

FOREST CLASSROOM AS A TOOL OF LANDSCAPE MANAGEMENT: INTEGRATING ENVIRONMENTAL EDUCATION, FORESTRY AND GAME MANAGEMENT

Monika Fárka, Jitka Fialová, Dastan Bamwesigye

Department of Landscape Management, Faculty of Forestry and Wood Technology, Mendel University in Brno, Zemědělská 1, 613 00 Brno, Czechia

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Abstract

Sustainable landscape management requires not only ecological and economic approaches, but also the long-term development of environmental awareness and responsible attitudes. This work presents the concept of a forest classroom as an innovative tool integrating environmental education, forestry and game management within the framework of landscape management.

The forest is understood not only as an ecosystem, but also as a dynamic educational environment that enables experiential learning and supports the development of environmental literacy. I emphasize here the role of informal education, especially in work with adolescents, as a key factor in the formation of long-term relationships with nature and landscape.

The proposed concept combines traditional approaches to forestry and game management with modern educational methods and interactive elements. It shows how educational infrastructure embedded directly in the landscape can contribute to sustainable landscape management and strengthen regional environmental awareness.

Key words: landscape management; environmental education; forest classroom; non-formal education; forestry; game management

Introduction

The landscape today is facing many challenges, such as climate change, biodiversity loss, and increasing disconnection between society and nature. Although landscape management traditionally focuses on ecological and economic aspects, the social dimension is equally important. Environmental awareness and public engagement play a crucial role in ensuring long-term sustainability.

Environmental education plays a key role in shaping the relationship between society and the landscape (Daniš, 2018). It contributes to the development of environmental literacy, which includes knowledge, skills, values, and attitudes necessary for responsible interaction with the environment (Harazim; Hudaková, 2014). The landscape is not only a physical environment, but also a space influenced by human perception and activity. Therefore, its management must include educational approaches that support awareness and understanding. Educational activities aimed at strengthening the relationship between people and the landscape can serve as a preventive tool against environmental degradation and unsustainable development.

In current education, students often gain knowledge mainly through theoretical instruction. However, understanding nature cannot be based only on information obtained indirectly from books, media, or digital technologies. Direct experience, observation, and personal contact with the natural environment are essential for creating a deeper and lasting understanding.

The natural environment offers a unique opportunity for such learning. It is not only a place where ecological processes take place, but also a space where people can learn through their own experience. Direct contact with the natural environment enables a deeper understanding of ecological processes and encourages the development of a personal connection to the natural world (Andres; Vrtiška, 2018).

Nature can be understood as a living classroom that offers a wide range of learning opportunities. It provides a natural environment where students can directly observe ecological relationships, such as interactions between organisms, natural cycles, and biodiversity. Compared to traditional classroom teaching, this type of learning leads to deeper understanding and longer retention of knowledge (Knotková, 2022).

Nature also enables interdisciplinary education, connecting subjects such as biology, ecology, geography, and social sciences. It creates a space where knowledge is not separated into disciplines but understood in context.

Forestry and game management represent essential components of landscape management, focusing on sustainable use, conservation, and long-term planning. Integrating these fields into educational activities helps to provide a realistic and comprehensive understanding of human interaction with the landscape. Game management plays a significant role in maintaining ecological balance, regulating

wildlife populations, and supporting biodiversity (Českomoravská myslivecká jednota, 2026). When presented in an educational context, it can help overcome misconceptions and promote a deeper understanding of its ecological and cultural importance.

Forest pedagogy, as a method of non-formal education, combines professional knowledge with experiential learning approaches (Pešek et al., 2019). It enables participants to gain insight into landscape ecosystems and management practices directly in the field.

The aim of this paper is to present the concept of a Forest classroom as a tool of landscape management that connects environmental education, forestry, and game management. The concept is based on experiential learning and non-formal education and aims to strengthen the relationship between people and the landscape, while also integrating modern digital technologies and innovative tools for outdoor education.

Materials and Methods

The research presented in this article is based on a questionnaire survey designed to identify the attitudes, preferences, and needs of students and teachers regarding outdoor education and the concept of the Forest classroom.

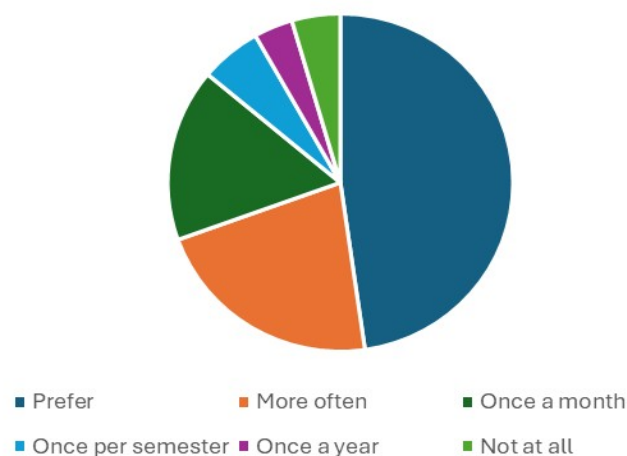
The survey was conducted among elementary and secondary school students (aged 15 and older) and teachers at selected educational institutions. This age group was chosen based on the respondents' ability to independently formulate opinions and attitudes toward environmental topics and educational approaches.

The questionnaire included questions focused on respondents' relationship with nature, their perception of game management, interest in learning in natural environment, preferred teaching elements (interactive and digital), and willingness to participate in activities in a forest classroom.

The collected data were analysed using basic statistical methods, primarily percentage analysis.

Results

- The results of the questionnaire survey show that respondents have a strong interest in outdoor education. A total of 91.4% of students stated that they prefer outdoor education, with 41.7% wanting it more often, 31.7% at least once a month, 11% once per semester, and 7% once a year. Only 8.7% of respondents do not prefer this form of instruction.
- Teachers expressed a high degree of willingness to incorporate outdoor education into their teaching practice. A total of 83.3% of teachers stated that they would use the forest classroom regularly, with 35.3% visiting it once a month, 29.4% more frequently, and 17.6% once every six months. Only 17.6% of teachers stated that they were not interested in visiting.
- Regarding the use of digital and interactive elements, 52.9% of teachers unequivocally support their inclusion in outdoor instruction. Another 23.5% are somewhat inclined to use them. A lack of interest in the use of digital technologies was expressed by 17.6% of respondents, and only 5.9% completely reject them.
- Tracking and wildlife observation are perceived as the most interesting for students (e.g., 56.3% chose "animal identification and tracking" as the most interesting).



• Fig. 1: Students interest in outdoor education

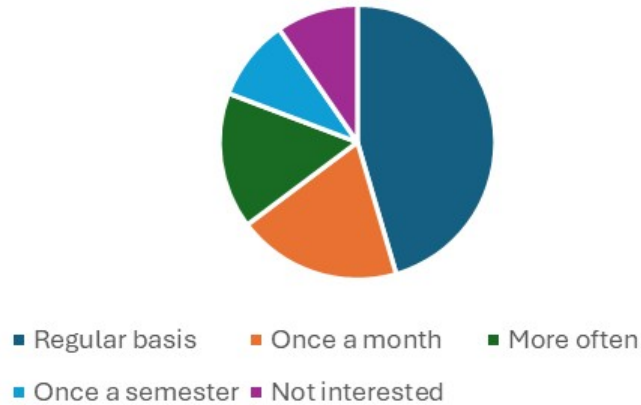


Fig. 2: Teachers interest in outdoor education



Fig. 3: Students interest in hunting related topics

- Students believe that game management is primarily about the care and protection of forests and wildlife. They largely prioritize conservation over hunting (71.7% game management – care for wild animals; 60.7% hunting).
- Students' personal experiences or contact with hunters are associated with greater interest in game management. (63.7% know someone in their circle who is involved in hunting; social contact increases students' interest).

Overall, the results confirm a high level of interest in experiential learning, openness to innovative educational approaches, and a positive attitude toward the integration of forestry and hunting into environmental education.

Discussion

The results of the questionnaire survey confirm that teaching in natural environments holds significant potential within the current educational system. Students' high interest in learning outside the traditional school setting suggests a need for greater integration of experiential and field-based forms of instruction into educational practice. These results align with general findings in environmental education, which emphasize the importance of direct experience in shaping a relationship with nature. Respondents' positive attitude toward the natural environment and their willingness to participate in outdoor learning support the idea that environmental education should be more closely linked to the real environment. Direct contact with nature enables a deeper understanding of ecological processes and fosters the development of environmentally responsible behaviour.

Another important aspect is the perception of game management as part of education. This factor is key to the practical implementation of the concept, as without the active involvement of teachers, it would not be possible to effectively utilize such educational tools. At the same time, it appears that educators are open to innovative approaches, including the integration of digital technologies into teaching in natural environments.

The inclusion of interactive and digital elements was viewed predominantly positively by respondents, confirming the importance of combining traditional and modern educational methods. Linking direct experience with technology can increase the appeal of instruction while expanding the possibilities for interpreting natural phenomena.

Modern technologies play a significant role in today's education and landscape management, enabling the effective integration of theoretical knowledge with practical application in the field. Technologies such as drones, sensors, and artificial intelligence-based tools are now essential instruments not only for research but also for nature conservation and landscape management (Chytré technologie chrání přírodu, 2026).

Drones are used, for example, in landscape monitoring, wild animal population counting, or locating young deer before haymaking, thereby significantly contributing to the protection of young animals. In forestry, they are used to monitor the health of trees, detect damage, and map areas, enabling more effective planning and decision-making. Camera traps, meanwhile, are an important tool for long-term monitoring of wildlife movement and behaviour, and the data obtained can be used not only for professional purposes but also as an educational element in teaching.

Digital tools directly accessible to participants are also a significant element of modern outdoor education. QR codes placed within the forest classroom area can provide quick access to supplementary information, multimedia content, or interactive tasks. Mobile apps, for example, allow users to identify plant and animal species, record observations, or work with maps and navigate the terrain.

Another innovative feature could be the use of a 3D shooting range, which allows for a safe and ethical introduction to hunting-related topics without the need to use real firearms. This feature can contribute to a better understanding of hunting as part of landscape care while eliminating the risks associated with the practical handling of firearms.

The integration of technology and education is also evident in activities such as geocaching (Geocaching, 2026), which combines outdoor exploration with the use of digital tools. This activity allows participants to actively discover the natural environment while developing their sense of direction and environmental knowledge. In the context of a forest classroom, geocaching can be used as an interactive educational element, for example in the form of thematic tasks focused on identifying wildlife, tracks, or hunting equipment.

The integration of modern technologies into teaching in a natural environment does not disrupt contact with nature; on the contrary, it expands the possibilities for exploring it.

A well-chosen combination of experiential learning and digital tools can increase the appeal of instruction and contribute to a deeper understanding of how landscape ecosystems function. This approach also reflects the need to modernize environmental education in the context of current technological trends.

Another important aspect is the perception of game management as part of education. The positive attitude of teachers and the interest of students in topics related to wildlife observation and the functioning of ecosystems suggest that game management can be effectively integrated into environmental education. This can contribute to a better understanding of humanity's role in the landscape and promote the perception of game management as part of caring for the natural environment, rather than merely as an activity associated with hunting.

The concept of the forest classroom thus reflects current educational needs as well as requirements for sustainable landscape management. It creates space for linking theoretical knowledge with practical experience and enables a comprehensive perception of the landscape as a dynamic system. However, certain limitations of the research should also be noted. This is an exploratory study with a limited number of respondents and a regional focus, which does not allow for the generalization of results to the entire population. Further research should focus on a broader sample of respondents and on the long-term impacts of forest classroom instruction on participants' attitudes and behaviours.

Conclusion

The forest classroom represents an innovative approach to landscape management that integrates environmental education, forestry, and game management into a single functional unit. It demonstrates that landscape stewardship involves not only technical interventions but also the cultivation of people's relationship with the natural environment.

The results of the questionnaire survey confirmed students' high interest in outdoor education, teachers' positive attitude toward its use, and openness to incorporating modern educational elements, including digital technologies. These findings suggest that the concept of a forest classroom meets the current needs of educational practice and has the potential to become an effective tool for environmental education.

The combination of experiential learning, informal education, and specialized knowledge in the fields of forestry and game management enables the creation of a comprehensive educational environment that supports the development of environmental literacy and responsible behaviour toward the landscape.

At the same time, integrating educational infrastructure directly into the landscape offers new opportunities to strengthen the public's connection to the natural environment and promote sustainable approaches to its use.

The forest classroom can thus serve as a significant tool for developing environmental awareness and contribute to the long-term sustainable management of the landscape.

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Souhrn

Udržitelné hospodaření s krajinou vyžaduje nejen ekologické a ekonomické přístupy, ale také dlouhodobé rozvíjení environmentálního povědomí a odpovědného přístupu. Tato práce představuje koncept lesní učebny jako inovativního nástroje, který v rámci hospodaření s krajinou propojuje environmentální výchovu, lesnictví a myslivost.

Les je chápán nejen jako ekosystém, ale také jako dynamické vzdělávací prostředí, které umožňuje zážitkové učení a podporuje rozvoj environmentální gramotnosti. Zdůrazňuji zde roli neformálního vzdělávání, zejména v práci s dospívajícími, jako klíčového faktoru při utváření dlouhodobých vztahů k přírodě a krajině.

Navrhovaný koncept kombinuje tradiční přístupy k lesnictví a myslivosti s moderními vzdělávacími metodami a interaktivními prvky. Ukazuje, jak může vzdělávací infrastruktura přímo zakotvená v krajině přispět k udržitelnému hospodaření s krajinou a posílit regionální environmentální povědomí.

Contact:

Monika Fárka

E-mail: xfarka1@mendelu.cz

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