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TRAINING OF A GEOGRAPHY TEACHER IN THE PROCESS OF GETTING MASTER'S DEGREE TO FORM THE EXPERIENCE OF MAKING DECISIONS ON ENVIRONMENTAL PROBLEMS BY STUDENTS OF 10 GRADES: THEORY AND METHODOLOGICAL EXPERIENCE

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The relevance of this research is determined by the problem of professional Master's training of geography teachers to implement education for sustainable development; need to educate children about the conscious solution of environmental problems, as well as the lack of scientifically based programs and teaching materials approved in practice, training methods for geography teachers, and the formation of experience in the decision-making of environmental problems for students of 10-11 grades.

The research proved the effectiveness of the proposed method for training geography teachers in the process of getting Master's degree to form the experience of making decisions on environmental problems by students of 10-11 grades, according to the results of the implementation of which the professional and pedagogical competence of most teachers-Master's students reached a creative level. The materials of the article can be useful for teachers of higher education in the training of Master's students in the formation of experience in the decision-making of environmental problems by students in the upper grades of general education schools.

Keywords: getting Master's degree, solving environmental problems, teaching geography, experience in decision-making, education for sustainable development, competence approach, cultural and environmental approach

I. INTRODUCTION

The trend of modern education to the study and solution of environmental problems is one of the priority trends in the development of the world education system, since it meets global environmental challenges and, in their context of the educational missions. In the XXI century, mankind faced with qualitatively new environmental challenges, which manifested itself in the form of global environmental problems threatening the very foundations of the existence of civilization. In these conditions, education aimed at solving environmental problems is considered at the international level as a "key factor of change" towards sustainable, harmonious development. This idea is reflected in the final documents of the International Conferences, the UN Summit on Environment and

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Development, the declarations of UNESCO meetings (1992, Rio de Janeiro, 2002, Johannesburg, 2012, Rio de Janeiro (RIO + 20), 2014, Aichi- Nagoya). The accepted documents of worldwide importance note the need for a reorientation of the main attention in education from the transfer of mastering knowledge to studying problems and finding their possible solutions (UNESCO Roadmap, 2014, Aichi Nagoya ..., 2014; Rio + 20, What to be ..., Strategy ... , 2005, Strategy ..., 2015).

The narrowest link in the promotion of this task is the discrepancy of teachers' qualifications with the requirements of innovative education. In this context, according to the Aichi Nagoya Declaration adopted by the UNESCO World Conference and the Roadmap for the Implementation of the Global Action Program for Education for Sustainable Development (UNESCO Roadmap, 2014, Aichi Nagoya ..., 2014), the problem of training a subject teacher clarification of new theoretical and methodological foundations in the context and ideas of sustainable development and a specific method for the teacher's professional training to provide opportunities for students to study and solve urgent Problems (Teacher ..., Compare ..., 2017, Civil ..., 2017, Crabb, 1989, Barrett, 2005). Of particular importance in this regard is the training of the geography teacher in the master's program to address the new innovative tasks of modern education, since geography itself as a science and educational area has a world view significance, considers environmental problems and ways of sustainable development as a dialectic of the results of interaction in the system "man (population) - nature - economy".

At the same time, the analysis of foreign experience presented in the analytical materials prepared by UNESCO (UNESCO Roadmap, 2014, What to be ...), as well as in the generalizing researches of Russian scientists: Vinokurova et al, 2015, Argunova, 2015, Ermakov, 2005, Ursul, 2015, made it possible to identify a number of problems in the geography teacher training in the process of getting Master's degree to form an experience in making decisions on environmental problems:

- Cultural and environmental tendency, which is weakly expressed in the content of education, which reflects the idea of sustainable development, which violates the principles of an integral world perception, leads to fragmentation of the socio-natural environment, its problems in the Master's students' consciousness and acts as barriers to cognitive and value character in his professional training;
- Insufficient attention to the problem-oriented construction of content, which does not create the potential for the implementation of the competence approach as the leading method foundation of goal-setting in modern education in Russia and abroad;
- Fragmentation of the process of development of professional and pedagogical competence, its weak connection with the substantive, procedural, technological and effectiveness-evaluation aspects of the

teacher's professional training in shaping the experience of making decisions on environmental problems of students.

The materials in this article are aimed at overcoming these problems. In the course of the research, a hypothesis was identified that was associated with the revealed contradictions and assuming that the geography teacher getting Master's degree to form an experience in the decision-making of environmental problems by students should include the theoretical-methodological and private-methodical levels, be oriented towards:

- Cultural, environmental and competence trends in the development of education reflecting the idea of sustainable development and the mission of education in achieving it;
- The selection and structuring of content in the context of the unity of scientific and geographical, spiritual, moral, technological foundations, which reflects all spheres of the consciousness of the individual, thereby ensuring the systemacity of professional and pedagogical training;
- Conjugation of the content, procedural and performance-evaluation aspects within the educational module, which involves the inclusion of the future teacher in cognitive, communicative and practice-oriented activities, which contributes to the development of their professional and pedagogical competence.

Within the framework of the hypothesis put forward, a research was carried out.

II. METHOD

As a basic in the training of the future geography teacher getting Master's degree, a competent and cultural and environmental approach is used. Competent approach focuses the purpose of education on the formation of professional and pedagogical competence.

The cultural and environmental approach, the essence of which we have justified and comprehensively disclosed in a number of publications (Vinokurova et al, 2015, Vinokurova, 2000, Vinokurova, 2002, Zulkharnaeva, 2016, Mamedov, 2015), determines the content of professional training of geography teacher. Traditionally, the environmental and cultural component in the process of training the future geography teacher getting Master's degree is studied in isolation. However, modern trends suggest a comprehensive view of the solution of environmental problems, since the landscape, being an object of geographical research, is the result of the interaction of man and nature. Such interaction can be constructive and destructive. The latter leads to the emergence of various kinds of environmental problems, the condition of which is the management of the landscape from the standpoint of environmental culture.

Consequently, in the content of the training of the geography teacher getting Master's degree, scientific and geographical, spiritual, moral and Instrumental and pragmatist bases will be singled out. The central concept reflecting the scientific and geographical bases using the cultural and environmental approach is the environmental problem, which is the result of contradictions in the interaction of man and nature in the modern landscape at the global, regional and local territorial levels.

Spiritual and moral foundations presuppose the formation of a value attitude to landscapes as the conditions for solving environmental problems; therefore, such concepts as aesthetic value of the landscape, environmental ethics, environmental responsibility and method of developing these qualities among students in the process of geography training are introduced into the content of education (Nemtsov, 2014).

Instrumental and pragmatist bases in the content of education suggest studying the method of decision-making of environmental problems, as well as the theory and pedagogical technology of development of environmental thinking in schoolchildren in the lesson of geography.

III. RESEARCH METHODS

During the research, the following methods were used: Analysis and generalization of literature on the problem under research, modeling of educational pedagogical situations, design, pedagogical observation and experiment, control works, systematization and generalization of data.

Method for verifying the effectiveness of the training of geography teacher in the process of getting Master's degree to form the experience of making decisions on environmental problems by students of 10-11 grades.

Taking into account the urgency of the formation of experience in the decision-making of environmental problems by students of the 10-11 grades, the professional and pedagogical competence of future geography teachers getting Master's degree was diagnosed with a view to the readiness to develop this quality of personality. Approbation was carried out during the experimental work. The research hypothesis was formed: the future geography teacher training for the formation of experience in decision making environmental problems will be effective if the educational module for the training of Master's students - future geography teachers will be implemented educational module "Environmental problems: experience in decision-making".

Experimental work was carried out at the Federal State Educational Institution of Higher Education "Nizhny Novgorod State Pedagogical University n.a. Kozma Minin" (Russia) at the Faculty of Natural, Mathematical and Computer Sciences. The approbation of the research involved students attending Master's program, the age of participants - 22-40 years, the number of participants - 150 people, participation in the experiment was conscious and voluntary.

Pilot and experimental work was carried out in four stages.

Phase I. Planning the experiment (July-August 2015). It included the selection and justification of the diagnostic criterion. As a criterion for diagnosis, professional and pedagogical competence was chosen, which develops at three levels, in accordance with them, diagnostic tasks were developed (Table 1).

TABLE 1: LEVELS OF PROFESSIONAL DEVELOPMENT AND PEDAGOGICAL COMPETENCE

	Level	*Characteristic*	*Diagnostic indicators*
I	reproductive	simple reproduction of the method for forming the experience of solutions to environmental problems	answer to theoretical questions
II	productive	application of the method of forming the experience of solving environmental problems in the learning situation	modeling of pedagogical activity in the conditions of classroom work
III	creative	application of the method for forming the experience of solving environmental problems in a real situation	the introduction of method in the lesson of geography in the context of the work of the school

Phase II. Carrying out of the ascertaining stage of the pedagogical experiment (September, 2015), which assumes the determination of the initial data for further research and includes: a) the allocation of experimental and control groups of students; b) conducting control researches of the levels of professional and pedagogical competence in experimental and control groups; c) statistical processing of the received materials.

As a result, it was revealed that the reproductive level of development of professional and pedagogical competence prevailed in the control and experimental groups (Table 2).

TABLE 2: LEVELS OF PROFESSIONAL AND PEDAGOGICAL COMPETENCE AT THE ASCERTAINING STAGE OF THE PEDAGOGICAL EXPERIMENT

creative level	*productive level*	*reproductive level*	*Cannot cope with any task*
4%	10%	36%	50%

Phase III. Conducting the formative stage of the experiment (October 2015 - August 2016), during which the development of the program and the introduction into the educational process of the experimental group of the educational module "Environmental problems: experience in decision-making".

Phase VI. Summing up the pedagogical experiment (September-October 2016), which included: a) conducting control researches of the levels of professional and

pedagogical competence in experimental and control groups; b) data processing; c) evaluation of the effectiveness of the introduction of the module, including quantitative and qualitative analysis, systematization of the experimental data obtained.

As a result of the diagnosis of professional and pedagogical competence of groups of students under the module program (experimental), the creative level showed 78%, productive - 14%; reproductive - 6%, all students coped with the assignment. The control group showed poor results (Figure 1).

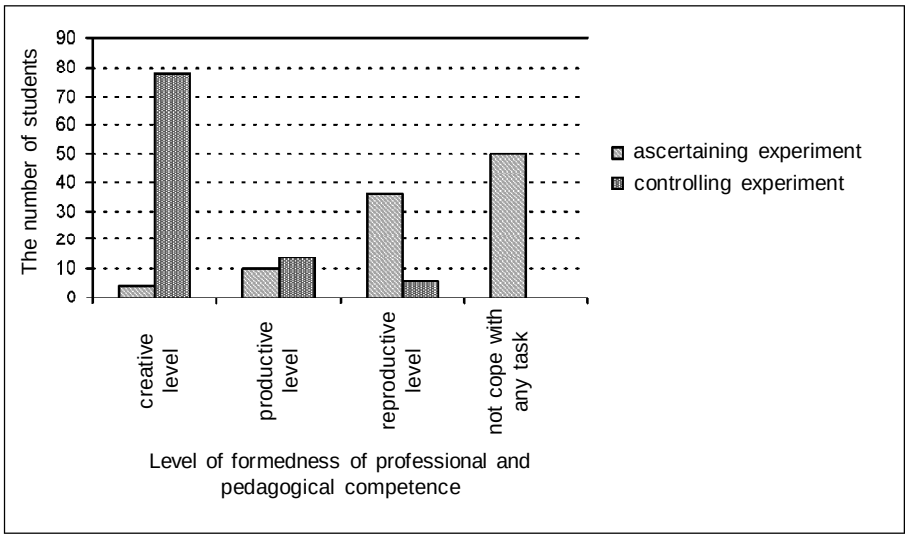

Figure 1: Levels of formation of professional and pedagogical competence

Thus, the quantitative and qualitative analysis of the results of the pedagogical experiment has proved the effectiveness of introducing into the educational process for the training of Master's students - future geography teachers of the educational module "Environmental problems: experience in decision-making "with the aim of forming an experience in the decision-making of environmental problems of students of the 10-11 grades.

IV. RESULTS

The purpose of the educational module "Environmental problems: experience in making decisions" is the creation of conditions for the formation of professional and pedagogical competencies of students in the field of studying and solving environmental problems.

Educational module "Environmental problems: experience of decision-making "is a complex of special educational disciplines, pedagogical and research practices.

TABLE 3: THE PROGRAM OF THE EDUCATIONAL MODULE"ENVIRONMENTAL PROBLEMS: EXPERIENCE IN DECISION-MAKING"

The structural components of the educational module	*Educational disciplines*	*Dominant methods and technologies*
Scientific basis	1. Environmental Challenges and the Mission of Education 2. Education in the field of environmental problems	Problem-dialog technologies (problem lecture, problem seminar) Annotation of scientific articles. Information and cognitive projects
Spiritual and moral foundations	Ethics of environmental responsibility Modern landscapes: aesthetics and design	Problem-dialog technologies (problem seminar). Methods of interactive interaction: discussions, debates. Technology of development of critical thinking
Instrumental and pragmatist bases	Environmental thinking Training method for decision-making	Pedagogical designing Technology of decision-making Case study technology
Practical module	Scientific-research Practice	The practice of meta-subjective immersion in the environment
	Externship	The practice of pedagogical design in the field of solving environmental problems

The scientific foundations of the module's professional cycle are the disciplines "Environmental Challenges and the Mission of Education" and "Education in the Field of Solving Environmental Problems". The main task of this module of the module is the development of the cognitive aspect of professional and pedagogical competence in accordance with the requirements of education for sustainable development.

The applied nature of the disciplines of the basic component of the module is expressed in the training of the teacher for the formation in the students of the experience of designing and constructing methods for solving environmental problems in a specific environmental situation at the global, national and local levels (Vinokurova 2002, 2008).

The variative part of the module is realized by means of two blocks of applied disciplines "Spiritual and moral bases" and "Instrumental and pragmatist bases".

The "Spiritual and moral foundations" module implements the value aspect of environmental knowledge and skills in mastering such academic disciplines as "Ethics of environmental responsibility" and "Modern landscapes: aesthetics and design". The research of the first discipline prepares teachers for the development of responsible attitude to the problems of human interaction and the environment on the basis of norms of moral and ethical self-awareness of the individual (Vinokurova, 2002).

The second discipline, "Modern landscapes: aesthetics and design", is aimed at the formation of professional and pedagogical competencies in the study of aesthetics and the design of modern landscapes as a new social reality, oriented to training for the development of a system of knowledge and practical skills in the field of landscape design in line with the idea of sustainable development (Badin, 2012).

Applied disciplines of the practice-oriented module "Instrumental and pragmatist foundations" are aimed at training the teacher for the development of environmental thinking of students as an intellectual mechanism for solving environmental problems. Mastering the discipline "Environmental thinking" provides mastering of modern pedagogical technologies of development of environmental thinking on the basis of creation of educational problem situations.

The course "Training to make a decision" develops the competence of students in the field of studying environmental problems and making environmentally sound decisions in life practice. Trainees develop criteria and management strategies for environmentally appropriate actions; receive skills to assess the situability and effectiveness of decisions (Kartakov, 2014).

Independent learning and practical, design and research activities of students are carried out throughout the entire training process, but the opportunity to show their abilities in real conditions of the natural or educational environment, to solve real professional problems, learners get in the process of passing two practices that complete the training module. These practices require the students to systematize, generalize and practically implement the accumulated experience and knowledge.

The scientific practice of meta-subject immersion in the environment creates the conditions for training for the implementation of global environmental thinking by examining the environmental problems of its region. In carrying out individual and group research projects, students assess the environmental situation, select and justify the action models of the chosen solution, which contributes to the formedness of the competencies of students in the field of solving environmental problems in a real environment.

The practice of pedagogical design in the field of solving environmental problems makes it possible to implement the professional-behavioral component of the educational module. In the conditions of a specific educational institution (school, lyceum, gymnasium, college), the trainee teachers design the educational process in the disciplines of the natural science cycle, including in their lessons and after-school activities, situational tasks, problem situations to identify and solve environmental problems (Krivdina et al, 2012, Krivdina, 2012).

Modularity in the system of training Master's students allows to divide the educational process into several parts and arrange them in a certain order, starting with the subjects of theoretical and methodological content (scientific foundations) necessary for mastering the next module of methodical disciplines

(spiritual and moral and instrumental and pragmatist bases), and complete with a block of practice.

Use in the academic lecture-seminar system of training problem-dialogue technologies provides creative mastering by Master's students of the contents of the academic disciplines by including such elements as a problem lecture ("Education in the 21st Century: problems and perspectives "), a problem seminar (" Domestic and foreign experience in the development of education in the field of solving environmental problems", "HTP and sustainable development", "Environmental ethics in post-industrial society", etc.), discussions ("XXI century will be a century of culture or it will not be at all", "To be or to have?", etc.).

The technology of development of critical thinking is realized in the course of studying the disciplines "Ethics of environmental responsibility", "Environmental thinking", and "Training to make a decision". It is focused on achieving such educational results as the ability to work with increasing and constantly updated information in the field of studying and solving environmental problems; ability to build and express your judgments clearly; confident and correct in relation to others; the ability to develop their own opinions based on the comprehension of different experiences, ideas and perceptions; ability to solve problems; ability to independently engage in their own training (academic mobility); ability to cooperate and work in a group; ability to build constructive relationships with other people (Khutorskoi, A.V., 1998).

The case-study technology within the framework of the presented module focuses on the development of own models of behavior and the way of thinking on the basis of analysis of real and artificially modeled environmental situations of different hierarchical levels: global, regional, local.

The technology of decision making is the key in the developed educational module, since it meets the leading task of the program. Decision-making requires careful study of all aspects of the origin and solution of the problem and the answer to the questions: What are the causes of this? What to do? With what costs? How to do? Who has to do? When to do? For whom to do? Where to do? What will it give?What effect? Technology focuses on constructing a conceptual model of a problem situation and involves presenting an understanding of the problem, as a whole, a system of views on a specific environmental problem (Khakhina A.V., 2006, 2007).

Methods of pedagogical design are directed to the development of professional pedagogical skills. Master's students master the skills of designing educational programs, educational process, forms, methods and technologies of training and control, develop training sessions and geography lessons, as well as extra-environmental activities.

The technology of meta-subject immersion is oriented to the organization of such activities of students, in which they not only learn something new, but also

realize their experience and knowledge; they have their own personal result. Technology is realized in the framework of training practice.

The presented set of methods allows forming a system of problem-integrated environmental knowledge, environmental thinking, and eco-humanistic value trends among Master's students.

V. DISCUSSION

In the course of the research, the proposed hypothesis was confirmed, the provisions of which constituted the structural and logical basis for the research. The results of the research contain author materials of a theoretical-methodological and private-methodical nature. They are very relevant for the development of modern professional and pedagogical education in the context of the existing environmental challenges of the world; they have scientific novelty, theoretical and practical significance.

In the general conclusions made by UNESCO experts in the analysis of the state of teacher training for education for sustainable development, it is noted that the new emphasis on the trend to sustainable development and real-world problems is still rather poorly reflected in the content and technologies of the professional and pedagogical education. Their active introduction into training in higher educational institutions is seen as an important priority (Technology ... 2013, Mamedov, et al, 2015). In connection with this, the present research, in which possible ways of solving this problem are disclosed, is of obvious relevance.

The scientific novelty and theoretical significance of the work is that a method is proposed that organically includes previously developed isolated, cultural and environmental and competence approaches, the theory of modular training, combining them on the ideas of sustainable development. The peculiarities of the reproductive, productive and creative levels of the geography teacher training to the formedness of experience in the decision-making of environmental problems by students have been revealed and revealed. In the educational module, the integration of substantive, procedural, technological aspects of professional pedagogical training is realized.

The practical significance of the research is that the specific pedagogical experience presented in the article can be used in the practice of higher professional and pedagogical education, orienting it towards the ideas of sustainable development and solving environmental problems of the real world.

Prospects for research on this issue suggest:

a) development of the problem of motivation of teachers for further training on education for sustainable development; b) ensuring the continuity of the professional training of teachers in education for sustainable development.

VI. CONCLUSION

The problem of training a geography teacher in the process of getting Master's degree to form an experience in the decision-making of environmental problems by students of the 10-11 grades is relevant in the context of a global environmental crisis. The leading role of education sets new guidelines for the training of the future geography teacher. They are based on cultural and environmental ideas, suggesting a change in the content of education in the direction of shaping the experience of environmental decision-making problem. This task is carried out by the training module "Environmental problems: experience in decision-making ", the effectiveness of which is confirmed by the results of experimental researches. In the structure of the training module, there are scientific, spiritual-moral, instrumental and pragmatist module that include academic disciplines, practical design and pedagogical activities.

These modules are studied using pedagogical technologies (project, case-technology, problem-dialogue, critical thinking) that allow to develop professional and pedagogical competence in the field of shaping the experience of making decisions on the environmental problems of students of the 10-11 grades when training geography.

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