THE BENEFITS OF LANDSCAPE DESIGN FOR TEACHING AND OUTDOOR RECREATIONAL ACTIVITIES: CASE STUDIES AND DESIGN PROPOSALS

BENEFICIILE AMENAJĂRILOR PEISAGERE PENTRU ACTIVITĂȚILE ȘCOLARE ȘI DE RECREERE ÎN AER LIBER: STUDII DE CAZ ȘI PROPUNERI DE AMENAJARE

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Abstract. *In the post-pandemic context, when people have developed a heightened awareness of their relationship with their environment, this study addresses the impact of landscaping on school and outdoor recreation activities. By analyzing three relevant case studies from the literature, the paper highlights the benefits of outdoor classrooms and how they can improve student engagement and well-being. In light of these findings, two proposals for the design of the green space of the "Vasile Adamachi" Agricultural College of Food Industry in Iasi were developed. These proposals aim to create an environment conducive to learning and recreation, integrating natural elements and facilities adapted to the needs of students.*
Keywords: Landscaping; Student Welfare; Outdoor Education; Green Spaces.

Rezumat. *În contextul post-pandemic, când oamenii au dezvoltat o conștientizare sporită față de relația lor cu mediul înconjurător, acest studiu abordează impactul amenajărilor peisagistice asupra activităților școlare și de recreere în aer liber. Prin analiza a trei studii de caz relevante din literatura de specialitate, lucrarea subliniază beneficiile salilor de clasă în aer liber și modul în care acestea pot îmbunătăți implicarea și bunăstarea elevilor. În lumina acestor descoperiri, s-au dezvoltat două propuneri de amenajare pentru spațiul verde al Colegiului Agricol de Industrie Alimentară „Vasile Adamachi" din Iași. Aceste propuneri vizează crearea unui mediu propice atât pentru învățare, cât și pentru recreere, integrând elemente naturale și facilități adaptate nevoilor elevilor.*
Cuvinte cheie: Amenajări Peisagistice; Bunăstarea Elevilor; Educație în Aer Liber; Spații Verzi.

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INTRODUCTION

Thoughtfully designed outdoor spaces have historically played a pivotal role in shaping educational and recreational environments for students (Fadzidah *et al.,* 2021; Mirmoradi, 2021; Vasilenko *et al.*, 2021; Dascălu *et al.,* 2018). These spaces can influence students' experiences, perceptions, and cognitive development (Farghaly *et al.,* 2021). From ancient Greek gymnasiums to Renaissance-era educational institutions, landscape design has been recognized for its inherent educational and recreational potential (Gill *et al.,* 2018). The built environment in which students learn and play is a fundamental element that can significantly impact their overall well-being and learning outcomes. By providing students with access to well-designed outdoor environments, they can engage in embodied learning experiences that foster critical thinking, problem-solving, and a deeper understanding of the natural world. Additionally, outdoor spaces can serve as therapeutic environments, allowing students to take breaks and restore their attention, increasing concentration and productivity. Landscape design is crucial in creating educational spaces that support students' holistic development and enhance their learning experiences (Gill *et al.,* 2018).

There has recently been a growing recognition of the importance of natural environments for education, as supported by empirical research. Landscape design allows for a direct connection with nature and promotes a holistic mode of learning that integrates cognitive, emotional, and sensory experiences. This integrative approach leads to a deeper and more intuitive understanding of subjects (Faujiah and Marzuki, 2021; Lim and Perono Cacciafoco, 2021; Freeman and Seaman, 2020; Grecu *et al.*, 2018). Incorporating landscape education into the curriculum has been beneficial in developing essential foundations in students, particularly in fostering active citizenry (Lugeri *et al.,* 2019). Furthermore, the history of outdoor education has revealed four themes from the existing literature: transculturality, space and place, religion and spirituality, and personality/personalities (Ningrum and Yani, 2016). By utilizing landscape as a strategic tool in communicating Territorial Sciences, society can be engaged in a joint action towards a sustainable future. Overall, landscape-based learning designs have the potential to promote environmental ethics and instill good values and behavior in learners.

The post-pandemic era has highlighted the importance of open, green spaces within educational institutions. These spaces serve a dual purpose: they provide a break from indoor confinement, promote mental well-being, and function as dynamic classrooms supporting experiential learning. Landscape design is no longer just about aesthetics but has become a critical pedagogical tool (González Ortiz, 2021). The move to online learning during the pandemic has blurred the boundaries between traditional and real-life learning spaces, emphasizing the need for a more holistic approach to educational design (Wardak *et al*., 2022). Schools, especially those with limited resources, are struggling to find solutions to create safe learning environments. Action research and service-learning experiences have emerged as potential solutions for upgrading and extending educational spaces while developing students' soft skills (Montiel *et al*., 2021). The pandemic has also

accelerated the use of technology in education, adapting activities and improving online platforms for remote learning (Reyes *et al*., 2021).

Landscape design provides opportunities to improve student's academic achievement and social-emotional intelligence, fostering an awareness of the natural environment and a training ground for sustainability (Lim and Perono Cacciafoco, 2021). Learning in nature-centric environments aids students in acquiring knowledge across subjects like science and cultivates learning through sensory experiences (Mirrahimi *et al*., 2011). Moreover, intentionally landscaped educational settings bolster personal and social well-being, nurturing attributes such as self-confidence, cooperation, and problem-solving skills (Freire, 2013).

To engender a more environmentally-conscious generation, introducing landscape education into curricula can lay the groundwork for fostering active citizenry, making students more attuned to the environment and the challenges it faces (Warming, 2017). Garden-based education, an extension of this philosophy, capitalizing on landscape design, extends tangible benefits to student learning, physical and mental health, and holistic development (Newton, 2017).

Landscape design enhances teaching and outdoor recreational activities by providing engaging and safe learning environments that promote academic achievement, social development, and well-being.

This research focuses on the design and benefits of outdoor learning environments within agricultural education. Concentrating on the "Vasile Adamachi" Agricultural College of Food Industry in Iasi, we delve into the opportunities landscape design presents to enhance educational and recreational experiences.

The objectives of the study are:

1. Assessment & Analysis: To evaluate the current state of outdoor spaces within the college and identify potential areas for development and enhancement.

2. Innovative Design Proposals: Conceptualizing and proposing innovative designs for green areas that cater to educational needs and foster student engagement and well-being.

MATERIAL AND METHOD

1. Literature Review

A systematic review of existing literature was conducted to understand the impact of landscape designs on outdoor teaching and recreational activities.

Selection Criteria: Studies were selected based on their relevance to outdoor classrooms, student engagement, and well-being. Only studies conducted after 2000 were considered to ensure the most recent trends and findings.

Sources: Databases such as Web of Science, Scopus, and Google Scholar were scoured for relevant research papers, articles, and case studies.

2. Case Study Analysis

Three case studies from the reviewed literature were selected for a detailed analysis. These studies were chosen based on their relevance and the depth of information they provided on the benefits of landscape designs.

Criteria for Analysis: Each study was analyzed to understand the type of

landscape design used, its impact on students, and any notable strategies or features that enhanced student engagement and well-being.

3. Landscape Design Proposals

Based on the literature review and case study analysis findings, two landscape design proposals were developed for the "Vasile Adamachi" Agricultural College of Food Industry in Iasi.

Design Principles: The proposals were grounded in eco-learning principles, enhancing student welfare and utilizing natural elements.

4. Tools and Software

The landscape design proposals were visualized using Autodesk® AutoCAD 2D, a leading computer-aided design software. This tool enabled a precise and detailed representation of the space and features, ensuring accuracy in the layouts and allowing for iterative revisions based on feedback.

RESULTS AND DISCUSSIONS

1. Case Study Analysis

a. The Geoscience Garden (figure 1) is a simulated field environment on the University of Alberta North Campus that allows Earth Science students to develop field observation skills, interpret features of Earth's crust, and discover Earth's history (Waldron *et al.,* 2016; Waldron *et al.,* 2010). It consists of large boulders and rock slabs arranged in a landscaped layout representing the geology of western and northern Canada (Quarderer *et al.,* 2019; Remmen and Frøyland, 2017).

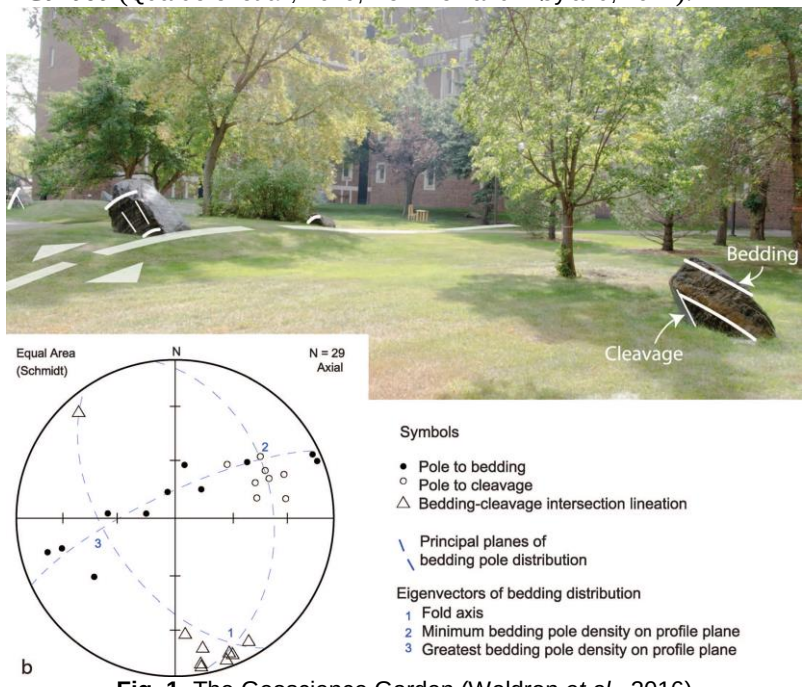

Fig. 1. The Geoscience Garden (Waldron *et al.,* 2016)

The garden serves as a local environment for teaching basic field skills to students and prepares them for field courses at more remote locations (Bogner, 2002). Initial responses to the garden have been positive, with students reporting greater satisfaction with their ability to collect primary field data. The Geoscience Garden offers a unique opportunity for students to apply their classroom knowledge in a practical setting and enhances their understanding of Earth Science concepts.

b. Teacher and student perceptions of an outdoor classroom (figure 2) were examined in several studies. Both teachers and students reported increased perceptions of well-being, pleasure, and interest when teaching and learning in the outdoor classroom. Children with disabilities were less distracted and more on-task when working in the outdoor classroom. The study contributes to the understanding that outdoor exposure is essential for healthy child development and the well-being of teachers and students (Guardino *et al.*, 2019).

The findings suggest that providing access to an outdoor classroom or utilizing outdoor spaces within a schoolyard can benefit learning and well-being (Guardino *et al.*, 2019).

Fig. 2. Comparison between indoor and outdoor classroom (Guardino *et al.*, 2019)

c. Urban riparian restoration projects provide opportunities for college and high school students to collaborate in conservation efforts and engage in outdoor learning experiences. These projects aim to remove exotic vegetation and restore native plant coverage in urban creek areas (figure 3) (Purcell *et al.*, 2007). Through the involvement of local students, these restoration projects also serve as outdoor classrooms, educating the community about restoration and conservation (Riley and Spencer, 2000). The Waterways Restoration Institute has recognized the need

for hands-on experience in environmental restoration and has been involved in discussions about effectively teaching the field (Bartlett, 2011). Building an outdoor classroom and using it for experiential learning has been shown to improve comprehension of outdoor education and create better attitudes toward the environment (Krasny *et al.*, 2013). Restoration and stewardship projects, with significant community engagement, provide opportunities for environmental and biodiversity learning in cities (Hall and Bauer-Armstrong, 2010). The Earth Partnership for Schools program has successfully collaborated with students, teachers, and citizen volunteers to restore schoolyards and natural areas, addressing diversity, pollution prevention, and ecological literacy.

Fig. 3. Restoration site (Purcell *et al.*, 2007)

2. Landscape Design Proposals

a. The first landscape design proposal (figure 4) embodies a rustic theme, a testament to an aesthetic that draws inspiration from nature, simplicity, and authenticity.

Rustic Style: This style is palpably manifested in the design, primarily due to the maple wood furniture, which retains its inherent natural and robust character. Wooden furniture is frequently synonymous with the rustic style, given its intrinsic connection to nature.

Amphitheater Layout: The choice to arrange the furniture in an amphitheater fashion is ingenious. It allows students to have personalized space while concurrently fostering a sense of community. It is especially apt for group discussions or outdoor educational activities.

Furniture Placement: The decision to situate the furniture in the northern quadrant of the plot, shielded by the canopy of linden trees, is pragmatic. The lindens are a protective barrier against the sun's rays, making the area conducive for relaxation or scholarly pursuits.

Vegetation: Opting for perennial plants is reasonable for the region's climate, ensuring the garden remains verdant and thriving throughout the year: each chosen plant augments the aesthetic and functional value of the ensemble.

Access Paths: The two delineated access pathways are pivotal for seamless circulation and to demarcate activity and relaxation zones. They guide visitors

toward the garden's focal points and establish visual and functional segregation between various landscape segments.

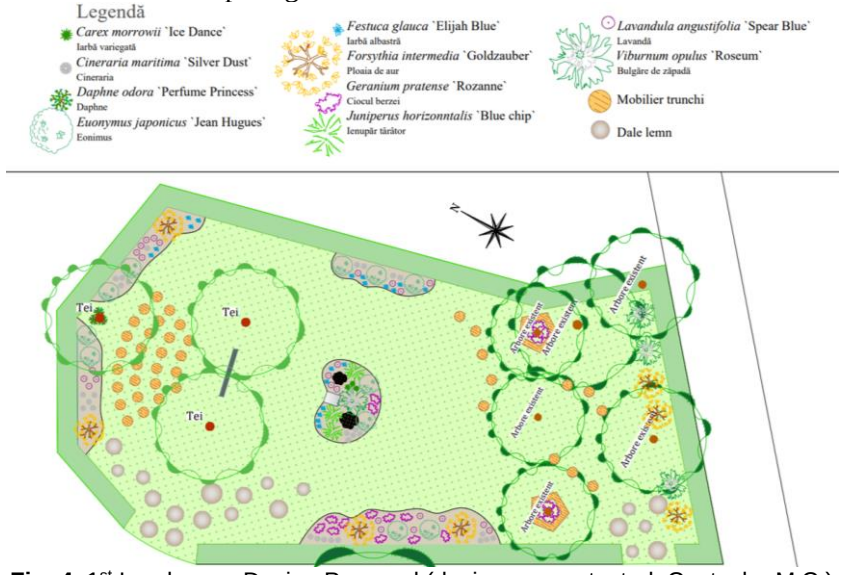

Fig. 4. 1st Landscape Design Proposal (design concept: stud. Costache M.C.)

The presented design seamlessly melds natural elements with human-made constructs, forging an outdoor realm that promotes relaxation, engagement, and education. It is a sterling exemplar of how aesthetics can harmoniously coexist with functionality in green space planning.

b. The second landscape design proposal (figure 5) articulates a harmonious arrangement centered on unity and cohesion, enhanced by strategically placing furniture in a circular form while ensuring protection against the elements and facilitating seamless movement with split pathways for diverse activities.

Circular Furniture Arrangement: In this design, the emphasis is on promoting unity and collaboration within the group. Distributing the furniture elements in a circular form creates a palpable sense of togetherness and harmony. Such an arrangement often facilitates group discussions collaborative tasks and fosters a sense of community among users.

Shelter Installation: One of the salient features of this design is the introduction of a canopy above the workspace. Recognizing the importance of protecting users from direct sunlight, the shelter is an effective sunshade, ensuring comfort during outdoor activities. This feature is particularly crucial as one of the three Linden trees is repurposed to provide shade for the relaxation area, not the workspace.

Plant Palette Consistency with Varied Placement: The placement strategy differs while the plant selection remains consistent with the first design. Plants are spread throughout the landscape, creating an evenly distributed green canvas. This ensures that no matter where one is within the space, they are always near nature, enhancing the overall ambiance and sensory experience.

Pathway Bifurcation: In a strategic move to enhance accessibility, the primary pathway is proposed to be split. This bifurcation serves a dual purpose: it facilitates smoother movement and defines distinct zones within the landscape. One path leads to the teaching area, while the other directs users to relaxation spots. This clear distinction ensures that learning and leisure activities coexist without interfering.

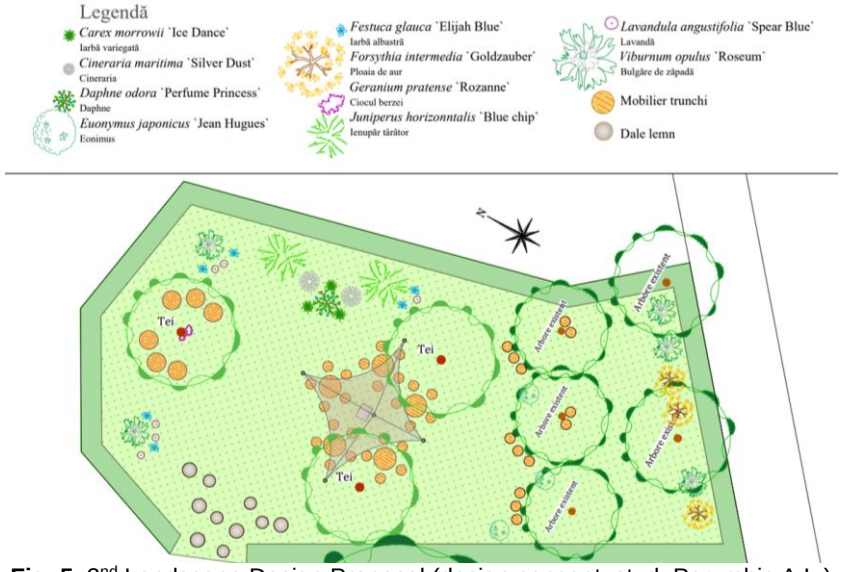

Fig. 5. 2nd Landscape Design Proposal (design concept: stud. Porumbic A.L.)

The second landscape design proposal offers a harmonious blend of functionality and aesthetics. Making deliberate choices in furniture arrangement, shade provision, plant placement, and pathway design ensures an environment conducive to learning and relaxation. The design exemplifies how thoughtful planning can transform an outdoor space into a versatile, user-friendly environment.

CONCLUSIONS

1. The importance of landscape design in educational settings has historical roots, with a significant role in shaping educational and recreational environments. These well-designed outdoor spaces enhance students' cognitive development, well-being, and holistic learning experiences.

2. Landscape design promotes an integrative learning mode, combining cognitive, emotional, and sensory experiences. This comprehensive approach fosters a deeper understanding of subjects and plays a role in developing students' values, behaviors, and environmental ethics.

3. The post-pandemic era has spotlighted the value of open, green spaces within educational settings. These areas are essential for breaking away from indoor confines and facilitating dynamic, experiential learning. As a result, landscape design has evolved from being primarily aesthetic to being a vital pedagogical tool.

4. Analyzing various case studies sheds light on the multi-faceted benefits of landscape design in education. From the Geoscience Garden enhancing Earth Science comprehension to the positive perceptions from teachers and students about outdoor classrooms and the community-driven urban riparian restoration projects, it's evident that landscape-driven educational spaces significantly bolster learning and well-being.

5. The landscape design proposals for the "Vasile Adamachi" Agricultural College of Food Industry in Iasi showcase innovative ways to incorporate eco-learning principles and natural elements to foster student welfare. The designs emphasized functionality, aesthetics, and protection against the elements, demonstrating how landscape can create engaging, safe, and beneficial educational environments.

6. This research underscores the transformative potential of landscape design in educational and recreational activities. By prioritizing green spaces and integrating them into curricula and school infrastructure, there is an opportunity to improve academic outcomes, boost student well-being, and cultivate a deeper connection with the environment. As society moves forward, it becomes imperative to consider landscape design essential to future educational strategies.

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