

UDC 37.016:504

M. M. Radomska, Yu. G. Kartash
National Aviation University

THE ANALYSIS OF ENVIRONMENTAL AWARENESS AMONG CHILDREN OF THE SECONDARY SCHOOL AGE

The fundamental elements of environmental education and awareness building at school have been analyzed. The implementation of environmental education in Ukraine was compared against foreign experience and the necessary elements of environmental education improvement have been described. The most efficient methods of the school environmental education improvement have been determined based on the results of the children questioning conducted. The factors having influence on the formation of environmental awareness have been defined and ranged according to their importance.

Keywords: environmental education, environmental awareness, natural resources management, secondary education, sustainable development, teaching methods.

Проаналізовано основні складові екологічної освіти та підвищення екологічної обізнаності у школі. Проведено порівняння реалізації екологічної освіти в Україні з іноземним досвідом та описані необхідні елементи покращення екологічної освіти. Визначено найбільш ефективні методи покращення шкільної екологічної освіти на підставі результатів опитування дітей. Визначені фактори, що впливають на формування екологічної обізнаності, та оцінено їх відносну важливість.

Ключові слова: екологічна освіта, екологічна обізнаність, управління природними ресурсами, середня освіта, сталий розвиток, методи навчання.

Introduction. Environmental education is a fundamental indicator of the development of the personality in the environmental sphere, which is a collection of available knowledge about the problems of ecology, about the features of nature protection, about person's rights and obligations in the field of environment protection. The formation of personal ecological culture and understanding of environment safety issues is the result of purposeful activities of the state and its institutions in ecological education of the population, including the dissemination of knowledge about environmental safety, information about the environment condition and intensity of the natural resources use. The environmental awareness of the personality is also the result of studying ecology in educational institutions, cultural institutions, museums, libraries, environmental organizations, sport and tourism organizations, other authorities involved in the environmental education and initiatives of the various groups of society [1, 2].

Problem formulation. The progress of science and technology on the one hand made it possible to satisfy all the needs of human society, but on the other hand it worsened the conditions of humans' existence. The critical condition of the modern environment is obvious to the vast groups of scientists and researches, unlike common population being aware about the presence of some problems, but believing they personally have nothing to do with the process of environment degradation. So, the way to the improvement of environment condition must also include the efforts invested in the development of environmental thinking through the mass environmental education and awareness. This will result in more responsible people's behavior and contribute to the efficient coexistence between natural environment and society. The success of this work depends predominantly on the next generations. Thus, **the aim of work** is identification of deficiencies in the level of environmental awareness among children of the secondary school age and development of recommendations for its development.

To achieve the aim of work, such tasks were set: to describe features of environmental education and awareness, compare environmental education in Ukraine and abroad, to conduct the questioning of children of the secondary school age and give recommendations for improving environmental education in Ukraine.

The analysis of previous research. The need for and importance of environmental education has been emphasized through a series of intergovernmental forums and documents since the 1970s as a strategy for addressing the growing trend of environmental problems: The UN Conference on Human Environment in Stockholm (UN, 1972), The Belgrade Charter (UNESCO, 1976), The Tbilisi Declaration (UNESCO, 1978), The Brundtland Report (WCED, 1987), The Rio Earth Summit (UNCED 1992) and the Johannesburg Summit (UN, 2002). For example, the need for environmental education was realized and emphasized at the United Nations Conference on Human Environment held in Stockholm in 1972 [1-5].

The environmental education is aimed at provision of better understanding of the natural world and applied knowledge about the support of environmental safety [6]. The goal of environmental education is to show the economic, social, political and ecological interdependence of the modern world, in which state and personal decisions and actions can have international consequences and guarantee or make impossible conservation and improvement of the environment [3, 6].

The first formulation of the goals of environmental education was presented in the Tbilisi Declaration at the Intergovernmental Conference on Environmental Education [3, 4]. These goals were amended by the UNESCO and UNEP to involve the principles of sustainable development and now include the following [3, 5]:

- to develop the understanding of interactions between various components of humans activity and environment at local to global levels;
- to give every person possibility, skills and knowledge to protect the environment;
- to foster new behavioral patterns contributing to the environment conservation.

The specific mechanisms of environmental education provision at various training levels were then considered in the works of numerous scientists, including M. Argunova, G. A. Bilyavsky, N. S. Kasimov, Y. L. Mazurov, A. P. Meshchaninov, N. A. Poustovit, N. M. Ridey, T. V. Saenko, S. M. Stepanenko, B. C. Tykunova, S. M. Shmal and others. However, these studies do not cover the modern issues of school children personal development and the resulted environmental awareness of children in the middle of their secondary education.

Despite the fact that public interest in environmental problems has increased rapidly in recent years, the level of environmental awareness generally remains very low, which acts as a barrier to the formation of ecological culture. Difficulties caused by the lack of attention in educational institutions to the environmental issues, environmental propaganda and events, and not sufficient level of economic development of the country. According to this, it was chosen to investigate the level of environmental awareness among children of the secondary school age, as they are the next generation in solving global environmental problems. The analysis of the environmental awareness may show the general trend in children environmental consciousness formation for choosing priority actions aimed at society sustainable development and improving environmental quality.

Secondary environmental education in Ukraine. Acquaintance of children with nature is carried out in various forms: in the classroom, observations in daily life, education in out-school groups and classes. The priority of general secondary environmental education is personal orientation, involving the creation of educational environment in which nature becomes a personal value to each pupil. This approach is carried out in three stages in accordance with the age of the children, scope and level of their knowledge and experience, psychological characteristics. Thus, secondary schools of the 2nd grade (grades 5-9) are designed to provide pupils with the basic level of environmental education, mastering the fundamentals of ecological culture. As a result pupils should learn the essence of ecology as a science and sphere of practical human activities, regularities of nature functioning; realize the priority of nature, the universal and objective character of natural laws; understand the influence of scientific-technical progress on the nature and causes of global environmental problems; know the ecological rights and duties of citizens of Ukraine; be able to evaluate the environment, adjust their own consumption and way of life to meet the potential of nature in its provision.

The literature on environmental education provides several ways of understanding and designing curriculum for environmental education, all having their strength and weaknesses:

1. Environmental education as an independent subject, which will be provided with its own syllabus, time allocated and testing procedures applied. However, environmental education has almost limitless body of knowledge and skills, which cannot be fit into the traditional subject framework. It is also problematic in terms of the need to build “green” attitude to life and “sustainable” thinking based on only one subject. In addition, not everybody may study it if learners have possibility to choose the subjects they want to study. The general criticism of this approach is seen in the feedbacks and works by international organizations and researches [1, 5, 8, 9].

2. Integration of environmental education into other subjects, so that it is a cross-curricular and multidisciplinary issue. This is a popular way, where a theme or topic is addressed in different subjects [4, 7, 10]. Successful integration of environmental education into the whole school curriculum will depend on the organization of the study process, aims of education, and socio-economic potential of a particular country. This approach will eventually form sustainable worldview of learners and enable them take an active and responsible role in the environment conservation. The intensity of environmental education introduction into training content varies from one subject to another. Thus, in some subjects environmental content is included as a content to be learnt (Natural sciences), while in others it has been included as a teaching and learning resource and learning tasks (for example, in Math).

3. Organization of the curriculum around significant issues and problems, when teachers and learners identify significant issues and problems without taking into consideration the boundaries between subject areas. The core of the education is based on issues rather than on topics. This will develop the ability of pupils to think and learn independently, and eventually develops desire to participate in the process of environment safety support throughout their life. The learning is traditional, as it is based on knowledge from different subjects, but it also opens to the learners the real interactions of people with the environment.

The most common method of the environmental education applied currently in Ukraine is the single subject teaching, which is comfortable to all teachers. However, the continuous work on improvement of school curriculum leads to gradual introduction of environmental elements into various subjects, but it is still far to go to reach issues-oriented training. As a result, environmental education content included in the subjects of Ukrainian secondary school is emphasized on teaching about the environment, but not teaching in the environment. Focus on the third dimension of education for the environment is minimal [4, 11]. To analyze the level of environmental awareness of school children the following survey was conducted.

Methods and materials. The questionnaire is a special method of collecting primary data asking a set of questions, each of which is logically connected with the central objective of the study [12]. The use of this method is complicated by the low reliability of the results, as the majority of people is inclined to try to look better that they really are when answering the questions. The development of questionnaires with different types of questions – both opened and closed, - increases the informative value of answers. Closed questions include pre-formulated answers, which makes it easier to respond and eliminates the possibility of misunderstanding, which is very important in the work with children. Open questions give possibility to display original ideas and expose valuable information or missed issues.

Based on the background of the study, the research included three groups of questions:

- What is more important?
- Could you ...?
- What would be happen if ... ?

In the first group, the focus is on children's understanding of environment, economy development and technical progress and their relative value for the society. It displays moral values and worldview of respondents in terms of nature exploitation.

The second group of questions is concerned with whether children are ready to do something for nature protection and improve the state of surrounding environment by giving up some elements of comfort and benefits.

The third questions focus on children's level of environmental knowledge at all. The questions involve logical chain that initially shows how well children are competent and aware of existing environmental problems (climate change, extinction of species, direct relationship of man with nature).

The study was based on the children of secondary school age (10-15 years), as this is the period of manifesting personal qualities of a child, formation of moral ideals and moral beliefs, at the same time it is still possible to get honest answers. Adolescence is characterized by critical thinking. Pupils of this age have larger demands for information and evidence and improve the ability to think abstractly, and, what is the most important, they start to understand the interaction of “cause – consequences”.

The experiment involved children from two different localities: Kyiv (city, capital of Ukraine) - children from families with high economic prosperity, high living standards and opportunities for development; Ripky (small town in Chernihiv region) - families with average and low economic incomes. It was done to get results not only from the children who study in special schools, but also those from comprehensive schools. Also the level of welfare is one of the factors that affect the level of environmental education and awareness among children.

The survey involved 93 children, which responded to 3 different types of questionnaires. 89% questionnaires were correctly filled, 11 were spoiled. The age of participants was from 6 to 14 years. To conduct the comparative analysis of the results, statistical processing was applied

For the comparative analysis of the obtained results, children were divided into age groups from younger to senior for the first and the second surveys, the third survey covered only older children. An important issue is that during the questioning the children noted the increased attention and interest in the issues; they often asked questions and thus came to the logically correct answer.

Results and discussions. The questions from the group “What is more important?” required from children to choose one of two proposed aspects of nature conservation and improvement of the environment.

The general tendency of answers shows that most of children know and understand the problems associated with the environment: 75% children are willing to do something for nature, and they believe industry is one of the main causes of environmental pollution.

In spite of this, a number of questions that relate to the environment and the welfare or living standards, has shown the opposite: children are not ready and do not want, or understand the need to give up all the benefits in the name of nature. They also show the inclination to improve something that already exists instead of introducing alternative approaches.

Analysis and comparison of the obtained results shows that in most cases children chose the most effective method for solving environmental problems in favor of economic or social factors (prosperity and amenities). Thus, the general trend is that children choose economically beneficial option, that environmentally-friendly or rational for using.

The second survey "Could you...?" was related to the understanding personal influence on the environment. All questions were related to the rational use of natural and artificial resources, such as water, food, equipment, transport and other issues. Statistical analysis of the results shows that major part of children (55,6% respondents) are ready to reject some goods and services to save natural resources and to protect nature. But growing older, children loose interest to nature and environmental activities (or small children simply do not understand the seriousness of the issues). It might be worthwhile to analyze all age groups, to determine where the lack of environmental education starts, current research have showed the border line to be at the age of 9.

The 3rd part of the questionnaire, called "What would be happened if...?", was conducted in the form of open questions, where children voiced their thoughts and ideas about what will

happen if they change the ecosystem and natural components. Children had to answer 15 questions, some of which were even related in meaning. Since, the data were collected in two different locations: Kyiv (city) and town-village - Ripky, there is an opportunity to analyze the level of environmental education of children, respectively.

The general tendency of answers showed that the level of environmental knowledge and practices is higher in Ripky by an average of 10%, despite the fact that the children from the Kyiv schools were sufficiently educated and well-read. The results obtained from the children from Ripky may have been influenced by close contact with nature, where natural resources directly affect the way of life. The difference between the responses of children from different locations was expressed in the following components:

- the children from Kyiv gave more homogeneous answers, when the children from Ripky responded to the questions differently;
- children from the city are more likely to receive information materials and manuals on environmental problems and their solutions;
- way of life affects the ecological perception of a child in different ways.

Thus, it is necessary to improve the approaches to the environmental education implementation in school by moving to the integrated subject, interdisciplinary subjects and finally to issue related work. The most efficient would be participatory and innovative methods, namely field visits, group discussions, situation analysis, role playing, environmental games, field survey, project work, debates and panel discussions.

Visit to natural places provides the best opportunity to contact with the natural environment and develop investigative skills of pupils. Group discussion and debates addressing specific environmental issues will give possibility to express personal views and ideas, as well as understanding the opposite arguments. Situation analysis is valuable for developing the understanding of reasons and consequences interaction and acquiring experience on what should and shouldn't be done in nature management. Role playing is the utmost technique for getting experience of nature management decisions and real-life professional and social interactions in the field of nature protection and exploitation. Games and field surveys should be used to raise interest, provide new knowledge and developing understanding of nature. Based on this individuals or groups may undertake projects to collect information or study specific environmental problems. The use of these methods will raise the interest of students and the quality of teaching material, which is very important for the success of environmental education.

The survey has revealed the importance of factors, in line with educational issues, which have influence (in decreasing order) on the formation of the environment value perception:

- parents attitude to the nature, natural resources and their preservation;
- level of the school curriculum and training;
- financial position of families;
- level of information provision regarding environmental issues in mass media;
- personal characteristics (character, temperament, level of general knowledge).

As a result, we can state that it is important to conduct continuous environmental education. Meaning that improvement of adults awareness will lead to the improvement of children's perception of the world and environmental issues that exist in it.

Conclusions. The main objectives of environmental education and awareness were recognized International Convention more than 20 years ago; despite the fact that Ukraine is a participant of conventions, the implementation of these goals is not enough for a high level of environmental culture in Ukraine. As a result, school program disclose environmental problems insufficiently and do not contribute to the deep environmental education of children.

In order to assess the current level of environmental education among children of the secondary school age a survey was conducted involving respondents from capital city and small town in the age range from 6 to 15 years. the most common finding was that it is difficult for

children to find the causal relationships of environmental problems with human activity and further consequences of problems aggravation.

In the first survey, most children (75%) recognized that nature and its preservation is more important than infrastructure and economy. The children of the secondary school age interpret the use of alternatives, prospects and new technologies as a tool for the future.

In the second survey it was found that only 55.5% of children could refuse welfare or benefit of modern technology to preserve natural resources. Distribution and analysis of responses by age showed that the younger the child is, the easier he may abandon the majority of benefits. Older children are very dependent on comfort and daily devices.

The third survey showed that the level of environmental awareness and education is not very different between children from Kyiv and from the rural area.

The general trend of the obtained answers is that 67% children of the secondary school age are aware of environmental issues and their implications and significance of man as the main factor of environment degradation.

Environmental awareness has turned to be directly proportional to education and life position of parents who are an example to their children about the environment. In general, the resulted level of environmental education is almost the same, which indicates a unified school curriculum that is taught in the school.

The range of participatory methods was offered to improve the efficiency of environmental education for school age children, as well as the need to improve the level of environmental education of adults.

References

1 Declaration of the United Nations Conference on the Human Environment. UN General Assembly. Stockholm, 1972.

2 Slepchenko A.A. The Ukrainian Legislation about environmental education: general characteristics (Слепченко А.А. Законодавство України про екологічну освіту: загальна характеристика) : Bulletin of Taras Shevchenko National University of Kyiv. 2005. 65-66. P. 84-87. (in Ukrainian)

3 Report on the Intergovernmental Conference on Environmental Education. UNESCO - UNEP. Tbilisi, 1977.

4 The assessment of environmental awareness of the secondary school learners in the Mabopane district. Potchefstroom, 2005. 93 p.

5 The Belgrade Charter: A Global Framework for Environmental Education. Belgrade: UNESCO. 1976.

6 Integrating environmental education in primary school education in Tanzania: teachers' perceptions and teaching practices. Åbo: Åbo Akademi University Press, 2011. 227 p.

7 Lee J., Williams M. Researching environmental education in the school curriculum: An introduction for students and teacher researchers : International Research in Geographical and Environmental Education. 2001. 10. P. 218 – 244.

8 Chuikova L.Yu. Concepts of ecological education, built on the idea of forming an ecological culture (Чуйкова Л. Ю. Концепции экологического образования, построенные на идее формирования экологической культуры) : Humanitarian researches. 2012. 2. P. 342–352. (in Russian).

9 Palmer J. Environmental Education in the 21st Century: Theory, Practice, Progress and Promise. London: Routledge, 1998. 304 p. doi:10.1017/S081406260000375X

10 Gough A. Education and the environment: policy, trends, and the problems of marginalization. Melbourne: The Australian Council for Educational Research, 1997. 204 p. doi: 10.14221/ajte.1998v23n1.7.

11 Hadzigeorgiou Y., Skoumios M. The development of environmental awareness through school science: Problems and possibilities : International Journal of Environmental & Science Education. 2013. 8(3). P. 405-426. doi: 10.12973/ijese.2013.212a.

12 Robottom I., Hart P. Research in Environmental Education: Engaging the debate. Geelong: Deakin University Press. 1993. 81 p.

© М. М. Радомська,
Ю. Г. Карташ

*Надійшла до редакції 25 квітня 2018 р.
Рекомендувала до друку
докт. техн. наук Л. М. Архипова*