

© Natalia V. BAUER, Olga P. SHABANOVA

nbauer@list.ru, shabanova.o.p.@gmail.com

UDC 371.315

**DEVELOPING ECOLOGICAL THINKING
IN STUDENT-DESIGNERS WITH THE HELP OF PROJECT ACTIVITY**

SUMMARY. Effective development of the ecological thinking of student-designers in landscape design is provided with the help of innovative methods of training.

KEY WORDS. Ecological thinking, innovative methods of teaching, the method of project.

The technological revolution of the 21st century affects all aspects of society. Rapid acceleration of technological progress has caused massive human pressure on nature, which leads to environmental changes. Serious contradictions between society and nature have led to the threat of a worldwide environmental crisis.

One of the key areas of work to avoid the ecological crisis is the establishment and development of environmental education and education of future designers. This education will contribute to their renewed ecological thinking and attitude to the world. [1]

Such public documents as The Federal Law “On Environmental Protection” (1991), which includes the section “Continuous environmental education”, is the legal basis for the organization of NEO population, and it promotes these ideas. The public documents taken are:

- The Government Decree “On measures to improve environmental education” (№ 1208 from 03.11.94);
- A joint decision by the Ministry of Education and the Ministry of Environment and Natural Resources “On environmental education in educational institutions of the Russian Federation” (1994);
- “The concept of secondary environmental education” (1994);
- The Government Decree “On the Action Plan of the Government of the Russian Federation in the field of environmental protection and natural resources for 1996-97” (№ 155 of 02.19.96);
- The program “Environmental education of the population of Russia” (Moscow, 1996).

Considering the development of higher education in the sphere of design, we have seen some problems that require modern approaches to the improvement of ecological education.

A university entrant who consciously chooses a design specialty must develop ecological culture. Environmental culture expresses, in addition to responsibility, a complete readiness for environmental performance, the ability to solve social and economic problems through knowledge of natural processes, prediction of man's and society's influence on the environment, taking into account the spiritual and aesthetic values of humanity.

Environmental activities are defined as all types and forms of activity related to the rational solution of environmental problems and focused on the formation of ecological thinking.

However, traditional teaching does not really solve the problem of training in ecological thinking to the extent that it deals with the current state of society and the biosphere.

In the conceptual and terminological dictionary, ecological thinking is regarded as "the establishment of a cause-effect relationship, and forecasting probability as well as other types of bonds, to determine the causes, nature and ways to solve problems in situations of moral choice and forecasting; proper foundation of civil respect for the environment" [2].

Ecological thinking is the skill to consider environmental issues in a broad social range, seeing the priority of universal principles, to analyze the relationship between society and nature on the global and regional levels, to predict the short-and long-term effects of human impact on the environment.

This style of thinking includes equally both hemispheres of the brain and contributes to the development of non-standard, creative, alternative solutions, which is critical in resolving environmental situations.

Modern ecology is an interdisciplinary scientific and practical complex that affects all modern science and socially productive people's activities.

This requires the implementation of innovative teaching methods that would ensure the training and education of students in ecological principles. These teaching methods would help to prepare for a life in harmony with the environment, the formation of an ecologically conscious citizen of the Russian Federation, who could make their own decisions, predict the potential environmental consequences, a human who is able to work with nature, ready for creative ecological initiatives.

In order to find effective ways of environmental training for students, we must look to a newly constructed curriculum, develop courses, workshops, and deal with old and new methods of teaching [3]. Along with traditional teaching methods can be used effectively the method of projects.

Projecting technology is based on the development of cognitive technologies and research, the ability to construct the knowledge in order to navigate in the environmental space.

In the foreground is the priority of development of the human as an environmental particle. The traditional "teacher—student" connection changes to a "student—teacher" connection.

This is the case when the permutation of terms changes the sum (educational outcome). The particular importance is the involvement of students in the process of

environmental research, in which the most important thing is not so much the result itself, but rather the process of result achievement.

Realization of an environmental project to teach students to use knowledge of ecology and other disciplines to address specific environmental tasks, and (or) to form ecological thinking equates to a degree, culture, education, in which each student in their professional and extraprofessional activities intends to create and organize optimum conditions in the natural environment for its further development and maintenance. [4]

During the project the teacher acts as a consultant, helps students to find information and coordinates the process of the project.

Table 1

Work on developing the project “Exploring the city park”

Stage of the project content	Content of work	Students' activities	Teachers activities
1. Training	a) An excursion to the park	Observation of wildlife	An excursion focused on the conditions of the park
	b) The definition of the problem, themes and objectives of the project, its initial position	Discuss the topic with the teacher, get additional information, determine the issues and objectives of the project.	Introduces the meaning of the project approach and motivates students. Helps in determining the goals of the project. Monitors the work of the students.
	c) Formation of workgroups.		Coordination of student distribution in interest groups.
<p>Results: <i>Identification of problems: littering the park, damaged trees.</i> <i>Determination of goals: to study the recreational (load of tourists on vacation spot) and ecological values of the park.</i></p>			
2. Planning	a) Identify sources of information b) Choose themes of group projects. c) Identify ways to collect and analyze information d) Define how present the results (form project). e) Establish procedures for evaluating the project. f) The distribution of tasks (responsibilities) among group members	Form the tasks of the project. Choose topics of group projects with a common theme: “Exploring the city park.” Develop an action plan. Determine the sources of information. Distribute tasks among the team members.	Offers ideas, to make suggestions. Oversees the work of the students.

<p>Result: <i>The main objective of the project "Exploring the city park": to take part in the preservation and study of the nature of the ecological system, to contribute to the ecology of the park.</i></p> <p><i>The formulation of project objectives: to seek information about the objects of research, to make a map of the park, to make a list of plant species.</i></p> <p><i>The choice of information sources: encyclopedias, reference books, periodicals, personal knowledge, information from the Internet.</i></p> <p><i>Selecting themes for group projects:</i></p> <p><i>"Determination of the area of the park, the area of trees and shrubs and the relations between them"</i></p> <p><i>Selecting themes for individual projects, "Historical and cultural information about the city park", "current use of the park", "construction of the park landscape"</i></p> <p><i>The allocation of responsibilities among the members of groups: searching for information, observation, photography of the park for sociological research, preparation of the questionnaire.</i></p>			
3. Research	<p>a) The collection and clarification of information</p> <p>b) Identify and discuss the various options that have arisen in the course of the project</p> <p>c) The selection of the optimal variant of project progress</p> <p>d) Phased implementation of research problems</p>	<p>The students perform the tasks of the project in phases</p>	<p>Observes, advises indirectly manages the students</p>
<p>Results: <i>Collection and refinement of information in the form of interviews, surveys, observations, experiments, literature search, processing the information collected.</i></p> <p><i>Identification of alternatives: by "brainstorming": hypotheses to solve problems.</i></p> <p><i>Selection of the optimal variant of project progress: extracurricular activities, careful planning stages of the study, definition of objectives.</i></p> <p><i>Phased implementation of research problems.</i></p>			
4. Conclusions	<p>a) Analysis of the information</p> <p>b) The formulation of conclusions</p>	<p>Doing the research, working on the project, analyzing the information, carrying out the project</p>	<p>Monitors, advises (at the request of students)</p>
<p>Results: <i>Individual and group studies on projects and projects design.</i></p>			

5. Presentation of the projects and their evaluation	a) Prepare a report on the implementation of the project with an explanation of the results b) Analysis of the project's progress and the reasons for it	Present a project involving its collective analysis and evaluation	Listens, asks questions, as an ordinary member. Directs the process of analysis if necessary. Commends the efforts of the students, the quality of the report, creativity, quality of the sources, the potential to continue the project.
<p align="center">Results: <i>The selected report forms: oral report with demonstration materials and a written report. Analyzing the successes and failures as a result of the project, identifying the reasons for this.</i></p>			

In the analysis of completed projects, there is a tendency to increase the number of students who have improved the quality of training on the subject "Landscape design environment".

Thus, the project method has great psychological and educational opportunities for environmental education and training, and in the development of environmental outlook. During their execution the projects addressed the following educational, developmental and educational problems:

- creation of a set of environmental knowledge to understand the interaction of people with the environment;
- increased motivation to obtain additional environmental knowledge in order to make environmental knowledge, thinking and ideas into a material force of society's progress;
- study methods of scientific knowledge in relation to the environment;
- develop the capacity for reflection and interpretation of the results;
- develop research into personality traits;
- training in environmental competencies;
- organization of the basic algorithm of social behavior on the basis of ecological spheres of social and productive activities.

Project-based learning is always oriented towards the different types of independent work of students: individual, pair, and group work.

In the practical training project, technology allows you to:

- put into practice program requirements to attract students not only to educational activities, but also to design and research;
- bring ecological thinking;
- develop the ability to work with information sources;
- organize skills of project activities;
- form the ability to analyze and evaluate the environment;
- help students see the vital importance of the work.

In carrying out an environmental project, the student can realize the personal vision of the environmental situation or problem which the teacher proposes. The

implementation of this type of learning activity involves the construction of special training because the project can be implemented only if there are environmental and research problems which require integrated knowledge.

The teacher, preparing for the course, should have information about the potential ability of students to work independently, to identify different sources to obtain the necessary environmental information, analyze the available natural and human resources, to find innovative ways to achieve the goal of a possible result of its project activities.

The important thing in the design stage is to train students to provide economic (calculation of logistical costs) and ecological justification, mini-marketing research.

The results of the projects must be purely material, that is to say properly documented in print, or to be in the form of computer presentations, videos, etc.

The use of environmental projects allows students to apply previously acquired life skills and study skills in specific environmental conditions, showing the vital importance of the knowledge obtained in the classroom for general ecology.

Environmental projecting promotes efficient forming of students' environmental thinking. The method teaches how to make adjustments to a process, to be able to make algorithms of activities and present the results.

Summarizing this experience of forming ecological thinking of student designers in classes of "Landscape Design" with the use of technology-based learning projects, it should be noted that students understand the connections in nature, between nature and society, only through an active approach.

Research study in project activity solves this problem and provides a basis for the further ecological development of the person.

REFERENCES

1. Dirksen L.G. Noosphere development design education // Successes of modern science. 2008. № 10. P. 46-48.
2. Dictionary. Protection of landscapes. Moscow: Progress Publishers, 1982.
3. Polat E.S., Bukharkina M.Yu. Modern teaching and information technology in education. Moscow: Academy, 2007. 264 p.
4. Tetior A.N. Social and environmental pillars of architectural design. Moscow: Academy, 2009. 240 p.