Outdoor Education for Design Thinking: An Experiential Learning Approach in Built Environment Education

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ABSTRACT

Outdoor education has played an important strategy in the education of the built environment to promote the experiential learning. However, limited research exists on the role of outdoor activities in helping students understand the built environment and design thinking. This study examines the use of a treasure hunt as an outdoor teaching strategy to improve students' design thinking in the built environment. It was an event on campus. The students worked in groups on group assignments where they had to observe and analyze elements of the environment, landscape and architecture. A qualitative case study design was employed. Data for this research were collected via participant observation and student feedback and analyzed thematically. The findings showed that the outdoor learning activity improved students' spatial awareness, contextual understanding, teamwork and reflective thinking. The campus tour helped students better connect what they learn in the classroom to the real world, students said. It has also led to more critical observation, analysis and interpretation of design elements. Through working together on learning activities, they enhanced their communication and problem solving skills. The findings of the study indicate the use of structured outdoor learning activities to promote the development of design thinking through experiential learning opportunities beyond the classroom. Through direct interaction with the real environment, students were able to develop a better understanding of the theory and practice relationship and to acquire critical skills for the fields of the built environment. The findings add to the growing literature on experiential learning in higher education, and they provide useful guidance to instructors on the incorporation of outdoor learning in built environment programs to enhance student engagement and learning outcomes.

Keywords: outdoor education, outdoor learning activities, built environment

INTRODUCTION

Prejudice Built environment is built on people, place and natural environment. But for students in traditional classroom instruction, access to these real-world contexts is often limited. This research deals with an educational approach that combines outdoor interactive learning and student presentations where students can play the role of facilitators of the learning process. It seeks to generate a reflective, collaborative and experiential learning environment that mirrors professional practice in built environment disciplines. It also fosters the development of critical 21st century skills such as communication, critical thinking, collaboration and contextual design awareness. Studies have shown that outdoor learning has positive effects on creativity, environmental awareness and spatial understanding, as students learn from their own experience and interpretation of physical settings (Wells & Evans, 2003). Direct experience in outdoor spaces in built environment education allows students to reflect critically on spatial relationships, material properties and environmental conditions (Van den Berg et al., 2010). This approach in teaching is based on the experiential learning theory of Kolb (1984) that emphasizes active involvement and reflective practice as the element of meaningful learning. Similarly, interactive learning methods have been found to enhance students' motivation, engagement and knowledge retention (Prince, 2004). One of the constructivism principles is that students should be encouraged to lead discussions and to present learning content, because knowledge is actively constructed through teaching and working with peers (Palincsar & Brown, 1984). Research has shown that peer-led learning increases student engagement, confidence and conceptual understanding (Bovill, Cook-Sather, & Felten, 2011). Learning in

natural settings has also been associated with decreased stress, enhanced well-being and the development of open dialogue, collaborative learning and holistic thinking (Louv, 2008; Rickinson et al., 2004). This makes outdoor education a valuable pedagogical approach for built environment programmes.

Built Environment Education through Experiential Learning

Education in the built environment is concerned with understanding the complex relationships that exist between people, places and the physical environment. Salama (2015) points out that knowledge in architecture, landscape architecture, urban planning and related disciplines is best developed through direct engagement with real environments where students can observe, analyse and interpret spatial qualities, in contrast to many theoretical disciplines. In traditional classroom instruction, students lack opportunities to connect theoretical concepts with real world contexts, resulting in a fragmented understanding of the principles of environmental design. Thus, experiential learning has become a major pedagogical approach in the context of built environment education. Kolb (1984) defined learning as "the process whereby knowledge is created through the transformation of experience" which includes a continuous cycle of concrete experience, reflective observation, abstract conceptualisation and active experimentation. Learners do not passively receive information, but rather construct knowledge through interaction with the environment and reflection upon experience. According to Kolb, genuine experiences enhance learning because students are constantly using their theoretical knowledge in practical, real-world contexts. Likewise Dewey (1938) pointed out that education receives its meaning from experience. He argued that learning should be connected to real situations where inquiry, reflection and problem-solving are encouraged, not memorisation. These principles are particularly pertinent to design education where students are asked to interpret environmental conditions, evaluate design solutions and respond creatively to contextual challenges. Experiential learning has been identified by many scholars as the foundation for design education. Salama (2015) argues that students of architecture and built environment develop their critical thinking skills when the learning activities go beyond the studio classroom to the real urban context. They need to experience the real thing. Lectures and books can't convey the full complexity of the environment.

Outdoor Learning as Pedagogy

The value of outdoor learning as a pedagogical method for a variety of educational disciplines is increasingly being recognized. In outdoor education, the environment is not seen as a place for learning, but as an active resource for learning (Rickinson et al., 2004). Students gain a deeper understanding through direct work with physical settings through observation, investigation, and inquiry. Outdoor learning is an educational process that entails cognitive, social, emotional and environmental growth through planned activities in an outdoor setting, away from the traditional classrooms (Waite, 2011). Similarly, Beames, Higgins and Nicol (2012) argue that outdoor learning has the potential to increase curiosity, motivation and learner engagement as it provides opportunities for students to experience real-life situations that require active participation. Higher Education is seeing an increased use of outdoor learning in disciplines that need a contextual understanding such as Geography, Environmental Science, Ecology and the Built Environment. Students have a lot of opportunities for exploring spatial relationships, environmental quality, landscape qualities and architectural features in campus settings, urban contexts, parks and neighbourhoods (Temple, 2008). They help students to link theory to practice through observation and hence to develop a deeper understanding of the concepts. "It has also been shown that outdoor learning increases students' motivation and engagement. Rickinson et al. (2004) undertook a review of the literature on outdoor learning. They found that well-designed outdoor educational experiences consistently improve knowledge acquisition, attitudes towards learning, interpersonal skills and long-term retention of knowledge. These findings show that outdoor learning is far more educationally advantageous than traditional classroom learning.

Design Thinking in Built Environment Education

Design thinking is a vital skill in built environment education. It empowers students to tackle complex spatial problems through observation, creativity, critical analysis and iterative reasoning. Design thinking is a human-centric methodology that combines empathy, creativity, experimentation and collaboration to develop innovative solutions for complex problems (Brown, 2009). Moreover, Cross (2011) claims that designers have their own ways of knowing that are characterized by problem framing, visual reasoning and reflective inquiry. Design

thinking does not follow linear procedures, but instead involves learners interpreting contextual information, identifying relationships among environmental elements, and continuously evaluating alternative solutions. Schön (1983) defined the concept of reflective practice arguing that professional designers learn through reflecting-in-action as they engage with real design situations (p. 30). Reflection helps students to connect theory and practice and improves their knowledge in the design process. In education for the built environment, opportunities for direct observation of the environment are thus a key to the development of reflective practitioners capable of making informed design decisions. Although design thinking is receiving more attention, many higher education programs still rely on classroom instruction, limiting students' opportunities to engage with real-world environmental settings. This limitation may hinder students from developing contextual awareness and critical observation skills, which are fundamental to design practice.

Collaborative and Place Based Learning

The importance of collaborative learning has been long recognised in design education. According to Vygotsky (1978), knowledge is socially constructed through interaction with others. Learning in groups allows students to share perspectives, negotiate meanings and solve problems together that might be difficult to solve individually. Likewise, cooperative learning has been reported to enhance communication, critical thinking, interpersonal skills, and academic achievement (Johnson and Johnson, 2009). Design disciplines are collaborative activities, which provide students with multiple interpretations of environmental conditions and reflective discussion during problem-solving processes. Collaborative learning and place-based education are complementary because they share a focus on situated learning within local environments and communities. This is what Sobel (2004) refers to as place-based education, which encourages learners to investigate their local environments as important sites for inquiry and knowledge construction. Place-based approaches use local landscapes, buildings, and public spaces as educational resources rather than viewing learning environments as passive settings. A treasure hunt is one example of place-based learning, where students are asked to undertake active, structured investigations of physical spaces. These activities imply observation, interpretation, team work and problem solving and at the same time they provide students with an opportunity to link theoretical concepts with authentic spatial experiences. Research has shown that inquiry-based outdoor activities can increase learner engagement, curiosity and deeper understanding because students are active participants, not passive recipients of knowledge (Prince, 2004).

METHODOLOGY

A qualitative case study design was adopted to explore the impact of a structured outdoor learning activity on the enhancement of design thinking among undergraduate students in built environment education. A case study approach was adopted because it allows for an in-depth investigation of students' learning experiences in their real educational context (Yin, 2018). The research was conducted at Universiti Teknologi MARA (UiTM), Perak Branch, Malaysia for one academic semester.

The participants were undergraduate students, enrolled in the Built Environment programme which covers the disciplines of Architecture, Interior Architecture and Town and Regional Planning. Purposive sampling was employed on the basis that all participants had direct experience of the outdoor learning intervention, and were able to provide rich insight into the learning process (Patton, 2015). Students were organized in collaborative groups of four to five to foster interdisciplinary interaction, collaborative problem-solving and peer learning.

The outdoor learning intervention was developed based on Kolb's (1984) Experiential Learning Theory and Sobel's (2004) Place-Based Education model. Students participated in a structured campus exploration activity using worksheets that had them noting architectural elements, landscape features, environmental conditions, circulation patterns, and spatial relationships. The activity lasted about three hours, with students recording their observations in the form of field notes, sketches, and photographs. Once finished, each group gave a ten-minute presentation linking their observations to the theoretical concepts presented in the classroom sessions.

Data were collected from three qualitative sources: participant observation, students' group presentations and open-ended reflective feedback forms. Participant observations of student engagement, collaboration, communication, problem-solving behaviour and interaction with the physical environment. Presentations

showed students' understanding of design concepts, and reflective feedback revealed students' views of the learning experience.

Qualitative data were analysed using Braun and Clarke's (2006) six-phase thematic analysis. First, the researchers familiarized themselves with the data by reading field notes and student reflections multiple times. Initial codes were created and subsequently grouped into broader themes and categories. Theme names were revisited and defined to ensure consistency and alignment with research aims.

To increase the credibility of the research, methodological triangulation was used to cross-check the evidence obtained from participant observation, student presentations, and reflective feedback (Creswell & Poth, 2018). Peer debriefing was used by the researchers to review consistency of coding and to reduce the bias of the individual researcher. The credibility, dependability and confirmability of the findings were enhanced by using multiple data sources and collaborative interpretation.

Participation in the study was on a voluntary basis and students were advised that all the responses would be treated as confidential and for research purposes only. Identifiable information was not used for data analysis or reporting.

RESULTS AND DISCUSSION

Thematic analysis of participant observations, group presentations and students' reflective feedback identified four major themes: (1) enhanced spatial and contextual understanding, (2) development of design thinking skills, (3) collaborative learning and professional competencies, and (4) increased student engagement and reflective learning. Together these themes illustrate how structured outdoor learning activities can contribute to experiential learning in built environment education.

Improved Spatial and Contextual Awareness

The results suggest that outdoor experiential learning significantly increased students' understanding of spatial relationships and contextual design principles. In direct contact with the physical environment, students were able to move beyond abstract theoretical ideas and observe how architectural elements, landscape features, circulation systems, environmental conditions and human activities operate in the actual settings. During the field activity students gained awareness of on-site orientation, shading devices, material textures, accessibility and environmental responses to relate classroom knowledge to real design situations. Students frequently remarked that seeing the actual places helped them to understand ideas which had been hard to imagine in the lectures. Instead of relying only on drawings or photographs, they could experience the complexity of environmental conditions first-hand and recognize how design decisions respond to contextual constraints. By engaging with experience, they were led to critical observation and were strengthened in their capacity to interpret built environments in a systematic manner. These findings are consistent with Kolb's (1984) Experiential Learning Theory which holds that knowledge is constructed from concrete experience followed by reflection. Similarly, Salama (2015) stressed that built environment education is more meaningful when students experience real environments rather than just learning in the classroom. Therefore, the present study shows that outdoor learning provides authentic contexts that enhance students' spatial awareness and contextual understanding, both of which are important competencies for education in architecture, interior architecture, and urban planning.

Design Thinking Skills Development

Another important finding was the development of the students' design thinking abilities during the outdoor learning activity. Students were asked to observe the existing environment, analyze spatial problems, interpret user behaviour and propose appropriate design responses. The exercises allowed students to think critically, assess different options and come up with creative solutions based on real-life observations.The outdoor learning environment also fostered curiosity and inquiry. Rather than passively receiving information, students actively explored the site, questioned design decisions and discussed potential improvements with their peers. Their presentations showed a better ability to support design recommendations by using evidence collected from field

observations rather than by theoretical assumptions only. The results are consistent with Brown (2009) who describes design thinking as a human-centered problem-solving process that involves observation, empathy, experimentation and iterative reasoning. Similarly, Schön (1983) argues that reflective practitioners are constantly interpreting and evaluating design situations in authentic professional contexts. The results of the present study indicate that students can engage in the design thinking processes through structured outdoor activities by interacting directly with the built environment. Moreover, students demonstrated greater confidence in interpreting environmental problems and in proposing context-sensitive solutions, suggesting that experiential learning promotes not only conceptual understanding but also higher-order cognitive skills in professional design practice.

Learning Together and Professional Competencies

The study also found that collaborative outdoor learning improved students' interpersonal and professional competencies. The interdisciplinary group work made active discussion, shared decision-making, negotiation of ideas and collective problem-solving throughout the activity. Students learned to appreciate different disciplinary perspectives, bringing together knowledge from architecture, planning and interior design into a common understanding of the site. Participant observations showed that during the activity, group members took on different roles, including recording observations, measuring site conditions, drawing spatial arrangements, and reporting results. This collaborative process developed effective communication, leadership, teamwork and responsibility, all of which are essential competencies for future built environment professionals. The findings support Vygotsky's (1978) social constructivist theory that we learn through interaction with others. Similarly, Johnson and Johnson (2009) argue that cooperative learning improves communication skills, interpersonal relationships, and academic performance through the facilitation of students' joint knowledge construction. The interdisciplinary nature of the activity also reflects current professional practice where architects, planners and designers are working together collaboratively to solve complex environmental problems. Besides communication skills, students showed greater confidence in their presentations, both when describing their observations and when responding to questions from their peers. This strategy of role reversal turned students from passive learners to active contributors to the learning process and encouraged more ownership of learning.

Student Engagement and Reflective Learning

The final theme was increased student engagement and reflection in learning. In the outdoor activity, students demonstrated high levels of participation, enthusiasm and curiosity when interacting with the physical environment. The outdoor environment provided students opportunities of discovery, inquiry and reflection on real environmental scenarios unlike traditional classroom teaching. While carrying out the activity, students reflected by writing observations, discussing results with group members, and sharing conclusions with the class. Through these reflective processes, students were able to assess their own learning, compare views and further develop their knowledge of the concepts of the built environment. Many students thought that learning outside the classroom was more enjoyable and meaningful and memorable because they are actively involved in discovering knowledge rather than passively receiving information from the lecturers. The findings therefore lend further support to Prince's (2004) argument that active learning strategies greatly enhance student motivation, engagement and retention of knowledge. In a similar way, Rickinson et al. (2004) found that high quality outdoor learning experiences enhance cognitive development, interpersonal skills and long-term learning outcomes.

The study shows that outdoor experiential learning offers meaningful learning experiences for built environment students, fostering lifelong learning, self-reflection and professional confidence, in addition to enhancing academic understanding.

Limitation and Future Research

Some limitations of this study should be noted. First, a qualitative single-case study was conducted in one Malaysian public university, thus limiting the transferability of the findings to other educational institutions. Second, purposive sampling was used to recruit participants directly involved in the outdoor learning intervention and therefore findings should not be interpreted as representative of all built environment students.

Third, while methodological triangulation and peer debriefing were employed to enhance the credibility of the findings, the study mainly depended on participant observation and self-reported reflections that may be influenced by the researcher's interpretation and response bias. Finally, the study explored students' perceived learning experiences without incorporating objective quantitative measures of design thinking or academic performance.

Future research should extend to a broader spectrum of higher education institutions with larger and more diverse cohorts of participants to increase the generalizability of findings. Mixed methods approaches that combine qualitative evidence with quantitative measures such as design-thinking rubrics, creativity scales, and academic performance indicators would provide more comprehensive assessment of learning outcomes. Comparative studies with outdoor experiential learning in conjunction with traditional classroom instruction are also recommended to determine the relative effectiveness of different pedagogical approaches. Longitudinal studies should investigate whether the improvements in design thinking, collaboration, communication and professional competencies are sustained over time. Further research into different forms of outdoor experiential learning in architecture, interior architecture, landscape architecture, urban planning, and other related fields of the built environment could be an additional avenue.

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REFERENCES

1. Beames, S., Higgins, P., & Nicol, R. (2012). Learning outside the classroom: Theory and guidelines for practice. Routledge.
2. Bovill, C., Cook-Sather, A., & Felten, P. (2011). Students as co-creators of teaching approaches, course design, and curricula: Implications for academic developers. International Journal for Academic Development, 16(2), 133–145. https://doi.org/10.1080/1360144X.2011.568690
3. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa
4. Brown, T. (2009). Change by design: How design thinking transforms organizations and inspires innovation. HarperBusiness.
5. Creswell, J. W., & Poth, C. N. (2018). Qualitative inquiry and research design: Choosing among five approaches (4th ed.). SAGE Publications.
6. Cross, N. (2011). Design thinking: Understanding how designers think and work. Berg.
7. Dewey, J. (1938). Experience and education. Macmillan.
8. Johnson, D. W., & Johnson, R. T. (2009). An educational psychology success story: Social interdependence theory and cooperative learning. Educational Researcher, 38(5), 365–379. https://doi.org/10.3102/0013189X09339057
9. Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development. Prentice Hall.
10. Lincoln, Y. S., & Guba, E. G. (1985). Naturalistic Inquiry. Sage Publications.
11. Louv, R. (2008). Last child in the woods: Saving our children from nature-deficit disorder (Updated and expanded ed.). Algonquin Books.
12. Merriam, S. B., & Tisdell, E. J. (2016). Qualitative research: A guide to design and implementation (4th ed.). Jossey-Bass.
13. Palincsar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. Cognition and Instruction, 1(2), 117–175. https://doi.org/10.1207/s1532690xci0102_1
14. Patton, M. Q. (2015). Qualitative research & evaluation methods (4th ed.). SAGE Publications.
15. Prince, M. (2004). Does active learning work? A review of the research. Journal of Engineering Education, 93(3), 223–231. https://doi.org/10.1002/j.2168-9830.2004.tb00809.x

16. Rickinson, M., Dillon, J., Teamey, K., Morris, M., Choi, M. Y., Sanders, D., & Benefield, P. (2004). A review of research on outdoor learning. National Foundation for Educational Research.
17. Salama, A. M. (2015). Spatial design education: New directions for pedagogy in architecture and beyond. Routledge.
18. Schön, D. A. (1983). The reflective practitioner: How professionals think in action. Basic Books.
19. Sobel, D. (2004). Place-based education: Connecting classrooms and communities. Orion Society.
20. Temple, P. (2008). Learning spaces in higher education: An under-researched topic. London Review of Education, 6(3), 229–241. https://doi.org/10.1080/14748460802489363
21. Van den Berg, A. E., Hartig, T., & Staats, H. (2010). Preference for nature in urbanized societies: Stress, restoration, and the pursuit of sustainability. Journal of Social Issues, 63(1), 79–96. https://doi.org/10.1111/j.1540-4560.2007.00497.x
22. Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.
23. Waite, S. (2011). Teaching and learning outside the classroom: Personal values, alternative pedagogies and standards. Education 3–13, 39(1), 65–82. https://doi.org/10.1080/03004270903206141
24. Wells, N. M., & Evans, G. W. (2003). Nearby nature: A buffer of life stress among rural children. Environment and Behavior, 35(3), 311–330. https://doi.org/10.1177/0013916503035003001
25. Yin, R. K. (2018). Case study research and applications: Design and methods (6th ed.). SAGE Publications.