

A Review of Criteria for Outdoor Classroom in Selected Tertiary Educational Institutions in Kuala Lumpur

Maheran Y¹, Fadzidah A², Nur Fadhilah R³ and Farha S³

¹Asst. Professor, Department of Landscape Architecture, IIUM, Kuala Lumpur, Malaysia

²Asst. Professor, Department of Architecture, IIUM, Kuala Lumpur, Malaysia

³Postgraduate Student, Department of Landscape Architecture, IIUM, Kuala Lumpur, Malaysia

³Postgraduate Student, Department of Landscape Architecture, IIUM, Kuala Lumpur, Malaysia

E-mail: maheran@iium.edu.my¹, fadzidah@iium.edu.my², fadhilahrozali@gmail.com³, farha.rha9@gmail.com³

Abstract. A proper design outdoor environment in higher institutions contributes to the students' learning performances and produce better learning outcomes. Campus surrounding has the potential to provide an informal outdoor learning environment, especially when it has the existing physical element, like open spaces and natural features, that may support the learning process. However, scholarly discourses on environmental aspects in tertiary education have minimal environmental inputs to fulfill students' needs for outdoor exposure. Universities have always emphasized on traditional instructional methods in classroom settings, without concerning the importance of outdoor classroom towards students' learning needs. Moreover, the inconvenience and discomfort outdoor surrounding in campus environment offers a minimal opportunity for students to study outside the classroom, and students eventually do not favor to utilize the spaces because no learning facility is provided. Hence, the objective of this study is to identify the appropriate criteria of outdoor areas that could be converted to be outdoor classrooms in tertiary institutions. This paper presents a review of scholars' work in regards to the characteristics of the outdoor classrooms that could be designed as part of contemporary effective learning space, for the development of students' learning performances. The information gathered from this study will become useful knowledge in promoting effective outdoor classroom and create successful outdoor learning space in landscape campus design. It is hoped that the finding of this study could provide guidelines on how outdoor classrooms should be designed to improve students' academic achievement.

Keywords: outdoor classroom, campus landscape design, informal learning environment, teaching and learning

1. Introduction

An outdoor classroom is characterized an outdoor education facility that encourages teachers, learners, and educators to gain better knowledge and provide alternatives to learn and understand the interconnectedness of the natural resources [1]. In higher institutions, this approach is described as a tool that allows students and lecturers move their educational curriculum outdoors, and experience the natural and physical-created elements in natural settings.



As mentioned in [2], stated that the outdoor classroom provides opportunities to experience 'natural studies environment', as the physical environment creates positive impact towards student's learning possibilities and learning outcomes. Moreover, good landscape campus setting is essential to promote the physical and cognitive development of students and improve learning abilities.

The previous setting of Malaysian university campus settings is designed to accommodate formal teaching studies, like lecture halls, air-conditioned classrooms, and laboratories, with least consideration on integration with campus ground [2]. Studies by [4] also agreed that there is a lack of natural settings from primary schools to university level. Inconsiderate outdoor area and pocket spaces for a student's learning led to distinct interaction between the quality of the outdoor environment and the quality of life in the campus [3]. Hence, students tend to spend their break time indoor rather than outdoor, as the outdoor spaces are not functionally designed to support their learning activities.

This research has the objective to identify the criteria of the outdoor classroom in selected tertiary institutions, that is, the identification of the significant element of the outdoor classroom that could achieve physical and psychological realms of the students. The statement supported by scholars [19][10][14] underline physical element of outdoor classroom that contributes not only students experience, but also enhance educational pedagogy and students behavior settings.

2. Methods

Table research has been carried out to gather secondary data for this research, focusing on the significance criteria of the outdoor classroom in tertiary institutions in Kuala Lumpur. The aim of the analysis is to expand the understanding of the criteria of the outdoor classroom, and their relationship with student's learning activities. Review of articles was done to analyze and categorize the key parameters and significant attributes of the outdoor classroom. They are presented in table format, and selected were further elaborated in the findings section.

3. Outdoor Classroom in Tertiary Institutions

Malaysian campus settings are still applying traditional education practices which disservice to the academic aspirations of 21st century teaching institutions; that is, enriches students' lives with exposure to the natural environment and emphasizes the actual experience gain outside of the classroom [5]. The setting of outdoor learning in the university is important to encourage students to utilize the spaces vigorously and also to meet student's changing study needs [2]. Thus, by means, effective outdoor spaces that provides varying learning activities and promotes technological accessibility to aid students learning processes.

According to [4][6], connecting students with outdoor classroom helps to build a sense of belonging, develop social connections among peers and enhance personal skills performances including positive self- concept. The studies also highlight the advantages of the outdoor classroom in the learning environment which is (i) broadening educational performances (ii) developing individual potential (iii) motivating towards self-directed learning and also (iv) sharpening students' intellectual ability and psychological development.

Further view, studies by [19] acknowledges the component of outdoor spaces for active learning is according to the experiences and understanding of the connectivity between the architecture and landscape environment. Table 1 illustrates the three key features on an outdoor classroom for student – centered approaches.

Table 1. Key features of design spaces

Key features of design spaces for active learning
1. Sense of belonging
-The space that accommodates diverse students and public
-Maximize the use of day lighting to reduce energy use
-Multipurpose spaces for varying learning activities
-Comfortable spaces build a feeling of connection towards the environment
2. Flexibility and multi-use spaces
-Movable furniture to incorporate multifunction activities
-Highly flexible, self-contained and free distraction spaces
-Increasing flexibility spaces for specific functions / multifunction activities
-Design features that maximize user control
3. The uses of non-classroom spaces for learning
-Design spaces to overcome functions and services
-Space availability merges social interaction
-Usable transaction space between indoor and outdoor

The key features outlined 3 components of the establishment of learning spaces. The features are essential in designing the outdoor spaces with the building settings to encourage connections between campus layout and physical environment, intellectual culture and effective learning environment [2]. Therefore, a good campus environment does not only promotes positive learning attitudes, but also enhance students learning performances as preparations for students to overcome university challenges and beyond. In order to achieve the student – centered learning practices, the criteria of the outdoor classroom seem relevant to adequate the approach by considering the needs of students and educators, making it possible to support the transformation of the learning environment.

3.1 Criteria of Outdoor Classroom

A total of ten research articles was reviewed and included in the analysis. Table 2 shows the characteristics of the outdoor classroom in campus institutions, and the summaries of the literature reviewed are presented in the form of matrix data in Figure 1.

According to the analysis, most of the scholars agree that multi uses of outdoor classroom provide varied activities for students to achieve their physical and psychological development. Followed by the comfortable outdoor spaces and accessibility as most essential elements in the outdoor classroom. The comfortable spaces with the use of natural lighting controlled temperature and supported with suitable furniture enable students to utilize the spaces for any occasions⁷. Accessibility in outdoor spaces offers good connectivity movement in campus area for students in daily basis needs³. The continuity, directness and multiple choices of movement contribute to the increase of students walking in the campus and avoid massive vehicle usage.

Further view, the elements of calm, variety furniture, outdoor design element and technology and ICT tool changes learning spaces into flexible outdoor learning spaces. These findings support the previous study by [8] indicates that students much prefer outdoor spaces with movable furniture and the ability to use technology tools freely for learning activities. Besides, the calm environment allows students experience mental stability, reduce stress and relaxed mind [9]. Lastly, the criteria of outdoor classrooms, highlight the aesthetic element and social relation that affect student social integration at university campuses. As mentioned in [10] that describe the importance of social relation including students' interaction with peers and lecturers and the involvement in extra-curricular activities. These findings also support previous studies

by [8] indicates that outdoor spaces act as a community social space; engage students and faculty in participating in outdoor learning and forging connections, hence create a sense of belonging towards them.

Further examined, the physical features in the outdoor classroom enhance students towards learner-centered approach and promote the contemporary design element that suits their learning activities.

Table 2. Characteristic of the Outdoor Classroom

Authors	Characteristics of outdoor classroom	
Acker, S., and Miller, M., (2005)	1. Flexibility 2. Comfort 3. Ergonomic seating 4. 'Noise Zone'	5. Pervasive technology 6. Access learning media 7. Accessibility
Hunley, S., and Schaller, M., (2009)	1. Individual study -Free from distraction and noise -Comfortable -Pleasing aesthetic -Variety furniture -Good lighting	2. Group work discussion -Soft furniture for discussion -Controllable facilities -Spaces integrate needs and desires
Riddle, M., and Soultter, K., (2012)	1. Comfort spaces 2. Aesthetical values-simplicity and harmony 3. Physical and psychological flow of movement	4. Equity - the space support PWDs movement 5. Blending of technology tools and facilities 6. Repurposing -accommodate different activities as possible
Ibrahim, N., Fadzil, N., & Saruwono M., (2013)	1. Environmentally protected spaces 2. Flexibility 3. Furniture for learning	4. ICT tools and facilities 5. Varies design element beyond functional needs
Zandvliet, D., (2013)	1. Spatial environment -Space for physical and learning needs 2. Scale and aesthetics -Accessibility and attractiveness of space	3. Ambient factors -Comfortable designed spaces 4. Architectural element -Flow and layout of spaces 5. Visual element -Availability and adaptability lighting in outdoor setting
Matloob, F., Sulaiman, A., Ali, T., Shamsuddin, S., & Mardyya, W., (2013)	1. Ease of movement -Connectivity -Legibility -Comfort and safety 2. Sense of identity -Local style -Native plants	3. Accessibility -Distance between spaces -Continuity -Ease finding spaces 4. Quality of public realm -Cleanliness -Overall appearance -Quietness
Ibrahim, N., and Fadzil, N., (2013)	1. Creative and innovative space 2. Multipurpose outdoor area 3. Integration between indoor and outdoor	4. Designed space provide activities 5. Outdoor spaces as a focal point 6. Shaded spaces 7. Technology Accessibility
Sedaghatnia, et. al., (2014)	1. Legibility 2. Social relation	3. Space quality 4. Accessibility 5. Comfort
Ali, S., Rostam, K., & Awang, A., (2014)	1. Thermal comfort -reduced temperature surroundings 2. Aesthetic value 3. Natural elements -students interact with nature	4. Identity of the space 5. Educational related concept -stimulate student's learning interest 6. Safety and security 7. Cleanliness
Hossini, S., Azemati, A., Elyasi, N., & Mozaffar, F., (2014)	1. Accessibility 2. Safety 3. Comfort 4. Comfortable furniture 5. Calm for private and meeting space	6. Eliminating non-emergency preventives 7. Multi-functional spaces 8. Sense of place

Figure 1. Matrix Data of the Characteristic of Outdoor Classroom

Criteria of outdoor classroom		Authors									
		Acker and miller	Hunley and Schaller	Riddle and Souler	Ibrahim et. al.,	Zandvliet	Matloob et. al.,	Ibrahim and Fadzil	Sedaghania et. al.,	Ali et. al.,	Hossini et. al.,
Flexibility & Multiuse of space		●	●	●	●	●		●			●
Comfort	Comfortable	●	●	●		●	●		●		●
	Calm	●	●				●				●
	Variety furniture	●	●		●						●
	Thermal comfort								●		
	Visual element		●			●					
	Cleanliness						●			●	
	Facilities	●	●								
	Security & safety						●			●	●
	Integration		●					●			●
Movement	Accessibility	●				●	●		●		●
	Connectivity		●	●			●				
	Equity			●							
	Legibility						●		●		
	Continuity						●				
Technology & ICT Tools		●		●	●			●			
Aesthetic	Simplicity & harmony		●	●							
	Natural element				●						
	Design element				●	●		●		●	
	Sense of identity						●			●	●
	Focal point							●			
Social Relation									●		

3.2 Design Principles of Outdoor Classroom

In addition, information on the criteria of the outdoor classroom, studies by [18][8][17][16] outline the design principles in the creation of contemporary learn spaces, that offer an inclusive environment and robust basis in assessing alternative concepts of outdoor classroom settings. Table 3 illustrates the design principles for learning spaces.

Studies by [8] elaborate the use of technology brought unique capabilities to learning. Students recognize the technology supports that provide the fastest way of learning, especially in completing the project that needs multiple works. Moreover, students share the information, communicate with peers and access the information through mobile devices and wireless network. The increasing used of technology changes the outdoor spaces to be more flexible and networked, as the learning activities can occur in any place.

Table 3. The Design Principle for Learning Spaces

Author	Design Principles for Learning Spaces
Jamieson et. al., (2005) (Adoption of multi-disciplinary approaches)	1. Outdoor spaces for multiuse concurrently 2. Flexibility designed within each space 3. Design settings that have varied facilities 4. Design features and functions to maximize teacher and student control 5. Arrangement spaces to support student's curricula 6. Learning space design that provides accessibility for students
Oblinger, D. (2006) (Learner-centered approach to the design facilities)	2. Support multiple types of learning activities 3. Enable connection within surrounding 4. Accommodate information technology 5. Design spaces for comfort, safety and functionality 6. Reflect institutional values
Siddall, S. (2006)	1. Diversity spaces for learning activities 2. Versatile 3. Technologically reliable settings 4. Well-maintained facilities 5. The spaces should be universal in space and time 6. Effective learning space for student's multi activities 7. Sufficient resources allocated for learning spaces
Radcliffe et. al., (2009) (Spaces within an educational building)	1. Flexible outdoor spaces that accommodate current and evolving pedagogies 2. Future proofed settings that enable space to reconfigure and adapt external changes 3. The space that technology facilitated 4. Outdoor settings that inspire and promote creativity to users 5. Enterprising- Outdoor settings that support different purposes

The multi-use spaces in higher institutions are expanding into numerous space types to create a more attractive environment and more useable space [10]. The study conducted by [5] listed space types that is; (i) spaces for group teaching and learning with varying sizes and layouts, (ii) simulated environment with technological capacity, (iii) highly interactive virtual environments with ICT facilities, (iv) informal learning environment where peer-to-peer conversation, (v) clusters for student group work. (vi) private learning spaces and (vii) areas outside the buildings for individual or small group activity.

The third significant design principles as mentioned above is the flexible spaces that give opportunities to educators and learners choices to have multidisciplinary activities. According to [18][16], flexible spaces allow students to experience both indoor and outdoor learning environments, and transform the space from small group space to a large group discussion space. Thus, the spaces cater student-centered learning pedagogies and could be modified to suit with preferred learning styles and their needs.

4. Conclusion

Today's world concern on refining the educational perspectives embraces learning resources and technology as learning tools from primary to university level. Hence, outdoor classroom gives positive benefits to the students in all ranges of educational levels as the quality of the learning environment is affected the student's learning performances.

This review reveals that there is a considerable research suggesting the interacting parameters between the outdoor classroom and student's learning activities. Overall, the reviews suggest that the outdoor classroom can provide progressive outcomes in physical, psychological and emotional students in tertiary educations. The criteria of the outdoor classroom are very important in the campus landscape design as it is influencing students for learning, educating, meeting, exploring as well relaxing.

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