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FORMATION TRAINING OF VALUE ATTITUDE TO NATURE IN
CHILDREN FOR FUTURE TEACHERS

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Abstract

Formation of value attitude to nature in children as a component of the ecological culture of an individual is an actual problem at the present time. In the present article, the system of training future teachers for the formation of value attitude to nature in children is theoretically substantiated, that confirms its effectiveness under the conditions of pedagogical experiment. Students' readiness to form value attitude to nature in children consists of four components: motivational, cognitive, activity-based and reflective.

The experiment has been conducted on the basis of pedagogical faculties at the universities. At the initial (diagnostic) stage, the necessity to improve the future teacher training for the formation of value attitude to nature in children has been proved.

The next stage of search in the experiment aims at the following:

- development of teaching-methodological provision and support for natural and methodological disciplines;
- determination of criteria, indicators and levels of readiness of future preschool and primary school teachers for the formation of value attitude to nature in children;
- development of diagnostic tools to measure the level of the formation of each component of this readiness.

The program of the development stage includes the employment of the experimental system for training future teachers, implementation of certain pedagogical conditions for students training. It is found that the level of students' readiness to form value attitude to nature in children has significantly increased in the experimental groups.

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1. Introduction

In the context of global environmental problems, a growing pollution of our planet and consuming attitude of a human to nature, it is of vital importance to provide the younger generation with a relevant environmental education from the kindergarten to the university level. This stipulates the necessity to educate children at early age to love the environment and form value attitude towards nature.

Value attitude to nature is one of the leading qualities of a civilized person and an important indicator of his ecological culture. In the modern world, a person with a developed ecological thinking is distinguished by his caring attitude to nature, by admiring it, the desire to preserve and multiply natural resources, and active participation in the protection of nature. Although there is a particular emphasis on environmental education of children in kindergartens and secondary schools, formation of a value attitude towards nature among younger learners is still an urgent problem.

Attitude to nature is regarded as a peculiar projection of those valuable approaches worked out by mankind in the process of cultural development (Marshytska, 2003). Active care for the environment in adulthood is frequently associated with positive experiences of nature in childhood or adolescence, along with childhood role models who give the natural world appreciative attention (Chawla, 2007).

Value attitude to nature is regarded as an important component of the ecological culture of a human. It manifests in the internal readiness for such interaction with nature that would allow a person to realize its value for himself and society (Kolon'kova, 2007; Marshytska, 2003; Roganova, 2001).

Four features of value attitude to nature are distinguished: (a) enjoyment of nature, (b) empathy for creatures, (c) sense of oneness, and (d) sense of responsibility (Cheng et al., 2012).

Value attitude to nature includes the following: empathy and interest in what is happening in nature; perception of aesthetic properties of nature and their evaluation; reflection of one's own attitude towards nature in artistic and creative works (speech, pictorial, musical); manifestation of autonomy in the application of their emotional and aesthetic experience in the transformation of nature on the basis of acquired knowledge and modes of action and protective and humane attitude towards it (Roganova, 2001).

2. Problem Statement

Different aspects of the formation of value attitude towards nature have been studied by many scholars such as: Olga Groshovenko (formation of a careful attitude towards nature in the extracurricular educational work among younger students), Olena Kolon'kova (education of value attitude to nature in high-school students), Viktoriya Marshynska (education of senior preschool children for emotionally and valuable attitude towards nature), Marina Roganova (formation of value attitude to nature by means of arts in senior preschool children), etc. (Groshovenko, 2007; Kolon'kova, 2007; Marshytska, 2003; Roganova, 2001).

In order for the student to be ready to form value attitude to nature in his future pupils, he needs to have a high level of environmental culture for himself as well as to have a firm belief in the necessity to preserve and protect nature.

However, the problem of training of future teachers for the formation of value attitude to nature in children has not been resolved properly until now. In this respect, we cannot help mentioning the study by

Natalia Kazanishena on the training of the elementary school teacher for the environmental education of primary schoolchildren (Kazanishena, 2011).

3. Research Questions

During the study, we need to answer the following questions:

- What is the basis of training the teacher for the formation of value attitude to nature in children?
- What disciplines are the most important in training students of pedagogical faculties for the formation of value attitude to nature in children?
- What teaching technologies are the most effective in the process of training of future educators for the formation of value attitude to nature in children?
- What is the readiness of future teachers to form value attitude towards nature in children?
- What components constitute the readiness of students to form value attitude towards nature in children?
- What is the effectiveness of the proposed system of training of future teachers for the formation of value attitude to nature in children?

4. Purpose of the Study

The purpose of the study is to theoretically substantiate and practically test the experimental system of training of future teachers of elementary school for the formation of value attitude to nature in children.

5. Research Methods

Problem research methods embraced the following: analysis and synthesis of psychological, pedagogical and methodical references, generalization of the present state of training of future teachers for the formation of value attitude to nature, pedagogical experiment, enriching the content of natural sciences with ecological issues, and introduction of technologies of contextual education in a specially created ecology-oriented environment of an educational institution.

To identify the effectiveness of the authorship system of training of future teacher for the formation of value attitude to nature in children, we conducted a pedagogical experiment on the basis of pedagogical faculties (specialties "Preschool education", "Primary education") of the Poltava National Pedagogical University named after V.G. Korolenko, the Rivne State University of Humanities, the Sumy State Pedagogical University named after A. S. Makarenko, the Bohdan Khmelnytsky Melitopol State Pedagogical University, the Kryvyi Rih State Pedagogical University, the Chernihiv National Pedagogical University named after Taras Shevchenko, the Kirovohrad State Pedagogical University named after V. Vynnychenko, the Pavlo Tychyna Uman State Pedagogical University during 2012–2017.

The experimental system of training of future teachers for the formation of valuable attitude to nature in children was carried out in three stages and implemented in pedagogical universities. These stages reflected the general logic of the study; and they included diagnostics, search and development.

5.1. The diagnostic stage.

During the diagnostic stage (2012–2013), we assessed the state of future teachers in different higher educational institutions of the Ukraine as well as defined their level of readiness for the formation of value attitude in children.

Their readiness consisted of the following components: motivational (understanding the importance of caring attitude to nature and desire to protect it), cognitive (knowledge about living organisms, natural phenomena and interrelations in nature), activity-based (organization of environmental activities with children) and reflective (awareness of the importance of caring attitude to nature and analysis of one's own activities).

At this stage, we studied the results of questionnaires of university professors, students and practicing teachers. There were also observations of trainers' activities organized as well as conversations about various ways of improving the training of students in higher educational institutions, etc.

254 students and 28 university teachers participated in the diagnostic experiment.

According to the results of the diagnostic stage of the experiment, it was established that the level of their readiness to form value attitude towards nature in children was not sufficient for qualitative professional activity in general educational institutions. Thus, we could state the need to increase the level of the training in higher educational institutions of the Ukraine.

5.2. The stage of search.

The purpose of this stage during 2013–2015 was the following:

- clarification of the main components of the system of training of teachers for the formation of value attitude to nature in children;
- development of teaching and methodological support of natural sciences disciplines: "Methodology of natural sciences learning" ("Fundamentals of natural science with the methodology"), "Children, get acquainted with nature!", "Fundamentals of ecology", "Ecological culture of personality" ("Theory and methodology of environmental education of preschoolers") etc.;
- preparation of experimental materials for the formation experiment.

Criteria, indicators and levels of readiness, as well as diagnostic tools for their measurement, were substantiated for the objective determination of the level of readiness of future teachers for the formation of value attitude towards nature in children.

To assess the level of the readiness components, we selected and modified some techniques as well as developed our own questionnaires, test tasks, control works, etc.

Thus, to diagnose the motivational readiness component, we used the questionnaire "Motivation of professional activity" (K. Zamfir's methodology for defining motives for professional activity in the modification by A. Rean (Batarshv et al., 2007; Rean, 1999); the questionnaire "Motivation for Achievement in Professional Activities" (Karelina, 2002); the questionnaire "Motivation for Success and Fear of Failure" (Rean, 1999).

To diagnose the level of the cognitive component of readiness, we used a questionnaire on the knowledge of natural and ecological terms and concepts, written control works on the methodology of teaching science and test tasks.

The formation of the activity-based component was determined by solving ecological problems and a questionnaire on self-assessment of skills and assessment of products of methodological activity (lesson notes, extracurricular activities scenarios, excursions and clubs descriptions, etc.).

Diagnosis of the reflective component was on the basis of students' self-assessment of the formation of their ecological culture, a questionnaire "Self-assessment of the creative potential of the individual" (Batarshv et al., 2007), as well as evaluation of the student's portfolio.

According to the research results of the present stage, the methodology of developing experiment was developed.

5.3. The development stage.

The main purpose of the development stage (2015–2017) was to study the effectiveness of the experimental system of training of future teachers to form value attitude to nature in children.

The tasks at this stage are the following: (a) to form control and experimental groups of students – future preschool and primary school teachers according to the diagnostic stage results; (b) to introduce an experimental system of training of students for the formation of value attitude to nature in children into the educational process of pedagogical faculties; (c) to implement certain pedagogical conditions for training of teachers for the formation of value attitude to nature in children; (d) to implement the author's educational and methodological support of natural sciences disciplines; (e) to apply appropriate diagnostic techniques to identify students' readiness for each of the components identified in the study; (f) to verify the validity of research results by means of the Pearson criterion.

During the development stage there we verified a working hypothesis that the quality of training of teachers would increase in case of the implementation of an innovative training system aimed at the increase of the level of readiness for the formation of value attitude to nature in children.

The content of the development stage implied implementation of the developed system of training of future teachers and implementation of certain pedagogical conditions.

We identified the following pedagogical conditions that facilitated training students for the formation of value attitude to nature in children: a) enrichment of the content of educational disciplines for future specialists with ecological topics; b) creation of the ecology-oriented environment of educational institutions, aimed at formation of ecological culture in students, including development of valuable relationship to nature; c) application of innovative teaching technologies, the priority of which was given to the technology of context-based learning.

The program of the development stage aimed at acquiring profound environmental and methodological knowledge by students, formation of ecological competence, development of positive motivation for nature protection activities and formation of a caring attitude to nature. This was achieved through simulation of environmental situations in the educational process, including business games, participating in creative workshops, solving environmental problems and cases, implementing environmental projects, organizing self-dependent and research work of students, as well as during the practice in the field.

The pedagogical experiment involved the use of various organizational forms of training (classes in the nature, excursions, walks and admiring lessons), introduction of innovative technologies to improve the

quality of training of future teachers. This made it possible to determine their influence on the formation of various components of students' readiness to form value attitude towards nature (motivational, cognitive, activity and reflective) in children. The introduction of author's teaching and methodological support for natural sciences and methodological disciplines was of great importance.

In total, 242 students of higher educational institutions participated during the development stage. Future preschool and primary school teachers were divided into two groups: control group (CG) comprising 122 students and experimental (EG) with 120 students.

In the experimental group, the content of students' training was enriched with ecological topics; innovative teaching technologies were introduced, which contributed to the development of ecological thinking of prospective teachers, their creative abilities, an ecology-oriented learning environment, etc. The educational process was strengthened with the author's educational and methodological support (manuals ("Methodology of preparing excursions in the nature", a workbook with a printed basis for students' self-dependent work on "Methods of teaching natural sciences", collections of tests and environmental problem tasks, methodical recommendations for holding laboratory classes, school practice, preparing yearly and diploma projects, as well as elements of distance learning).

In the control group, teaching was carried out using traditional teaching methods.

The evaluation of the levels of all the components of students readiness in the control and experimental groups was carried out preliminarily, as well as comparative analysis was made between the indicators of the level of readiness components of CG and EG students.

Relative homogeneity of the students in CG and EG due to quantitative and qualitative indicators enabled us to provide greater reliability of the research results. Thus, an important factor at the development stage is the creation of identical starting conditions for the respondents of the both groups.

The development stage involved the implementation of the author's system of training future teachers for the formation of value attitude to nature. This stage resulted in the following:

1) ecologization of the content of natural and methodological training of future biology teachers, enriching classes with environmental topics, introducing elective disciplines. In particular, they are "Methods of conducting excursions in the nature" (8 lecture hours, 18 hours of practical classes, 10 laboratory hours and 54 hours of self-dependent work) and "Fundamentals of naturalistic work in school and extracurricular establishments" (12 lecture hours, 10 hours of practical classes and 38 hours of self-dependent work).

Studying natural and methodological disciplines by the EG students aimed at "immersion" of future teachers in the ecology-oriented learning environment, formation of theoretical and practical knowledge and skills in the methodology of teaching natural science and development of ecological competence. The consolidation and enrichment of knowledge and skills of future teachers also took place during the practice on the field, i.e. during the direct "communication with nature". Solution of individual teaching and research tasks, teaching and methodological projects, solving ecological problems and cases, creating a portfolio were prior. The content of training of future teachers implied the development of each component of readiness for the formation of value attitude to nature in children.

2) use of innovative teaching technologies in training the EG students. Organization of the educational process for EG was carried out on the curricular (lectures, laboratory and practical classes,

individual consultations) and extra-curricular (work in the educational research laboratory of environmental education, excursions) bases with the introduction of innovative technologies (interactive technologies, context learning, creative workshop technology, case technology, project technology, portfolio technology, information and communication technologies and distance learning technology);

3) creation of the ecology-oriented educational environment for the training of teachers, in particular designing the Room of teaching methodology for science subjects, functioning of the relevant educational research laboratory, provision with information support, etc.;

4) assessment of the level of each readiness component of the students in CG and EG for the formation of value attitude towards nature in children at the end of the fourth, fifth and Master's years in order to identify the dynamics of formation of future teachers' readiness.

As an analysis (control and analytical) at the development stage, we assessed the level of readiness components in the students in CG and EG at the end of the experimental research and carried out comparative analysis between the indicators of the level of readiness components in CG and EG as well as identified reliability of the obtained results by means of the Pearson criterion.

We assessed effectiveness of the developed training system for future teachers on the basis of identifying and comparing the changes, that had taken place during the experiment in EG and CG, by means of determining the levels of students' readiness before and after the development stage and statistical data processing.

6. Findings

The results of the diagnostic stage gave us the provision to state that the system of future teachers training for the formation of value attitude to nature in higher educational institutions of the Ukraine required modernization of the content and organizational and methodological improvements.

According to the research results and developed diagnostic tools, the levels of each student's readiness were determined as follows: motivational, cognitive, activity and reflective.

In the CG, differences in the levels of readiness of the students to form value attitude to nature before and after the experiment were not significant except for cognitive component. This confirmed that the traditional method of teaching in higher education institutions was oriented mainly to the acquisition of theoretical knowledge ("knowledge" approach), and proved the necessity to introduce a competent approach, the application of practice-oriented technologies, etc.

Here are the results of the development stage in the experimental group (Table 01, Fig. 01).

Table 01. Results of the development stage in the experimental group

Component of readiness	Control test	Low level	Middle level	Sufficient level	High level
Motivational	I	31,8%	37,4%	24,3%	6,5%
	II	15,9%	30,7%	37,2%	16,2%
Cognitive	I	37,4%	41,0%	17,3%	6,3%
	II	13,1%	34,3%	42,5%	12,1%
Activity-based	I	34,7%	43,5%	20,5%	1,3%
	II	14,2%	38,5%	39,8%	7,5%

Reflective	I	23,9%	37,4%	32,2%	6,5%
	II	12,6%	29,4%	41,0%	17,0%

The research showed that in the experimental group, the level of motivational component increased by 22,1%, cognitive – by 31,3%, activity-based – by 28,2%, reflective – by 17,9%. In the control group, changes were insignificant. The results of the study were presented in the form of a diagram.

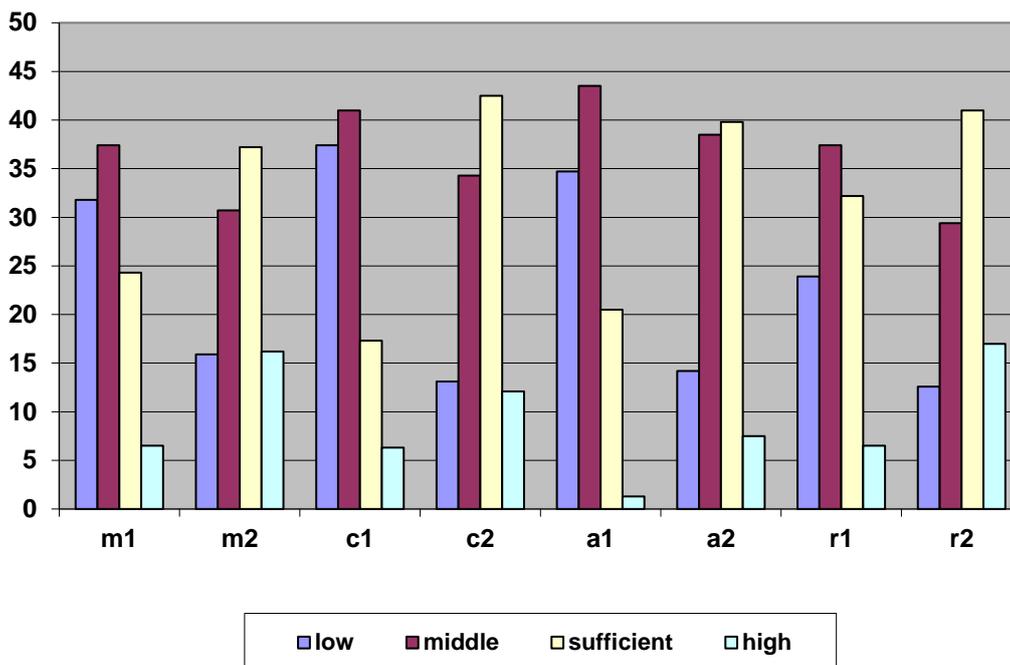


Figure 01. Dynamics of the formation of readiness components in the experimental group,

where m1 – motivational component of the experiment; m2 – motivational component after the experiment;

c1 – cognitive component of the experiment; c2 – cognitive component after the experiment;

a1 – activity-based component of the experiment; a2 – activity-based component after the experiment;

r1 – reflective component of the experiment; r2 – reflective component after the experiment.

The results of the study showed that after the experiment, the number of the students with high level increased significantly (by 9,7% for motivational components, 5,8% for cognitive, 6,2% for activities, and 10,5% for reflective ones), with sufficient level (based on motivational component – 12,9%, cognitive – 25,2%, activity-based – 19,3%, reflective – 8,8%). And, the number of students with low level reduced (motivational component – by 15,9%, cognitive – 24,3%, activity-based – 20,5%, reflective – 11,3%).

The data of comparative analysis for the experimental and control groups are presented in Table. 02

Table 02. Comparison of the dynamics of readiness levels of the students in the control and experimental groups before and after the experiment

Component of readiness	Readiness level, in %							
	low		middle		sufficient		high	
	C	E	C	E	C	E	C	E
Motivational	-1,9	-15,9	-2,3	-6,7	+2,3	+12,9	+1,9	+9,7
Cognitive	-5,2	-24,3	-5,7	-6,7	+8,2	+25,2	+2,3	+5,8
Activity-based	-2,1	-20,5	-2,1	-5	+2,3	+19,3	+1,9	+6,2
Reflective	+2,1	-11,3	-5,1	-8	+2,3	+8,8	+1,7	+10,5

Reliability of the received data of the development stage was provided by the volume of pedagogical experiment and the use of methods of statistical analysis of the experimental data (the Pearson criterion).

7. Conclusion

The results of the experiment show that under the conditions of the introduction of the training system for future teachers and the implementation of certain pedagogical conditions, there are qualitative changes in the levels of readiness of the future teachers to form value attitude to nature (in the experimental group). And, the share of students with high level of readiness has increased.

The analysis of the experimental data allows us to conclude that the students in the experimental group have a higher level of formation of this type readiness than those in the control group. Hence, the proposed system of training of future teachers has turned out to be effective.

In addition, the effectiveness of the author's training system in the experimental group is evidenced by our pedagogical observations: the atmosphere of interest in classes, discussions, activation of cognitive activities of the students, the desire to ask questions, supplement and clarify the answers of peer groups, manifestation of independence and activity in the classroom, development of their own position in terms of the need to form value attitude to nature. The control group students have not changed their attitude towards the subject.

With the help of mathematical statistics, significant positive changes in the experimental group have been proved. There has been an obvious increase in qualitative parameters of the analyzed indicators in the groups of future teachers trained in the author's experimental system.

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