received knowledge (criterion of assessment is consciousness), consistency of ecological knowledge and the degree of maturity of value environmental orientations (assessment criterion is consistency), profoundness of ecological knowledge (criterion of evaluation is profoundness), scope of the received knowledge, maturity of environmental and economic skills (criterion of assessment is scope of knowledge).

Sample

Two groups (n = 105 people) of the second-year students majoring in "Economics" and "Management" were selected for the research. The selection of groups was carried out on the analysis of curriculum programs, educational standards of specialist training, as well as the specifics of professional environmental and economic knowledge.

Methods

For each group of participants, in accordance with the program and qualification requirements, a series of questions and tasks have been made, some of which were included in the questionnaires and tests, while some were considered as topics of interviews. Series of questions and tasks were aimed at assessing students' knowledge on general ecology, global and regional environmental problems, environmental technologies. This helped to evaluate the profoundness, amount and dynamics of knowledge development in the students, the degree of awareness of the importance of studying environmental issues, the

possibility of transferring the knowledge acquired into professional activities. In addition, the content of the questionnaires included questions and tasks aimed at identifying motives of environmental and economic activities in the process of professional development or the reasons for their absence, forms and methods of environmental and economic activity, the use of modern environmental technologies in it, the quality of training, etc.

The analysis of the results was carried out in two aspects: from the point of view of professional knowledge (awareness of the future specialist of the system of ideas, regularities, concepts of this science); in terms of environmental and economic activity (to achieve the necessary interconnection of knowledge and socially significant value).

The research was based on A. Usova's (Usova, Bobrov, 1987) approaches to the methodology for the formation and development of knowledge, and on Bepalko's model of the process of assimilation of concepts (Bepalko, 1995). The authors believe that the assimilation of environmental knowledge is a complex process that involves the sensory-specific perception of meaning, its comprehension, the discovery of new properties and attributes, the establishment of relationships between them and the mastery of certain ways of actions in the process of cognitive activity. Therefore, the mechanism of assimilating knowledge by students provides four levels.

The content characteristics of each level served as a criterion for the quality of knowledge when processing the results of the survey (Table 2).

Table 2.

Levels of knowledge assimilation	Criteria
IV Creativity	High level of ways of activity and environmental knowledge mastering
III Application	The level of environmental knowledge mastering is rather high; ways of activity are quite mature
II Reproduction	Environmental knowledge is mastered at a low level; ways of activity are poorly mature
I Familiarization	Low level of both environmental knowledge mastering and ways of activity

The first level is characterized by the fact that students have mastered several actions and therefore can perform tasks related only to the distinction of environmental objects and concepts. The assimilation coefficient (AC) is less than 0.5 ($AC < 0.5$). There were students having certain environmental knowledge but not being able to analyze and compare them. They performed tasks only after receiving detailed instructions. Therefore, the coefficient of assimilation of the second level, in contrast to the first one, was higher than 0.5 ($0.5 < AC < 0.7$). The third level of mastering environmental knowledge is characterized by actions related to evidence, generalization, abstraction and comparison. The assimilation coefficient varies from 0.7 to 1 ($0.7 < AC < 1.0$). The fourth level is characterized by a high degree of mastery of different ways of activity and, consequently, a high level of assimilation of environmental knowledge. The coefficient of assimilation of knowledge at this level was up to 1.0 ($AC \approx 1.0$).

In the course of the research, an analysis of the quality of environmental knowledge of students was carried out according to the criteria: scope, consistency, consciousness, profoundness. The criterion should satisfy the requirement of addition, that is:

$$C(AB) = C(A) + C(B).$$

This means that the number, which serves as the measure of the two combined values, must be equal to the

sum of two numbers, which is a measure of each of the values.

To determine the scope of the students' knowledge, all their elements were allocated on one or another topic and the standards of answers were designed. As a criterion characterizing this parameter, the ratio of the number of assimilated knowledge elements to the number of knowledge elements included in the standard was taken.

The consistency of the respondents' knowledge was evaluated in the process of revealing different correlation relationships (between the elements of knowledge and relations, the logics of successive operations, the ability to generalize). This parameter was characterized by the ratio of the number of detected bonds, relations and generalizations to their number in theory.

The students' knowledge consciousness was assessed by analyzing their responses to tasks requiring the application of acquired knowledge in non-standard situations. To characterize this parameter, a criterion was used that shows the ratio of the number of correctly performed tasks to the number of tasks, in theory.

The assessment of the students' knowledge profoundness was based on the analysis of explanations in the responses. As a parameter, the criterion of profoundness of knowledge was used.

Mean values are shown in Table. 3 and Fig. 1.

Table 3.

№ of assessment phase	Criteria							
	Scope coefficient		Consistency coefficient		Consciousness coefficient		Profoundness coefficient	
	Economics students	Management students	Economics students	Management students	Economics students	Management students	Economics students	Management students
1	0.14	0.13	0.23	0.21	0.09	0.12	0.04	0.06
2	0.26	0.35	0.35	0.4	0.18	0.29	0.13	0.11
3	0.46	0.58	0.48	0.53	0.37	0.41	0.23	0.17
4	0.69	0.77	0.55	0.68	0.48	0.6	0.27	0.29
5	0.97	0.84	0.78	0.88	0.78	0.87	0.3	0.34

Graphically, this process makes it possible to visualize the patterns of distribution of mean values of the

quality of knowledge of the students according to the results of the assessment (Figure 1).

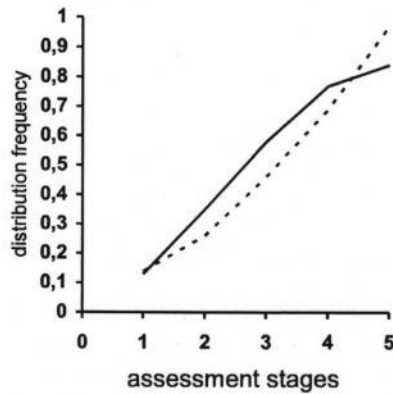


Fig. 1.1. Distribution of scores according to the assessment of the students' knowledge scope
1.----- economics students
2. — management students

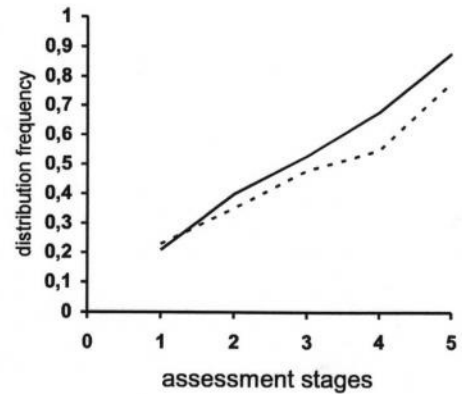


Fig. 1.2. Distribution of scores according to the assessment of the students' knowledge consistency
1.----- economics students
2. — management students

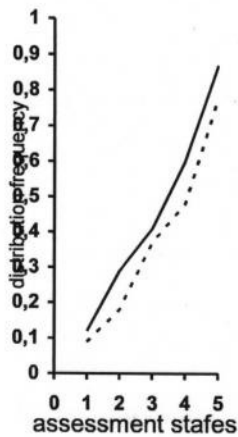


Fig. 1.3 Distribution of scores according to the assessment of the students' knowledge consciousness
1.----- economics students
2. — management students

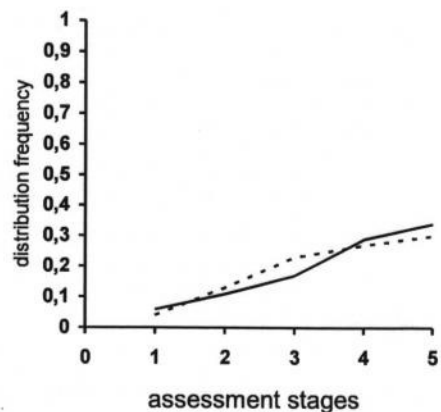


Fig. 1.4 Distribution of scores according to the assessment of the students' knowledge profoundness
1.----- economics students
2. — management students

Fig. 1. Results of Students' Environmental Knowledge Quality Assessment according to Distinguished Criteria

The results of the assessment of the students' knowledge quality varies depending on the methodology prevailing in the training, and the assessment criterion. At the same time, better results were found in the students of the specialty "Management", which is explained by the presence of the "Theoretical Foundations of Innovative

Technologies" discipline in their curriculum.

During the experiment, we studied the students' understanding of the role and functions of environmental and economic activities by means of modern environmental technologies. The respondents' replies obtained during interviews were grouped as follows: 1) answers revealing

scientific and practical importance of environmental and economic activities based on the use of modern environmental technologies though listed in general terms (87.7%); 2) answers disclosing ways of improving environmental and economic activity without proper explanation of its roles and functions (4.9%); 3) answers containing facts revealing methods of ecological-economic activity without explaining its functions (3.2%); 4) responses, highlighting the relevance of the study of the environment, where the functions were associated only with economic or environmental management (2.4%); 5) answers disclosing the role and functions of environmental and economic activity accompanied with arguments and evidence (1.7%).

The materials obtained during the experiment and their analysis make it possible to observe a direct relationship between the quality of knowledge of the students, the state of teaching environmental problems and the practice of training future specialists in terms of environmental and economic activity. During the experiment, a number of challenges have been identified: a) the students have a low level of environmental knowledge and skills which in our opinion can be caused by improper training at school; b) low level of interest in obtaining practical skills of environmental and economic activity due to low level of ecological culture.

In order to obtain a complete understanding of the level of environmental knowledge of the respondents and ways of correctional work, we applied the following environmental technologies: ecological monitoring (complex system of observations, estimation and forecasting of changes in the state of the environment under the influence of natural and anthropogenic factors), non-waste technologies (production method using raw materials and energy, through cycles: raw materials - production - consumption - secondary resources), utilization of waste

(special processing for transformation rendering into a neutral state that does not harm the environment).

This stage of our study has made it possible to carry out a general assessment of methods of using environmental technologies in teaching natural science and future specialists' environmental and economic competence. Sources of information were specially developed tests, questionnaires, oral responses of students.

Since in our experiment the teaching methods were different in the control and experimental groups, we assume that the difference in the results of the training will be determined, first of all, by the parameters of the quality of their knowledge (scope, consistency, consciousness, profoundness), parameters of the success of the training (knowledge) and the motivation dynamics.

In addition, for the compilation of diagnostic materials, indicators of the students' knowledge expressed in their respective abilities were used. The control group included 25 people of each specialty, and the experimental group involved 55 students of both specializations. The control group was taught the discipline "Ecology" according to the traditional methodology. When teaching this discipline to the experimental group students, in addition to traditional methods, environmental technologies were applied: the lectures were combined with practical classes and as extracurricular activities, the EG respondents were suggested an e-textbook "Modern Environmental Technologies"; besides, these technologies were introduced in internship of EG students.

The results of the comparative analysis (Table 4 and Figure 2) indicate that the experimental methodology not only improved the quality of special ecological knowledge of students, ensured its stable dynamics, but also significantly improved their environmental and economic competence.

Table 4.

Results of Comparative Analysis of Students' Knowledge Quality

№ Assessment stage	Criteria															
	Scope coefficient				Consistency coefficient				Consciousness coefficient				Profoundness coefficient			
	Economics students		Management students		Economics students		Management students		Economics students		Management students		Economics students		Management students	
	CG	EG	CG	EG	CG	EG	CG	EG	CG	EG	CG	EG	CG	EG	CG	EG
1	0.10	0.11	0.12	0.14	0.08	0.13	0.11	0.09	0.10	0.07	0.08	0.11	0.03	0.05	0.03	0.06
2	0.37	0.23	0.39	0.28	0.18	0.32	0.19	0.30	0.15	0.17	0.20	0.25	0.10	0.08	0.11	0.09
3	0.55	0.39	0.58	0.46	0.28	0.51	0.35	0.48	0.22	0.37	0.33	0.44	0.13	0.12	0.15	0.13
4	0.67	0.64	0.73	0.64	0.52	0.67	0.58	0.74	0.45	0.61	0.52	0.70	0.15	0.17	0.17	0.18
5	0.77	0.91	0.83	0.97	0.68	0.88	0.78	0.99	0.62	0.76	0.71	0.86	0.16	0.21	0.19	0.24

Graphically, this process allows to visualize the patterns of distribution of the results of the quality of the respondents' knowledge (Fig. 2).

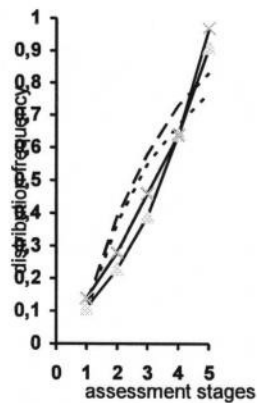


Fig. 2.1. Distribution of scores according to the assessment of the students' knowledge scope

- 1.----- economics students
- 2. — management students

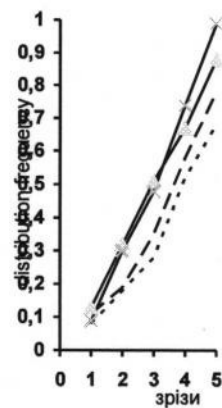


Fig. 2.2. Distribution of scores according to the assessment of the students' knowledge consistency

- 1.----- economics students
- 2. — management students

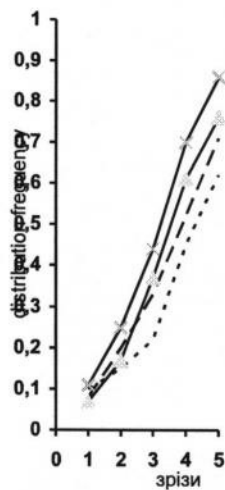


Fig. 2.3 Distribution of scores according to the assessment of the students' knowledge consciousness

- 1.----- economics students
- 2. — management students

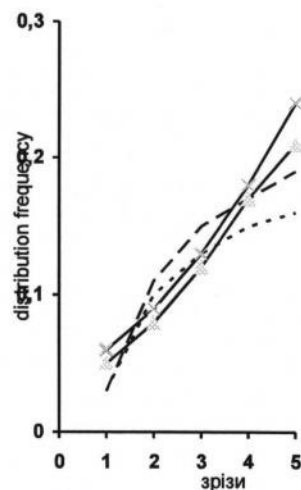


Fig. 2.4 Distribution of scores according to the assessment of the students' knowledge profoundness

- 1.----- economics students
- 2. — management students

Fig. 2. Results of the Respondents' Special Knowledge Quality Comparison

As can be seen from Table. 4 and fig. 2, the training according to the experimental technique with the use of environmental technologies contributed to a more intensive growth of students' knowledge as compared to the control group, despite almost the same indicators at the

initial stage of training.

The comparison of mean values of the students' knowledge of the control and experimental groups also shows quite distinct differences (Fig. 3).

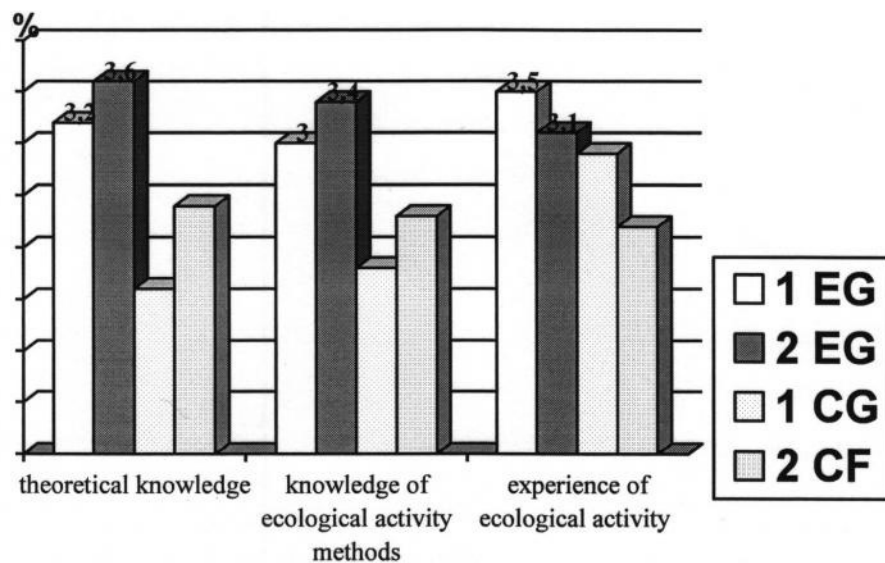


Fig. 3. Comparison of Indicators of the Students' Knowledge

According to Fig. 3, the experimental group achieved higher results of the development of the theoretical foundations of the material (3.6 and 3.2 points). Knowledge of methodological foundations of environmental and economic activity as compared to the theoretical knowledge is developed a little worse (3.4 and 3.0 points). But the indicators are higher in the experimental group as compared to the control one (the difference is 1.1 and 1.2 points). There is also difference in the control and experimental groups concerning the experience of the environmental and economic activity (0.9 points differ-

ence for the specialty "Economics" and 0.6 points for the "Management").

The analysis of the methodological level of the students' environmental and economic competence to be applied in practice shows that it can be significantly improved through the use of environmental technologies, including environmental oriented e-textbooks, which we proposed to the EG students.

Table 5 shows the distribution of the students of both groups depending on the maturity of their skills of environmental and economic activities.

Table 5.

Summarized Results on the Level of Students' Skills of Environmental and Economic Activities

Skills	Levels	CG		EG	
		Econom-ics stu-dents	Manage-ment stu-dents	Econom-ics stu-dents	Manage-ment stu-dents
Understanding general tasks of environmental and economic activity, planning its organizational forms	low	44.8	36.7	5.3	3.3
	average	42.6	43.3	57.4	47.7
	high	16.2	20.0	37.3	49.0
Specification of tasks of environmental education within the framework of creative activity; selection of material in accordance with the tasks of environmental and economic activity	low	61.6	58.1	15.0	12.1
	average	37.2	33.8	49.5	39.3
	high	6.2	8.1	35.5	48.6
Motivating and stimulating environmental and economic activity	low	61.6	58.1	15.0	12.1
	average	37.2	33.8	49.5	39.3
	high	6.2	8.1	35.5	48.6
Analysis of the results in accordance with the initial data	low	61.6	58.1	15.0	12.1
	average	37.2	33.8	49.5	39.3
	high	6.2	8.1	35.5	48.6

As can be seen from in table 5, quantitative indicators in the experimental group significantly exceed those

in the control one according to all groups of skills, which can be explained by the fact that the purposeful work on training students in terms of environmental and economic activity, carried out within the framework of a pedagogical experiment on the use of nature conservation technologies in the educational process, is expedient and should be implemented in the methodology of teaching science for all economic specialties.

Conclusions

1. In the process of theoretical substantiation of the issue of environmental education of students, it has been found that in the global context, environmental education is considered as a key part of the process of optimizing the use and conservation of nature and achieving sustainable development of each country and the world as a whole, in the pedagogical one, it is the basis of the formation of ecological culture in a personality. The following peculiarities of ecological education of students have been identified: the idea of unity of the ecological space, the formation of an ecologically oriented life position, raising interest in regional and local environmental problems. As a basis for teaching natural sciences, it is proposed to use the environmental component of environmental issues, to focus on the consideration of socio-ecological phenomena, processes and laws, and to study them, mainly through regional and local examples.

2. Environmental technologies (ecological monitor-

ing, non-waste technologies, waste utilization, which allow using local material to be used in the training, quickly change the information base, make changes in accordance with ecological realities) have been suggested and implemented in the process of training students in the experimental group.

3. The environmental and economic competence includes motivational-value, informational-cognitive, operational-activity components.

4. Experimental work was conducted to identify the attitude of students towards the content and quality of their training within the framework of environmental and economic activity and the degree of interest in such a kind of activity. Besides, we performed a general assessment of the possibilities of using new environmental technologies in students training, and the degree of future specialists' environmental and economic competence. The qualitative analysis of the facts obtained during the experiment has shown that the experimental method of training with the help of environmental technologies allowed not only to improve the quality of the EG students' special ecological knowledge, but also to ensure its stable dynamics, and improve their environmental and economic competence.

In further research studies, we are going to develop and implement modern environmental technologies in the training of future specialists in the field of pedagogy.

ЛІТЕРАТУРА

1. Bepalko, V. P. (1995). *Pedagogika i progresivnyie tehnologii obucheniya [Education and progressive teaching methods]*. Moscow [in Russian].
2. Gluhov, V. V., Lisochkina, T. V. (2000). *Ekonomicheskie osnovy ekologii [Economic foundations of ecology]*. Saint Petersburg: Spetsialnaya literatura [in Russian].
3. Deryabo, S. D., Yasvin, V. A. (1996). *Ekologicheskaya pedagogika i psichologiya [Ecological pedagogy and psychology]*. Rostov-na-Donu [in Russian].
4. Duussart, G. B. J. (1990). Environmental education in Europe: a synoptic view. *Environ Educ. and Inf.*, 2, 59-72 [in English].
5. Dushechkina, N. Yu. (2015). *Formuvannia ekolohichnoho svitohliadu studentiv ekonomichnykh spetsialnostei u vyshchykh navchalnykh zakladakh [Formation of university economics students' ecological worldview]*. Uman [in Ukrainian].
6. Zverev, I. D. (1991). Ekoglasnost i obrazovanie [Ecology and education]. *Sovetskaia pedagogika – Soviet pedagogy*, 10, 9-12 [in Russian].
7. Zakhlebnyi, A. N., Suravegina, I. T. (1975). K opredeleniiu poniatiia «okhrana prirody» [Revisiting the issue of “nature conservation” concept interpretation]. *Sovetskaia pedagogika– Soviet pedagogy*, 2, 33-40 [in Russian].
8. Zuev, V. (2007). Formirovanie ekologicheskoi kultury studentov ekonomicheskikh spetsialnostei [Formation of economics students' ecological culture]. *Problems of education in the 21st century*, 1, 125-134 [in Russian].
9. Ivashchenko, A. V., Panov, V. I., Gagarin, A. V. (2008). *Ekologoorientirovannoe mirovozzrenie lichnosti: monografiia [Ecology-focused worldview: monograph]*. Moscow: Izd-vo RUDN [in Russian].
10. Kavtaradze, D. N. (1990). Priroda: ot okhrany – k zabote? [Nature: from protection to care?]. *Znanie – sila – Knowledge is power*, 3, 12 [in Russian].
11. Kagan, M. S. (1974). *Chelovecheskaia deiatelnost [Human activity]*. Moscow: Politizdat [in Russian].
12. Nunez M. et.al. (2017). Environmental Literacy of K–10. *Student Completers*, 12, 1195-1215 [in English].
13. Pisarenko E. A. (2004). Informatsionnye tekhnologii v ekologicheskome obrazovanii studentov ekonomicheskikh spetsialnostei vuzov [Information technologies in ecological education of economics students]. *Candidate's thesis* [in Russian].
14. Robotton, Ian. (1987). Environmental education as educational reform. *Environ. Conserv.*, 3, 197-200 [in English].
15. Prabawani B. et.al. (2017). *Schools Eco-Friendly Education in the Frame of Education for Sustainable Development*. (pp. 607-616) [in English].
16. Usova, A. V., Bobrov, A. A. (1987). *Formirovanie u uchashchikhsia uchebnykh umenii [Formation of pedagogical skills in students]*. Moscow: Znanie [in Russian].
17. Chuprikova, N. I. (1990). Printsipy differentsiatsii kognitivnykh struktur v umstvennom razviti, obuchenie i intellect [The principle of cognitive structures

differentiation in mental development, teaching and intelligence]. *Voprosy psikhologii – Issues of psychology*, 5, 11-39 [in Russian].

18. Yatsyshyn, T. M., Mykhailiuk, Yu. D. (2017).

ЛІТЕРАТУРА

1. Беспалько В. П. Педагогика и прогрессивные технологии обучения / В. П. Беспалько. – М.: Педагогика, 1995. – 236 с.

2. Глухов В. В., Лисочкина Т. В. Экономические основы экологии / В. В. Глухов, Т. В. Лисочкина. – СПб.: Специальная литература, 2000. – 304 с.

3. Дерябо С. Д., Ясвин В. А. Экологическая педагогика и психология / С. Д. Дерябо, В. А. Ясвин. – Ростов-на-Дону: Феникс., 1996. – 480 с.

4. Duussart G. V. J. Environmental education in Europe: a synoptic view / G. V. J. Duussart // *Environ Educ. and Inf.* – 1990 – №2. – р. 59–72.

5. Душечкіна Н. Ю. Формування екологічного світогляду студентів економічних спеціальностей у вищих навчальних закладах: дис. ... канд. пед. наук: 13.00.07 / Душечкіна Наталія Юріївна – Умань, 2015. – 314 с.

6. Зверев И. Д. Экогласность и образование / И. Д. Зверев // *Советская педагогика*. – 1991. – №10 – С. 9-12.

7. Захлебный А. Н., Суравегина И. Т. К определению понятия «охрана природы» / А. Н. Захлебный, И. Т. Суравегина // *Советская педагогика*. – 1975. – №2. – С. 33–40.

8. Зуев В. Формирование экологической культуры студентов экономических специальностей / В. Зуев // *Problems of education in the 21st century*. – 2007. – Vol. 1. – P. 125–134.

9. Иващенко А. В., Панов В. И., Гагарин А. В. Экологоориентированное мировоззрение личности: монография / А. В. Иващенко, В. И. Панов, А. В.

Pryrodookhoronni tekhnolohii: konspekt lektsii [Nature conservation technologies: lectures]. Ivano-Frankivsk: IFNTUNH [in Ukrainian].

Гагарин. – М.: Изд-во РУДН, 2008. – 225 с.

10. Кавтарадзе Д. Н. Природа: от охраны – к заботе? / Д. Н. Кавтарадзе // *Знание – сила*. – 1990. – №3. – С. 12.

11. Каган М. С. Человеческая деятельность / М. С. Каган. – М.: Политиздат, 1974. – 328 с.

12. Nunez M. et.al. Environmental Literacy of K–10 Student Completers / M. Nunez. – 2017. – pp. 1195-1215.

13. Писаренко Е. А. Информационные технологии в экологическом образовании студентов экономических специальностей вузов: дисс. ... кандидата пед. наук: 13.00.08 / Писаренко Елена Анатольевна. – Ставрополь, 2004. – 177 с.

14. Robotton Ian. Environmental education as educational reform / Ian Robotton // *Environ. Conserv.* – 1987. – 14, №3, – р. 197–200.

15. Prabawani B. et.al. Schools Eco-Friendly Education in the Frame of Education for Sustainable Development / B. Prabawani. – 2017. – pp. 607-616.

16. Усова А. В., Бобров А. А. Формирование у учащихся учебных умений / А. В. Усова, А. А. Бобров. – М.: Знание, 1987 – 80 с.

17. Чуприкова Н. И. Принцип дифференциации когнитивных структур в умственном развитии, обучение и интеллект / Н. И. Чуприкова // *Вопросы психологии*. – 1990. – №5. – С. 11-39.

18. Яцишин Т. М., Михайлюк Ю. Д. Природоохоронні технології: конспект лекцій / Т. М. Яцишин, Ю. Д. Михайлюк. – Івано-Франківськ: ІФНТУНГ, 2017. – 85 с.

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ЕКОЛОГІЧНА ОСВІТА СТУДЕНТІВ ЕКОНОМІЧНОГО ПРОФІЛЮ ЗАСОБАМИ ПРИРОДООХОРОННИХ ТЕХНОЛОГІЙ

У статті розв'язується актуальна проблема екологічної освіти студентів, яка у глобальному контексті розглядається як ключова частина процесу оптимізації використання та охорони природи і досягнення сталого розвитку кожної країни і світу в цілому, у педагогічному – є основою процесу формування екологічної культури особистості. Розкрито роль природоохоронних технологій у підготовці майбутніх фахівців до еколого-економічної діяльності. Виходячи з аналізу відповідності існуючих освітніх технологій новим вимогам до екологічної освіти, зроблено висновки, що традиційні педагогічні методики викладання природничо-наукових дисциплін недостатньо мірою відповідають сучасним вимогам і потребують удосконалення. Мета дослідження полягає у теоретичному обґрунтуванні та експериментальній перевірці науково-методичних основ застосування природоохоронних технологій в екологічній освіті студентів економічного профілю. Розкрито склад готовності майбутнього фахівця до еколого-економічної діяльності: мотиваційно-ціннісний, інформаційно-когнітивний, операційно-діяльнісний компоненти. Розроблено методичний інструментарій, за яким проведено діагностику сформованості цієї якості у студентів. Проведено експериментальну роботу з виявлення ставлення студентів до змісту і якості їх підготовки до еколого-економічної діяльності і ступінь зацікавленості в ній (констатувальний етап), а також здійснено загальну оцінку можливостей використання нових природоохоронних технологій для навчання студентів економічних спеціальностей. Визначено результуючу ступінь готовності майбутнього фахівця до еколого-економічної діяльності (формувальний експеримент), що відкриває перспективи для розробки шляхів підвищення якості підготовки майбутніх фахівців до майбутньої еколого-економічної діяльності.

Ключові слова: екологічна освіта, студенти, природоохоронні технології, екологічні знання, еколого-економічна діяльність.

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