

Efficiency of Long- and Short-Term Educational Activities for Environmental Protection in "Vrachansky Balkan" Nature Park

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Abstract. For saving world's biodiversity, networks of protected areas were established, conventions, agreements, political and strategical documents for conservation of nature that all highlight the importance of the environmental context of the education for sustainable development were prepared. Nature and national park administrations in Bulgaria which are legally obliged to conduct educational activities have a significant role for building environmental awareness and behavior in visitors. The aim of this research is to develop and implement modern approaches and mechanisms to organize educational activities in the field of ecology and nature conservation in protected areas in Bulgaria after the example of "Vrachansky Balkan" Nature Park. For achieving this aim, instruments for carrying out quality long- and short-term educational activities were elaborated, verified and implemented in practice. Such comprehensive systematic approach, is organized for the first time in "Vrachansky Balkan" and it fulfills one of the objectives set in its Management Plan (2011-2021). The approbation of one week activities in the nature park shows better cognitive results and higher motivation for environmental protection among the participants in comparison to the one-day stay. The verified educational approach is a nature conservation instrument, applicable to the management of all nature and national park administrations for biodiversity preservation and sustainable use of natural resources.

Key words: protected areas, nature park, environmental education.

Introduction

The world's biodiversity declines and current trends could have unfavorable consequences for humanity. Biodiversity loss affects the ecosystem functions and threatens the provision of ecosystem services for people. For solving the global environmental problems, networks of protected areas for nature conservation were established, conventions, agreements, political and strategical documents for biodiversity protection, that all highlight the importance of the environmental context of the

education for sustainable development, were composed (CBD SECRETARIAT, 2013; IUCN, 2013; MOEW, 2014).

An important milestone in the development of the overall concept of biodiversity conservation is the United Nations Conference on Environment and Development in Rio de Janeiro from 1992 and the resulted action plan "AGENDA 21". Special attention in the documents of the Conference is paid on the "education for sustainable development", that is a process

of personal and social development and integrates ecological, economic, social and cultural aspects of life, builds responsible behavior to the surrounding world and expands the concept of environmental education. Its main objective is the proper use of the opportunities of formal, non-formal and informal education as instruments of solving the global problems facing the human community today and its application is covered in subsequent documents, among other: Johannesburg Plan of Implementation (2002), Global Action Programme on Education for Sustainable Development (2014) (UNITED NATIONS, 2015).

Bulgaria has well-developed network of protected areas that covers about 5% of the country's territory and the need of providing environmental education there is incorporated in the early Bulgarian legislation. In the current BULGARIAN PROTECTED AREAS ACT (1998), one of the management goals of national and nature parks, reserves, managed reserves and protected sites is carrying out educational activities in the field of ecology and environmental protection.

Best opportunities, taking into account the conservation category, the material and administrative provision for conducting non-formal and informal environmental education, offer nature and national parks. In order to assist the park administration in the effective informational work, elaboration of educational methodologies is necessary.

According to the management plan, annual reports, records and experts' data of the "Vrachansky Balkan" Nature Park Administration are identified the statement, problems and needs of the Administration for conducting effective educational activities in the field of ecology and environmental protection with high school students.

The main problems for effective educational activities are related to lack or deficit of:

- knowledge about the natural and social sciences' subjects for proper

adjustment of the Park's biodiversity conservation education to high school students' needs;

- approaches to organizing and conducting educational programs;
- structured content on important topics related to the Park's biodiversity conservation;
- methodology for conducting educational activities;
- supporting and visual materials for conducting educational activities;
- educational programs with different duration;
- qualified employees for conducting educational activities;
- mechanisms for evaluating and improving the quality of the educational activities.

In this regard in the Management Plan of "Vrachansky Balkan" Nature Park (2011), in the operational objectives of the Administration is included to achieve high awareness of the general public about the conservation significance of the protected area and deep understanding of its aspects, which involves the development of an information and interpretation system of the Park. The measures planned to achieve the desired results cover the creation of effective information tools for the Park, development of educational programs related to the most significant features of the territory, improvement of the staff competences for conducting educational activities, development of the material base to carry out trainings in the Park, cooperation at different levels.

The aim of the research is to develop and verify modern approaches and mechanisms for organizing and conducting educational activities in the field of ecology and nature protection in Bulgarian protected areas, after the example of "Vrachansky Balkan" Nature Park.

Materials and Methods

The systematic approach of research based on three main stages - analysis, synthesis and evaluation, was used.

The analysis includes:

- study of methodologies and approaches for carrying out educational activities in the field of ecology and environmental protection through experiencing nature;
- study of the management priorities of “Vrachansky Balkan” Nature Park regarding educational, information and tourist activities of the Administration;
- study of the curriculum from 8th to 12th grade in natural and social sciences.

At synthesis stage, the collected analytical information was summarized and specified for:

- development of training methodology and programs for conducting educational activities with high school students during short- and long-term stay in “Vrachansky Balkan” Nature Park.

In order to specify and meet the needs of the target group, for determination of the correlation between goals and results, an approbation and evaluation based on feedback was made.

The approbation of the educational methodology was conducted with high school students (8th to 12th grade) during 6 seminars for long stay and 5 seminars for short stay in the Park, with 20 to 25 participants in a seminar or a total number of participants between 220-250.

In the evaluation of the educational methodology, the survey method was applied. The survey data was processed using standard software tools IBM and Microsoft – SPSS, Excel.

Pedagogical modeling was also used in the research process.

The methodology elaboration included several main stages: determination of its objective and tasks, leading training principles and methods, thematic structure and educational content, establishment of training programs for short- and long stay in the Park.

Main objective of the methodology is to develop “shaping competences” by deepening, expanding and strengthening

knowledge about ecological and socio-economic importance of the “Vrachansky Balkan” protected area, using interdisciplinary and interactive learning approach.

According to the education for sustainable development concept of “shaping competences” (DE HAAN, 2008), that consist of 12 action oriented subcompetences, assigned to personal, practical, social and specialized skills for shaping a sustainable future, the methodology aims to develop:

- Knowledge about biological species and ecosystems;
- Understanding the interaction between man and environment;
- Skills to communicate in a team;
- Ability for discussing and argumentation;
- Ability for analysis, evaluation, planning and solving a problem;
- Rationalization of the experience;
- Sharing the experience with the rest of the group.

Leading training principles are: visualization, accessibility, consciousness, systematization, activity, persistence of knowledge, skills and habits.

The methods of non-formal education used are interactive. All they aim at motivating responsible attitude towards the surrounding world, to nature and society. They promote environmental thinking and generally develop sustainable behavior. The following methods are used: discussion – debates, talks, discussions, etc., where the participants acquire information and experience through controlled interaction; experiential (empirical) – project work, research, experiment, etc.; situational – case studies, simulation, role play, etc., where skills and habits for real action are shaped (NIKOLAEVA, 2015).

Based on the Park's long-term and operational objectives, operational tasks, conservation and use prescriptions included in its [Management Plan of “Vrachansky Balkan” Nature Park \(2011\)](#), as important for its educational activities, 8 thematic areas

have been identified, that are directly related to the abiotic, biotic, cultural and socio-economic characteristics of the Park. The thematic areas are:

1. Ecosystems and protected areas
2. Biodiversity
3. Pastures and meadows
4. Water resources
5. Forests
6. Caves and karst forms as habitats
7. Anthropogenic impact on biodiversity on the Park's territory
8. Sustainable use of natural resources

A study of the curriculum was made for the purposes of the methodology and the interrelations of subjects in middle (5-8th) and upper (9th-12th) grades related to biodiversity and environmental protection were identified (MES, 2013). Based on it, to each thematic area was included specific information, adapted to the compulsory curricula, as well as relevant educational activities.

Especially developed training materials are used to apply the methodology. They serve for visualization and accessibility of the information, as well as to implement the practical activities. Worksheets for the different thematic areas containing specific information for the "Vrachansky Balkan" Nature Park, tasks, open and closed test questions, schemes and graphs for analysis were composed. A set of cards with pictures and specialized texts for 70 typical species of plants, animals and mushrooms, was also prepared. The texts include: name of the species in Bulgarian and Latin, biological features, ecological characteristics of its habitats, nature conservation status, and curious facts.

Two formats of training programs of different duration were arranged - for one week (BANCHEVA, 2015) and for a day stay. Training activities follow a logical sequence and the "flow learning" stages - awaken enthusiasm, focus attention, direct experience and share inspiration (CORNELL, 1991) according the age peculiarities of high school students (CORLEIS, 2000).

Results and Discussion

The methodology for educational activities in "Vrachansky Balkan" Nature Park was approbated with high school students by applying the programs for a long and short-term stay during the years 2013-2015. For its evaluation anonymous semi-standardized questionnaires with open and closed questions were developed. The questionnaire of long-stay contained 13, and the one for short-term - 9 questions, partially coinciding. It aimed to verify the knowledge and skills, acquired of the participants during the seminars and the training methodology accordance to the objectives of the environmental education for sustainable development. It was also designed to identify the participants' satisfaction level of the stay in the Nature Park. Qualitative and quantitative analysis was used for conclusions.

The long-term educational program covered the main thematic issues: ecology, biodiversity and nature conservation; air pollution and climate change; sustainable resource and waste management; alternative tourism and sustainable lifestyle. The questionnaire was conducted among 139 participants in the seminars. Excellent and very good evaluation of the educational program gave almost 90% of the trainees. Educational activities were very useful for 87,6 % of the participants. Many new things learned 76,6% of them and almost 21% - not so many.

The content of short-term educational program was similar to the long-term. All 104 participants were interviewed. The results show that excellent and very good evaluation of the educational activities gave 57,7% of the participants, for 51,9 % the educational activities were very useful. The way of conducting the activities was determined at an excellent and very good level of 66,4 % of the trainees. New things during the short-term program learned 88,5%, from which 45,2% learned many new things and 43,3% - not so many.

The methodology application through educational programs during short- and long-term stay in the Nature Park showed some differences in the results in terms of their educational effectiveness.

Competencies that the participants have developed during the training show that all the defined, for the purpose of the methodology, "shaping competences" were well covered in both educational programs. The results do not differ significantly in terms of the overall competences advancement, but contain some particularities of both types of stay, presented on Figure 1. Participants appreciated most the understanding of human-nature interaction, deepening of knowledge about species and ecosystems, communication skills and teamwork. Both groups of seminar duration appreciated the development of ability for analysis, evaluation, planning and solving a

problem, which was better during a long stay. The percentage of students who appreciated the educational activities was significantly higher during a long stay in the Park than that of a day stay. The difference shows that participants with excellent and very good evaluation of long-term stay activities were 30.6% more than of short-term. Third of adolescents of short-term stay evaluated them as "good" and just 7,3 % of participants, trained a whole week in the Park (Fig. 2). Participants in a long-term stay, who said that educational activities were definitely useful to them, are 35.7% more than those in a short-stay (Fig. 3). The results of the question whether participants have learned a lot of new things during their educational activities are also expected. Many new things learned 31,4 % more students of a couple of days stay than those, who were only a day in the Park (Fig. 4).

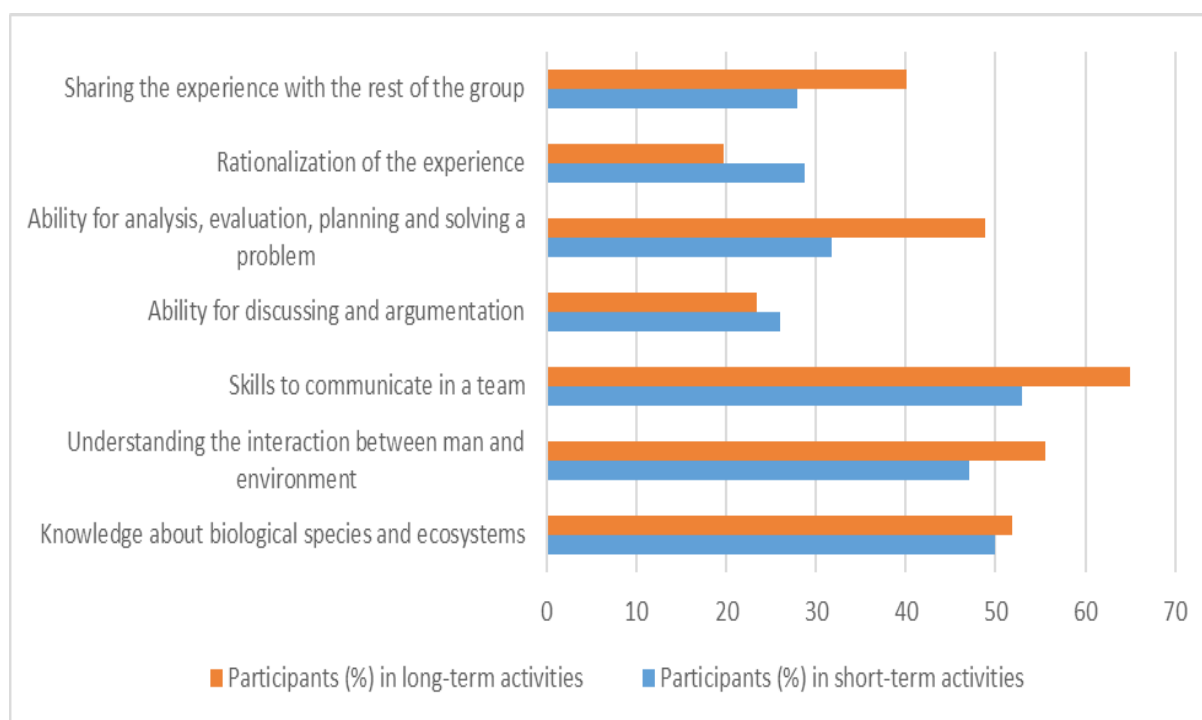


Fig. 1. Shaping competences acquired during long- and short-term educational activities in "Vrachansky Balkan" Nature Park according to the participants.



Fig. 2. Assessment of educational activities by percentage of participants in long- and short-term programs.

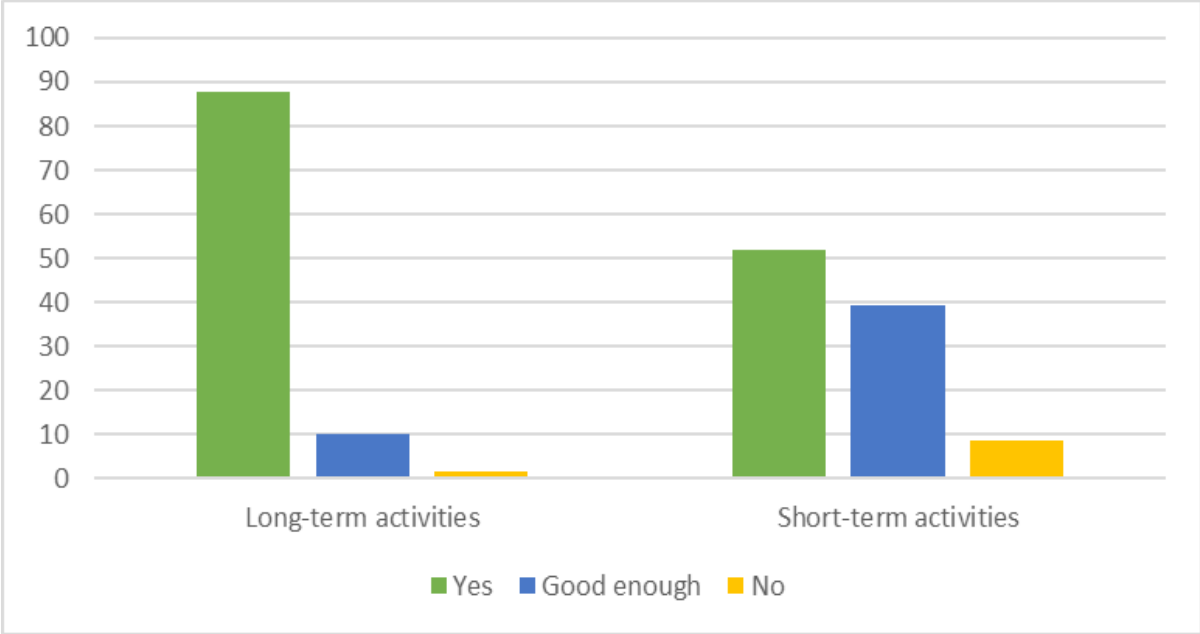


Fig. 3. Percentage of participants that considered short- and long-term educational activities useful to themselves.

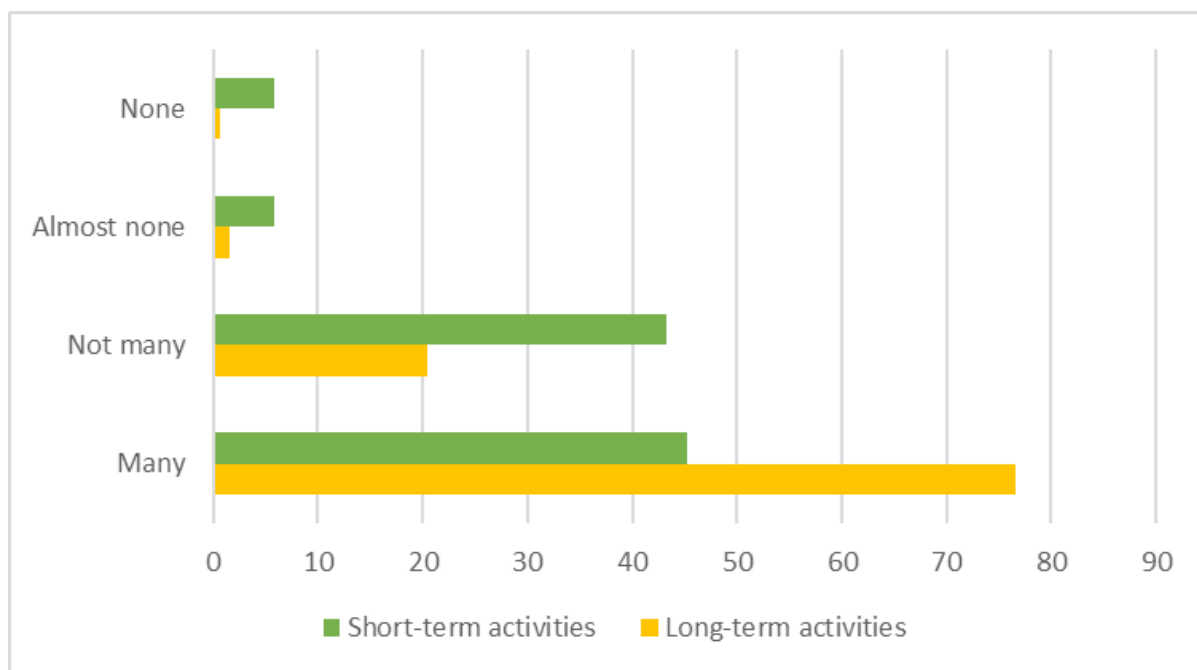


Fig. 4. New things learned by percentage of participants in long- and short-term educational activities.

Both students of short- and long-term stay confirmed that they liked the methods of educational program – the interactive activities. The responses show that participants were sensitive to the individual trainer approach, but not to the essence of activities.

Young people who had the opportunity to spend more days in the Park were significantly more satisfied with the educational program than those who were only a few hours. There is also a contrast in the pupils' educational experience during stays of different duration in the Park. It was more complete when they spend more time in nature.

Comparing the results of programs based on the methodology for conducting non-formal environmental education for sustainable development in "Vrachansky Balkan" Nature Park with groups of high school students during short- and long-stays in the Park shows higher efficiency of the methodology during several days stay of pupils in the nature territory.

The summary of the results confirms that one-day and several-day seminars in protected areas are a modern form of

conducting educational activities in the field of ecology and environmental protection. They correspond the key themes and achieve the goals of sustainability education.

Discussion

The developed and approbated methodology, incl. the training materials produced, meets the identified needs of "Vrachansky Balkan" Nature Park Administration, increases its capacity for educational activities and is a successful nature conservation instrument that can be applied in other protected areas. As a scientific and educational approach, it enables non-formal education in the field of ecology and environmental protection to become a permanent practice for the national and nature parks in Bulgaria.

The results of the conducted studies and practical activities show that the methodology application through organization of environmental education in protected areas is a modern form for acquiring knowledge and skills about the biodiversity and its conservation, human-nature relationships, sustainable use of

natural resources, etc. which also achieve the goals of sustainable development education. This is confirmed by the positive evaluation given in the survey carried out among all 243 participants in the trainings.

The survey, regarding the percentage distribution of the knowledge gained in the seminars, shows relatively highest percentage of participants who increased their competences in the field of ecology, biodiversity and nature conservation, man and nature interaction, the sustainable development and opportunities for sustainable tourism. Skills for teamwork, communication and exchange are also appreciated.

The results of the educational activities show that a couple of days' period of training on the Park territory is needed, in order to provide qualitative and in-depth knowledge of ecology and environmental protection. The short-term stay does not allow the overall achievement of the objectives of sustainable development education in its environmental aspects. This is also confirmed by the results' differences from the questionnaires regarding their learning effectiveness.

The approaches for training the Park Administration's staff for conducting educational activities, as well as the tools for evaluation and improvement of the quality of educational activities, are subject of additional research.

Conclusions

A methodology for carrying out educational activities in the field of ecology and nature conservation in protected areas, specified for the needs of "Vrachansky Balkan" Nature Park, was developed and implemented in practice. Such activity, including a comprehensive systematic approach, is organized for the first time in the Park and it also fulfills one of the objectives set in its Management Plan (2011-2021).

This verified instrument is applicable to the management of all nature and national park administrations for biodiversity preservation and sustainable use of natural resources.

Acknowledgements

This research was conducted thanks to the cooperation of "Vrachansky Balkan" Nature Park Administration and the financial support of the project "Holidays for Sustainability" of EcoCentric Foundation, funded by DBU for conducting the seminars. This document was supported by the grant No BG05M2OP001-2.009-0034-C01, financed by the Science and Education for Smart Growth Operational Program (2014-2020) and co-financed by the EU through the ESIF.

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Received: 31.10.2018

Accepted: 21.12.2018