

E-BOOK OF EXTENDED ABSTRACT

THE 14TH INTERNATIONAL INVENTION, INNOVATION & DESIGN COMPETITION 2025



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DESIGN COMPETITION 2025

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LEARNING BEYOND WALLS: OUTDOOR EDUCATION FOR DESIGN THINKING IN BUILT ENVIRONMENT

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ABSTRACT

This innovation paper investigates the use of outdoor education as a pedagogical tool to enhance design thinking in built environment education. Implemented with undergraduate students from town planning, architecture and interior design programs at a Malaysian university, the intervention integrated structured outdoor activities into the studio curriculum. Students engaged in site-based tasks that required observational analysis, spatial interpretation, and interdisciplinary collaboration. The approach aimed to extend learning beyond conventional studio walls, fostering experiential and place-based understanding. Findings indicate that students developed stronger spatial awareness, environmental sensitivity, and confidence in applying theoretical concepts to real-world contexts. A role-reversal strategy where students presented site-based insights further encouraged reflective thinking and peer-led learning. The study concludes that outdoor experiential learning, when purposefully designed, can enrich built environment pedagogy and better prepare students for professional practice.

Keywords: outdoor learning, design thinking, built environment education, experiential pedagogy,

1. INTRODUCTION

The built environment is intrinsically connected to space, nature, and human interaction. Traditional classroom-based methods often detach students from these contextual realities. Recent educational strategies advocate for integrating outdoor interactive learning with student-led presentations, wherein learners assume the role of the lecturer. This approach aims to create an immersive, collaborative, and reflective educational experience that mirrors real-world practices. Such methodologies align with the development of 21st-century skills, emphasising communication, critical thinking, and contextual design awareness. Emerging research indicates that outdoor learning environments enhance creativity and spatial understanding among students (Lang, 2023). In disciplines related to the built environment, physical immersion in natural settings enables students to more effectively analyse scale, materiality, and environmental impact (Lorenz, 2024). Kolb's Experiential Learning Theory underscores the importance of active participation and reflection in deep learning processes (Kolb & Kolb, 2022). Furthermore, adopting constructivist pedagogies, where learners construct knowledge through teaching others, has been shown to foster engagement and reinforce understanding (Wijnen-Meijer et al., 2022).

Addressing the concept of "nature-deficit disorder," recent studies suggest that incorporating nature into educational settings can reduce stress and improve learning outcomes (Dong & Geng, 2023).

2. METHODOLOGY

The study involves undergraduate students in a built environment course, including town planning, architecture, and interior design, in a Malaysian university. Weekly sessions are conducted both on and off campus. To ensure interactive learning, a treasure hunt activity was done to help students explore real-world built environment elements through an engaging, collaborative outdoor challenge that connects classroom theory to physical spaces. The participants of this challenge are students in groups of 4–5. The lecturer prepared a worksheet with questions/tasks.

Examples of Tasks by Discipline:

- Urban Planning: Land use mapping, mobility analysis, public realm assessment, environmental response, and regulatory reflection.
- Architecture: Studying building form, orientation, materiality, scale, and detailing.
- Interior Design: Sensory mapping, space use analysis, material texture review, lighting evaluation, and ergonomic observation

The duration for this task is 3 hours. Each team must complete the tasks. In the last session, teams must present a quick 10-minute summary of their findings and reflections connecting observations to their respective topics.

3. FINDINGS

The integration of outdoor learning significantly improved students' understanding of spatial and contextual dynamics. Engaging directly with real sites enabled students to move beyond theoretical concepts and better understand physical factors such as sun orientation, material textures, and environmental behaviour. Many students reported a shift in their perception where design was no longer abstract but something tangible that they could physically interact with, experience, and interpret. This immersion helped them grasp how real-world conditions influence design decisions.

Creativity and conceptual thinking were also heightened. The sensory experience of being in an actual space, like feeling textures, hearing ambient sounds, observing how people interact, stimulated inspiration and led to more nuanced, human-centred design solutions. Students began incorporating cultural elements, natural patterns, and environmental responsiveness into their work. Sketching, photographing, and journaling became tools not just for documentation but for creative exploration and reflection.

Interdisciplinary collaboration emerged as another major benefit. Mixed-discipline teams mirrored real-world design environments, encouraging dialogue between future architects, planners, and interior designers. This fostered better communication, respect for diverse perspectives, and a more integrated design approach. Furthermore, students developed greater environmental literacy, gaining confidence in applying sustainable and passive design principles observed during site visits.

The role-reversal element, where students became presenters, boosted communication skills and critical reflection. Students took ownership of their learning, and many reported increased confidence in

discussing their ideas and findings. Presenting to peers also reinforced their understanding of core concepts, making the knowledge more lasting and applicable in future contexts.

Importantly, outdoor learning exposed students to real-world unpredictability. Challenges such as weather changes, navigation issues, and public space dynamics became authentic learning moments. These experiences taught adaptability, problem-solving, and resilience—traits that are vital in professional design practice. Transitioning from a lecturer-led model to a student-centred approach created a more open and dynamic learning environment, where students were active participants rather than passive recipients.

4. CONCLUSION

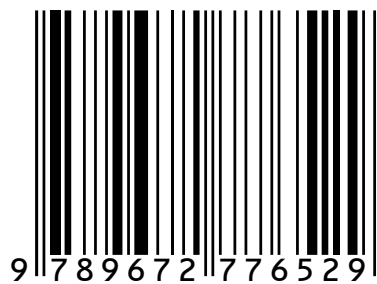
This innovation demonstrates that combining outdoor interactive learning with role-reversal pedagogy enriches built environment education. The outdoor setting inspires creativity, encourages contextual learning, and promotes a more reflective mindset, while student-led presentations foster autonomy, confidence, and deeper engagement with subject matter. The novelty of this approach lies in its dual-layered departure from traditional pedagogical models, which is Spatial Shift, where moving the classroom outdoors transforms the environment into an active learning space. This spatial recontextualization enhances sensory engagement and bridges theory with real-world environmental interaction. Another one is Pedagogical Shift by reversing the roles of lecturer and student, learners become knowledge providers, fostering ownership and accountability. This inversion encourages metacognition, critical thinking, and leadership skills essential for future professionals in the built environment sector. These shifts represent a holistic innovation in educational delivery, blending experiential and participatory methods to cultivate more engaged, skilled, and environmentally attuned graduates. Future research should explore scalability, long-term impacts on academic performance, and integration with digital tools for hybrid learning models.

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