

ACTIVITIES OF THE INSTITUTE OF LANDSCAPE ECOLOGY OF THE SLOVAK ACADEMY OF SCIENCES IN SUPPORT OF ENVIRONMENTAL EDUCATION

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Abstract

The Institute of Landscape Ecology of the Slovak Academy of Sciences (ILE SAS) is actively involved in activities that contribute to the formation of environmental awareness of the population. It considers activities aimed at both the lay and professional public, with an emphasis on activities for children and schoolchildren, who are very receptive to accepting new ecological ideas, to be important in this area. Regular and targeted activity, whether in the form of formal or informal education, significantly contributes to the formation of positive attitudes towards the protection and use of the landscape, as well as to the promotion of a lifestyle in accordance with the principles and criteria of sustainable development. To implement these activities, the Institute uses a variety of forms that it adapts to target groups. The aim of the presented paper is to present examples of the transfer of landscape ecological knowledge into the educational process in the form of the creation of supporting methodological material and educational tools such as a film, a natural environmental laboratory, a set of educational posters, worksheets, atlas works and a web application.

Key words: environmental awareness, nature protection, sustainable development, environmental education

Introduction

The current state of environmental education constantly raises the need for a conceptual solution at all levels of education. According to Ružička (1996), the main goal of environmental education is to teach students to think, to eliminate, memorization and to lead them to understand the mutual connections between man and his environment. Demek (1996) sees the goal of environmental education in the acquisition of systematized knowledge and understanding in the field of environmental protection and creation and the intellectual and practical skills and habits associated with them. According to Hilbert (1996), environmental education should aim at the harmony of feelings, thinking and responsible behaviour of individuals towards the external environment, towards living organisms, towards other people and towards themselves, towards creating their own way of life and lifestyle, while at the end of the environmental education process there should be a constantly developing person that only the education system can raise.

However, comprehensive ecological and environmental education is not and cannot be left only to schools (Konrád, 1996). It is a lifelong process in which the family, the state and society also must participate. Seko (1996) also identifies with this idea and adds that the process of lifelong education and education of the population to care for the environment should begin to be formed already in the preschool period.

One of the positive examples of how to get involved in the process of ecological and environmental education are the activities of the ILE SAS focused on the creation of didactic tools for formal and informal environmental education. Our main motive for creating them was to make available to the public scientific knowledge obtained from landscape ecological research of forest, agricultural, industrial and alpine landscapes, from research of abiotic, biotic and socio-economic components of the landscape, but also from research carried out on the basis of social-ecological needs such as biodiversity protection, protection of bio-cultural values, increasing ecological stability, sustainable development, ecosystem services, assessment of natural capital and green infrastructure, etc. We want to make available this environmental knowledge to all age groups of the population in a simple, understandable and, above all, illustrative form and thus contribute to increasing their environmental awareness.

The need to enrich the educational process with new didactic tools also resulted from the implementation of several sociological surveys realised in schools. From their conclusions, we

concluded that teachers would welcome new, modern didactic tools for environmental education, which participates in several primarily science-oriented subjects. Teachers expressed interest in tools that would make teaching more attractive - films on current environmental topics, worksheets with ecological tasks, blind maps on the topic of nature and landscape protection, fold-out 3D models of animals, plants, landscape ecosystems, various interactive games, etc. In environmental education, many teachers, in addition to modern technology, still use maps and posters, which are easy to manipulate and serve for quick visualization of the topic being taught.

Results

To increase the environmental awareness of society, the staff of the Institute of Landscape Ecology of Slovak Academy of Sciences have been implementing several environmental and ecological activities for many years, from which we select:

Creation of a film entitled *The Landscape and Its Sustainable Development* (Fig. 1, Fig. 2) for use in formal and informal environmental education, primarily in schools and leisure centers. Our goal was to create a DVD film to make it easier for pupils and students to understand the concept of sustainable development and to stimulate their interest in professional topics related to the environment. The individual parts of the film, titled: Landscape, Landscape as a Geosystem, Man as Creator, User and Destroyer of Landscape, Sustainable Development and Value Orientations (Izakovičová, Moyzeová, Štefunková, Cibira, Miklós, 2009) are a combination of images, spoken word, numerous illustrative images, graphs, diagrams, maps and balloon shots that will help students more easily understand the landscape and its structure, types of landscape, ways of perceiving landscape, interactions between man and landscape, relationships and processes taking place in the landscape, negative and positive human influences on the landscape, social and value factors and much more.



Fig. 1: DVD film.



Fig. 2: Presentation of the film at the event „We are SAS“.

An example of education through a project was the construction of a *Natural Environmental Laboratory* (PEL) in Suchá nad Parnou village. PEL consisting of an eco-center, an eco-laboratory and an educational trail. Under the professional management of the ILE SAS staff, several entities were involved in its implementation - teachers, students, the mayor of the village, deputies, a priest, hunters, but also local residents. The aim of the PEL was to implement educational activities directly in nature in the school garden and in the outskirts of the village in the form of walks and excursions along the educational trail. The effort was to demonstrate and observe selected natural phenomena and processes in the educational areas of the school garden and thus encourage students to be creative, competitive and work as a team and to introduce them to new techniques for caring for the environment and to gain practical skills and experience in protecting nature and the landscape (Fig. 3, Fig. 4).

Another activity was the creation of a set of educational posters from the cycle *Landscape and its sustainable development* under the titles: Landscape called Slovakia. Landscape what are you and what do you serve us for? Landscape what are we doing with you? Landscape where

are you going? Landscape what and how next, and their use in formal and informal environmental education in schools, leisure and information centers. The goal of these tools is to convey in a visual form a synthetic view of the landscape of Slovakia as a geo-ecosystem of interconnected elements, as a spatial base for social activities and as a space for the emergence of conflicts of interests and the resulting environmental problems. The effort was in a visual form, to explain primarily to students the issue of sustainable development, which is only marginally mentioned in the curriculum and to positively influence their value orientation and also attitude towards their environment (Fig. 5, Fig. 6).



Fig. 3: Erosion model.



Fig. 4: Climatologically station.



Fig. 5: and 6: Educational posters as part of the exposition of the Institute of Landscape Ecology of the Slovak Academy of Sciences at exhibitions and mass events.

By realisation of manual *We Learn from Each Other* and worksheets (Cibira, Izakovičová, Moyzeová et.al. 2005) (Fig. 7, Fig. 8), we created new unconventional didactic tools for formal and informal environmental education in primary schools with the aim of teaching pupils to perceive their immediate environment, its beauties, cultural and historical features, but also real environmental problems and to jointly seek solutions. Thematically, the worksheets are designed to bring a certain environmental topic closer to pupils in a playful way. Each worksheet has a short introduction to the issue followed by a task with an assignment in the form of a secret, riddle, figure eight, number puzzle, etc. The manual is a instruction as how to build an environmental laboratory in other schools.”

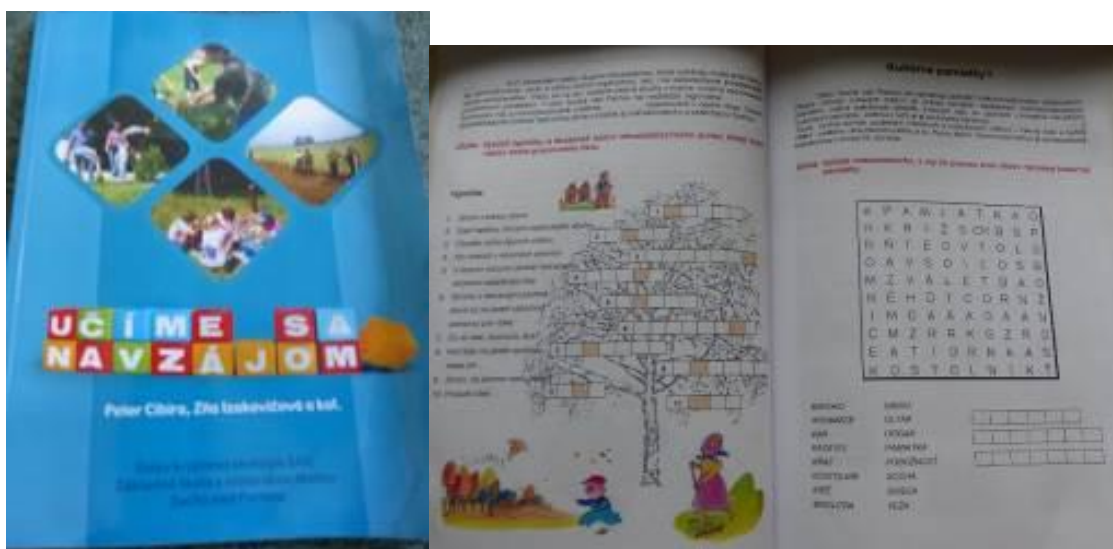


Fig. 7 Manual *We Learn from Each Other*. Fig. 8 Worksheets.

Publishing professional publications, atlases, information leaflets and brochures and their public presentation at exhibitions (Agrokomplex Nitra, Incheba Bratislava, Library Bratislava, NaturExpo Brno, Slovak Field Days), various popularization events (Earth Day, World Environment Day, Science and Technology Week in Slovakia, European Science Night, We are SAS, Science Fair) and in the teaching process at all types schools can be considered as other useful didactic activities ILE SAS. Their aim is to address the public of all age categories and stimulate their interest in active environmental protection and to teach them to correctly evaluate situations when environmental protection is necessary and also how to eliminate the negative impacts of human activities.



Fig. 9: and 10: Atlas works as part of the exposition of the Institute of the Landscape Ecology of the Slovak Academy of Sciences at exhibitions and educational events.

An equally important activity is the creation of the web application "ZIS" (Moyzeová et al., 2022) (Fig. 11, Fig. 12), made available to the general public on the ILE SAS website with the aim of transferring scientific knowledge into real practice, into the educational process and awareness-raising activities. We present the results of landscape ecological research on the topic of green infrastructure to users in the form of maps at the local to supra-regional level. Users of the application will obtain information about a given cadastral area, whether it is a comprehensive database of positive and negative socio-economic phenomena supporting or threatening green

infrastructure, about the value of ecological stability achieved in 2018 and 2023, whether the ecological stability of the area has decreased or increased, they will learn what the ratio of green, blue and grey infrastructure is in a given cadastral territory and likewise, what area of green, blue and grey infrastructure elements falls per inhabitant, on the total area of the cadastral territory, etc. Subsequently, users will obtain information about the function of non-forest woody vegetation in a given area in order to minimize the negative impacts of real conflicts of interest. Working with databases, maps and graphs has already enriched the teaching process at the Slovak Technical University in Bratislava.

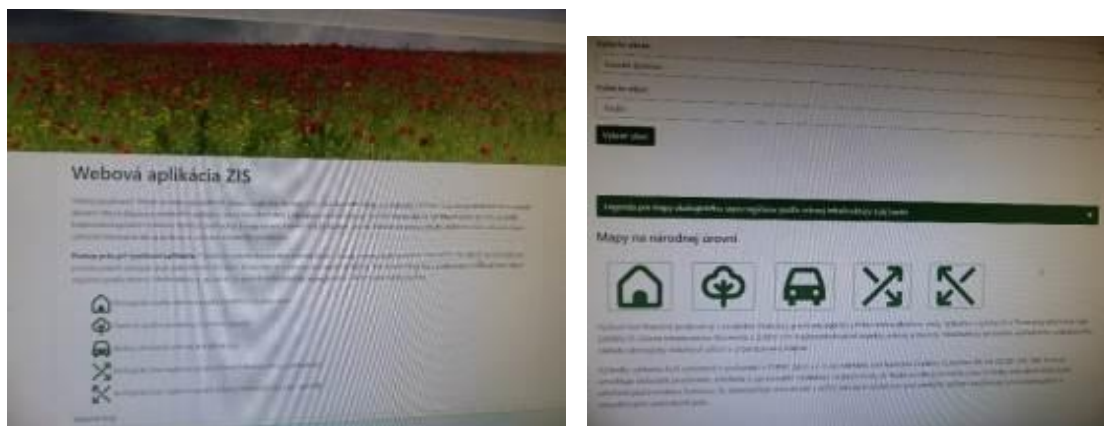


Fig. 11: and 12: Visual of the "ZIS" web application on the ile.sas website.

Discussion and conclusion

Only an ecologically educated society is prepared to ensure effective environmental protection and promote the principles of sustainable development in real practice. Therefore, the employees of the ILE SAS try to transfer the results of scientific research to the sphere of environmental education and training. In the educational process, we want to continue to support effective and innovative formal and informal education. We want to prepare professional presentations, excursions, seminars, various additional forms of education and thus expand the scope of knowledge about the environment in the further. Also, we would like to actively participate in the creation of new teaching tools that will help teachers implement environmental education in a more attractive and modern way. While respecting the factors of social, economic and cultural life, it is important and necessary to create sufficient space for the ecological aspects of the environment, so that consumers of our information become increasingly aware of the need and importance of positive human behaviour towards their environment. From this aspect, we also consider it important to form the foundations of environmental education in preschool age, continuing in school age up to the so-called third age. ILE SAS has been cooperating with the kindergarten in Petržalka. Workers prepare environmental education for preschool children as part of Earth Day regularly already fifteen years. Environmental education should be implemented not only through environmental education in schools with qualified teachers for environmental education, but also through television, radio, newspapers, magazines, professional literature and, last but not least, through family background. This goal is important to support due to the ever-growing importance of environmental education and training for the lives of not only current but also future generations. The presented cross-section of the activities of the ILE SAS is an example of the creation of new, innovative tools to motivate the Slovak public's engagement in environmental protection and creation.

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Souhrn

Předkládaný příspěvek je příkladem zapojení se pracovníků Ústavu krajinné ekologie SAV, v.v.i. (ÚKE SAV) do aktivit které přispívají k formování environmentálního povědomí obyvatelstva. K realizaci těchto aktivit ÚKE SAV využívá různorodé formy, které přizpůsobuje cílovým skupinám. Prezentace příkladů transferu krajinoekologických poznatků do vzdělávacího procesu v podobě tvorby podpůrného metodického materiálu zahrnuje zpracování DVD filmu o Zemi a její trvale udržitelném rozvoji, vybudování Přírodní environmentální laboratoře, vytvoření souboru naučných plakátů o Slovensku, zpracování pracovních listů na environmentální výchovu a vytvoření množství mapového materiálu zpřístupněného v podobě atlasových děl a webové aplikace široké veřejnosti. Formální a neformální environmentální vzdělávání výraznou měrou přispívá k formování pozitivních postojů k ochraně a racionálnímu využívání krajiny jakož i prosazování životního stylu společnosti v souladu s principy a kritérii udržitelného rozvoje.

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