



PLANNING MALAYSIA:

Journal of the Malaysian Institute of Planners

VOLUME 23 ISSUE 6 (2025), Page 891 – 916

ASSESSING COURTYARD DESIGN: KEY FACTORS INFLUENCING STUDENTS SOCIAL INTERACTION IN HIGHER EDUCATION INSTITUTION

**Fadzidah Abdullah^{1*}, Nik Farhana Aminuddin², Nayeem Asif³,
Aliyah Nur Zafirah Sanusi⁴, Aida Kesuma Azmin⁵, Zeenat Begam Yusof⁶**

*^{1,2,3,4,5}Kulliyyah of Architecture and Environmental Design,
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA*

Abstract

Social interaction holds a critical role in enhancing the overall experience of students in higher education institution, especially for those in the built environment disciplines where collaborative group works are essential. In a campus environment, students need conducive outdoors spaces for them to socialise and have effective social interaction. Hence, in the context of social space and in the effort to promote social interaction among students, this research aims to assess courtyard design, evaluating the key factors influencing students' social interaction in higher education institution. The main objectives of the study are to identify factors of courtyard design that contribute to social interaction among students and to recommend courtyards attributes which could enhance students' social interaction for future campus planning development. This research utilises both qualitative and quantitative approaches, where observational analysis of a courtyard is undertaken as a case study, and survey questionnaires are used to evaluate factors of courtyard design that can contribute to social interaction among students. The findings highlight the prominent factors that contribute to social connectivity, and recommendations of courtyard design in campus planning for enhancing social interaction among students are also discussed.

Keywords: Courtyard Design, Campus Planning, Social Interaction, Social Space, Campus Courtyards, Outdoor Environment

¹ Corresponding author. Email: fadzidah@iium.edu.my

INTRODUCTION

Research has shown that there is a strong relationship between the physical environment and social interaction among students. Hence, it is imperative for schools and campus planning to consider providing conducive learning environment that could foster positive social behaviours (Shamsuddin et. al, 2012). In higher education institution, social interaction is a vital component of students' lives due to its vast impact on students' mental health, academic performance and overall well-being (Kahu, 2013). Mental health, especially depressive disorder, has almost become a frequent case in the world, including Malaysia. The issues have a significant impact on the personal, family, and social life of youth (Ni, Li & Wang, 2020). However, this concerning issue has not been widely discussed in scholarly discourses. Since the scenario of mental illness is common after the Covid-19 pandemic, it is becoming essential to highlight the issue to ensure remedial effort would be considered for campus planning, management, and maintenance. Providing conducive physical planning development and implementing social programs would be the driving forces to ensure positive development of students' mental empowerment (Omar, Othman & Mohd Yusoff, 2016), so that they could efficiently contented to be the leaders of the future.

Good physical campus planning may give big impact to students' wellbeing and influence their mood to interact with each other. Having this conducive space quality in a campus environment that encourages social interaction is considered an indicator of successful campus design, that leads to good quality of students' lives (Ervits, 2024). In this educational setting, physical environments are vital in ensuring students could have social interaction (Cantero, Mira & Lopez, 2016). Outdoor physical environments, such as courtyards, could serve as multifunctional spaces for students to have positive social interaction. Students could use courtyards for working collaboratively, socializing leisurely and stress-free studying. The positive impacts of students' wellbeing are obvious with the provision of green open space for social interaction (Kaczynski & Henderson, 2007).

In the case of higher education institution, the provision of courtyards on campus are highly important as they provide spaces where students can meet and engage to enhance their social interaction. Besides, courtyards are additional recreational areas for students, which helps to improve the environmental quality of the university (Cantero, Mira & Lopez, 2016). However, the spatial requirement for courtyards in campus environment may have differed from public courtyard (Almhafdy, et. al., 2013). There are several design considerations to be examined to comply with spatial requirements and students' satisfaction, especially in the provision of places for students to socialize. In addition, recent

studies suggest that a good courtyard can provide motivation for students and contribute to their happiness and comfort (Salameh & Touqan, 2020).

Hence, this study aims to evaluate courtyard design factors contributing to social interaction among students in tertiary educational learning environments. The main objectives of the study are to identify factors of courtyard design that contribute to social interaction among students and to recommend courtyards attributes which could enhance students' social interaction for future campus planning development.

LITERATURE REVIEW

Definition of Social Interaction

Social interaction tends to have a wide range of definition. The term social interaction reflects the myriad ways of connection between human beings, on how people engage, communicate, and respond to each other (King & Morris, 2022). Based on the psychological aspect, social interaction could be defined as any process that involves mutual engagement and reciprocal behaviour or stimulation between two or more people (Diaz, 2022). Social interaction is very important in constructing good mental health and to prevent any issues regarding psychological-related issues such as stress, depression and anxiety (Umberson & Karas Montez, 2010).

Social interaction is a fundamental aspect of human behaviour, particularly for students. Social interaction becomes a very crucial part of daily visual experience (McMahon & Isik, 2023). Students usually engage in social interaction on campus due to the variety of communication styles. Social interaction among students encompasses a wide range of communication together with behavioural responses towards each other (McMahon & Isik, 2023) and social interaction among students often occurs within their social context.

The Concept of Social Interaction

Social interaction involves dynamic and mutual engagement between two or more individuals. The impression of social interaction is a construction of visual information and how students process the constructive information cognitively. According to McMahon & Isik (2023), social interaction ranges from a very simple daily communication to more formal or complex conversation with family or friends. The key components to social interaction perceived by visual social primitive. Visual social primitive involves a distance between two people with their "facingness and contingent motion" (McMahon & Isik, 2023).

Hence, social interaction is very important for students not only to boost their confidence but to improve their daily community engagement. Moreover, social interaction has its core components, which are named as "Physical

Interaction, Communicative Interaction and Goal Compatibility.” Goal Compatibility is furthered categorises into “helping and hindering.” Figure 1 shows McMahon’s and Isik’s (2023) illustration of Visual Social Primitive between individuals and the core components of Social Interaction.

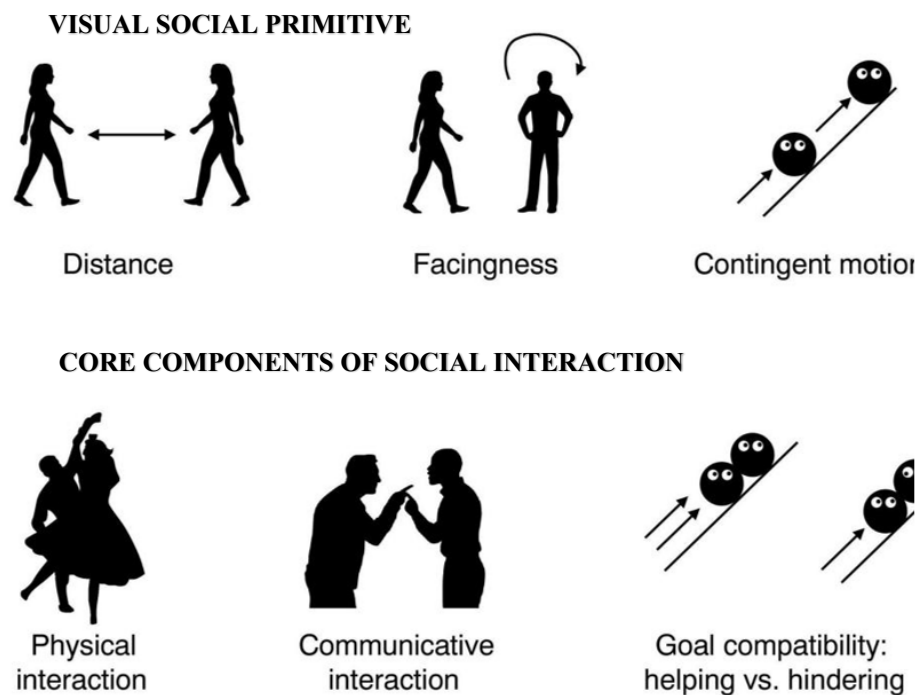


Figure 16: Visual Social Primitive and Core Components of Social Interaction, as described by McMahon and Isik (2023)

Factors Contributing to Social Interaction Issues

Issues with social interaction among students are instigated by several factors of circumstances resulting in the feeling of isolation, disconnection and loneliness which will then lead to mental health problems such as stress and anxiety (Hall & Goldberg, 1977). The factors contributing to social interaction issues are identified as technology overuse, lack of shared space, transitions of adjustment and cultural and socioeconomic behaviours (Mofatteh, 2020).

Recently, the situation has turned worse as covid-19 phenomenon leads to drastic increase on distant learning and online correspondence with peer and

class instructors. The long lock-down during the Covid19 pandemic, and the continual remote studying have a devastating impact of the way students learn and the way knowledge is delivered. These circumstances influence the development of students' social interaction, where being cut-off from their peers is among the most challenging aspect of studying. Consequently, many students are diagnosed of having mental health-related issues or stress, and some even receiving treatment for stress related problems. Generally, the perceived stress among students which leads to mental health issues comes from social, environmental, and psychological aspects. In Malaysia alone, Arifin et al., (2023) state that majority of students experience moderate to high levels of psychological distress, often linked to social adjustment difficulties, academic pressures, and limited coping resources (Arifin et al., 2023). of depression, anxiety, and stress among Malaysian universities students incurred due to a drastic change in the education system especially in teaching delivery. A recent study indicates that students in higher education institutions have experienced elevated levels of depression, anxiety, and stress, due to the rapid transformation of the education system, particularly in the methods of teaching and learning delivery (Kumaran, et. al., 2022).

In the context of higher education institutions, the lack of shared space has been the main factor for lack of social interaction among students. Communal space is supposed to be a facility for community engagement. Shared space consists of several types such as parks, courtyards, greenery, front yards, recreation fields, and lakes (Chen, Liu Xie & Marusix 2016). The absence of these shared spaces can result in the limitation of informal social interaction among students.

Courtyard Characteristic as Factor for Social Interaction

One of the key elements in enhancing social interaction among students in campus environment of higher education institutions is the design character of physical spaces (Kahu, 2013). In this context of study, there are a few characteristics of courtyards that can encourage social interaction among students. The courtyard creates an environment that provides a pleasant space for living and relaxation with the presence of several prominent characters (Safarzadeh & Bahardori, 2005). The most prominent element comes from the courtyard's spatial layout and other interesting characteristics of courtyards are the presence of natural elements, seating arrangement and environmental factors.

Natural elements in courtyard setting gives positive benefits to students as the quality of the learning environment is affected the student's learning performances. Considered as outdoor, courtyards connect the parameters between the outdoor learning environment and student's learning activities (Yaman, et. al., 2018). The courtyards can provide progressive outcomes in

physical, psychological and emotional wellbeing of students in higher education institutions. tertiary educations. Courtyard characteristics are very important to be considered in the campus landscape design as they influence the way students interact during the period of learning, educating, meeting, exploring and relaxing.

Courtyard Design Factors for Social Interaction

Originally, courtyards are considered as prominent architectural typology, utilised for cultural, environmental, social, and educational benefits, aimed at creating comfortable spaces for users, especially employed in Middle Eastern countries (Ibrahim, Al Badri, Mushtaha, Omar, 2022). Historically, courtyards underscored the Arab cultural significance and pivotal role in shaping the Arab countries identity as a social hub (Ezzeddine and Kashwani, 2019).

In all regions of the globe, courtyard is simply defined as an outdoor space surrounded by walls from all sides, but the impact of the courtyard is beyond just a space (Zhong, Schroder & Bekkering, 2022). The characteristics of the courtyard bring many values in terms of aesthetics, functions, and visuals. Therefore, the courtyard is a special area which gives relief to their inhabitants. Courtyards can give a sense of calm and ease (Kaczynski & Henderson, 2007) that could be considered suitable for students especially in higher educational levels. The result of having a good courtyard environment can improve students' mental health, self- esteem and their social participation (Vahid & Ibrahim, 2013). The courtyard can help in reducing stress and provide a connection with nature which makes a better quality of life for students.

Several studies have been conducted to identify courtyard design factors for social interaction of students in higher education institutions. Courtyards in higher education institutions have the goal to promote social interaction among students. A good courtyard is one that can function as a leisure space and also enhance social interaction among people. Courtyards in universities provide ample space for students to foster social communication among themselves. Courtyards can also be a spontaneous meeting point, discussion zone among classmates and recreational zone to take a break from class. The presence of the courtyard in campus environment enables the promotion of a healthy lifestyle, as students have a nearby space to release their stress (Saadatjoo, Badamchizadeh and Mahdavinejad 2023). The access to nature and outdoor spaces can help students to focus more on their mental and physical well-being rather than stay on the phone or going to any secluded building.

Conclusively, courtyard holds a variety of design features that can facilitate social interaction among students. Courtyard stands among one of the oldest architectural footprints that have been implemented in many buildings from previous years until today (Almhafdy, Ibrahim, Ahmad & Yahya, 2013). Courtyard creates an environment that provides a pleasant space for living and

relaxation with the presence of several prominent elements (Safarzadeh & Bahardori, 2005).

Table 1: Attributes of courtyard design for students' social interaction

Category	Attributes	Description / Importance	Sources
A Amenities	Gathering spaces	Areas that support both small and large group interaction, discussions, and community events.	Almhafdy et al., 2013; Saadatjoo et al., 2023
	Seating arrangement	Comfortable, varied seating promotes relaxation and informal meetings.	Safarzadeh & Bahardori, 2005
	Outdoor amenities	Inclusion of shelters, pergolas, or café-style areas enhances usability.	Almhafdy et al., 2013
	Water features	Encourage calmness, aesthetic pleasure, and reduce stress.	Safarzadeh & Bahardori, 2005
	Lighting	Adequate and warm lighting extends usability and ensures safety at night.	Almhafdy et al., 2013
B Design	Spatial layout	Open yet defined spaces encourage movement, visibility, and accessibility.	Zhong, Schroder & Bekkering, 2022
	Natural elements	Greenery and landscaping connect users with nature and improve well-being.	Yaman et al., 2018
	Visual connection	Visibility between buildings and courtyard enhances awareness and safety.	Kahu, 2013
	Human scale & proportion	Comfortable spatial dimensions encourage intimacy and interaction.	Ibrahim et al., 2022
	Architectural identity	Reflects local culture and institutional character, enhancing belonging.	Ezzeddine & Kashwani, 2019
C Function	Multipurpose use	Supports diverse activities—study, recreation, events, and exhibitions.	Saadatjoo et al., 2023
	Accessibility	Centrally located and connected to pedestrian routes for frequent use.	Chen, Liu, Xie & Marusix, 2016
	Informal learning space	Enables outdoor discussions and collaborative learning experiences.	Yaman et al., 2018
	Spontaneous interaction	Facilitates unplanned encounters that build social networks.	Vahid & Ibrahim, 2013
D Comfort	Thermal comfort	Shading, trees, and ventilation regulate temperature for usability.	Safarzadeh & Bahardori, 2005
	Acoustic comfort	Minimizes disruptive noise while maintaining social vibrancy.	Kaczynski & Henderson, 2007
	Psychological comfort	Provides calm, secure, and relaxing atmosphere that reduces stress.	Vahid & Ibrahim, 2013
	Safety and maintenance	Clean, visible, and well-lit areas promote user confidence.	Almhafdy et al., 2013
E Others	Cultural & social inclusivity	Encourages interaction among diverse groups and supports inclusiveness.	Kahu, 2013; Arifin et al., 2023
	Environmental sustainability	Uses eco-friendly materials and landscape promoting biodiversity.	Zhong, Schroder & Bekkering, 2022
	Connection to wellbeing	Reduces isolation and supports mental and physical health.	Hall & Goldberg, 1977; Mofatteh, 2020
	Adaptability	Flexible design accommodates evolving student needs and activities.	Saadatjoo et al., 2023

Courtyard is also usually found in public buildings or private houses that serve as meeting places for people to engage and to hold communal activities with family or friends (Almhafdy, Ibrahim, Ahmad & Yahya, 2013). The design feature of courtyard should have all these amenities: gathering space, open layout, outdoor amenities, outdoor lighting, water features, and accessibility. Based on the cited scholars' discourse, researchers have formulated Table 1, to summarise the attributes of good courtyard design for students' social interaction in campus environment.

RESEARCH METHODOLOGY

The Research Design

This study originally adopted a mixed-methods approach, as depicted in Figure 2. However, due to the article length limitations set by most journal publishers, the interview findings are not included in this discussion. Instead, the article highlights selected components of the overall research framework that are most relevant to the scope of this publication.

Henceforth, the discussion of this article focuses on qualitative approach of observational analysis of the case study, and the quantitative approach of survey questionnaires. A qualitative approach has been chosen as part of the method employed in this study because the approach could assist researchers in seeking knowledge and understanding the assumption from theories (Ghanad, 2023). Besides, observational case study of a courtyard is beneficial to provide input on how physical layout encourage different types of social interaction (Ahmad, Ullah, & Zobia, 2024). The method also the actual, spontaneous and intended uses of courtyard social space (Madihah Mat Idris, Magda Sibley, Karim Hadjri, Azhani Abd Manaf, 2021). Nurul Syuhada Badrul Halim et. al, (2025) suggest that photos or layout views of the existing courtyard should be included

allow comparison between student feedback and actual design features, thus strengthening the findings.

Meanwhile, for quantitative research approach, a survey questionnaire leads to the descriptive analysis of factors of courtyard design that can contribute to social interaction among students. The survey-questionnaires was distributed to KAED's students to gain information on their perception towards KAED courtyard. The survey includes recommendations to enhance better design for KAED courtyard. Survey questionnaire serves as the primary data collection method in this study. The structured questionnaire helps in establishing data on courtyard factors that can contribute to social interaction among students in tertiary education institutions. This research also utilizes content analysis of literature from previous research papers as secondary data to support data collection.

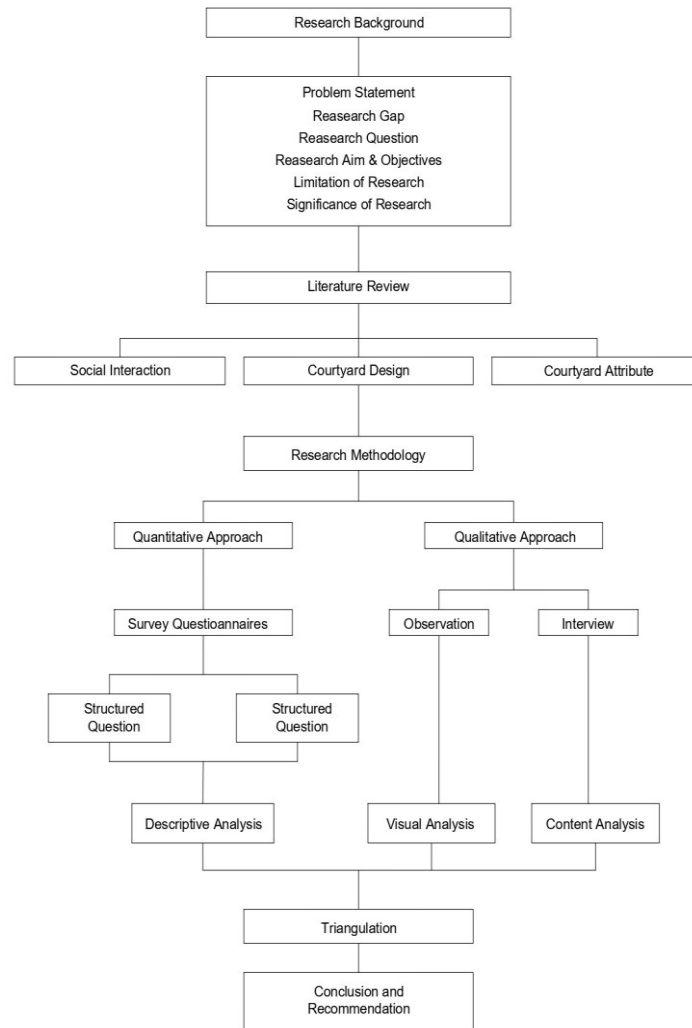


Figure 2: The Initial Research Framework

The survey questionnaire consists of five parts of structured questions, as shown in Table 2. Survey questionnaires help in the process of collecting data from students of tertiary institutions for more accurate results. This survey questionnaire was distributed to a total of 105 students from a tertiary institution from International Islamic University of Malaysia, Gombak branch. All the data collected was interpreted and analysed descriptively. The secondary data on the

other hand offers comprehensive review from previous research papers. This method helps in interpreting and analysing characteristics of courtyard design that can encourage social interaction and gives solid foundation towards this topic (Krippendorff, 2018).

Table 2: Structure of Survey Questionnaires

No.	Section	Description
1	Section A	Demographic Information
2	Section B	Attribute of KAED Courtyard to Social Interaction
3	Section C	Understanding Student's Activity and Social Interaction in KAED Courtyard
4	Section D	The Level of Comfort in KAED Courtyard
5	Section E	Perceptions, Recommendations and Comments

The Case Study

This research was conducted in the campus courtyard of the Kulliyyah of Architecture and Environmental Design (KAED) at the International Islamic University Malaysia (IIUM). The selection of KAED's courtyard as the case study site was based on the university's strong incorporation of Islamic architectural principles in its physical planning. The Gombak campus prominently features courtyards as a central design element in nearly all its buildings, reflecting the traditional Islamic emphasis on spatial harmony, community engagement, and contemplation. Historically, the courtyard in Islamic architecture serves as a space for social interaction, self-reflection, and communal gatherings. Figure 3 shows KAED Building of IIUM, and Figure 4 shows an aerial view of the IIUM Gombak campus with highlighted KAED building.



Figure 3: KAED Building of IIUM



Figure 4: An aerial view of the IIUM Gombak campus, with highlighted KAED building.

International Islamic University Malaysia (IIUM) is a public university in Malaysia. The study was conducted at the Kuala Lumpur campus in Gombak. IIUM Gombak campus has 14 faculties in total and they are called *Kulliyyahs*. Gombak campus accommodates the university administration, the Centre for Language and also Pre-University Academic Development.

Kulliyyah of Architecture and Environmental Design (KAED) was established on 1st June 1996. It was built to fulfil the demand for professional courses in a built environment. KAED offers unique programs and interesting

educational approaches in the built environment profession. KAED accommodates the following departments, as listed.

- Department of Architecture
- Department of Applied Arts and Design
- Department of Quantity Surveying
- Department of Urban and Regional Planning
- Department of Landscape Architecture

KAED has two courtyards, located at east and west of the building. The two courtyards are enclosed with seminar and lecture rooms. Specifically, one of the KAED courtyards was chosen because it accommodates students of architecture and environmental design, who are among individuals who possess a deeper appreciation of the courtyard's architectural, cultural, and environmental significance within the built environment.

The observation was conducted together with checklist items, formulated based on knowledge gained from review of literature. This method confirms that KAED courtyard provides all the necessary characteristics for the courtyard to serve as a space for social interaction among students. The west wing courtyard was not included in the research due to its inconducive environment, in front of timber, brick and concrete workshop. Figure 5 show the location of case study courtyard, highlighted with red coloured boxes, within the KAED building, and figure 6 shows the floor plan of KAED Building, showing the location of east courtyards.

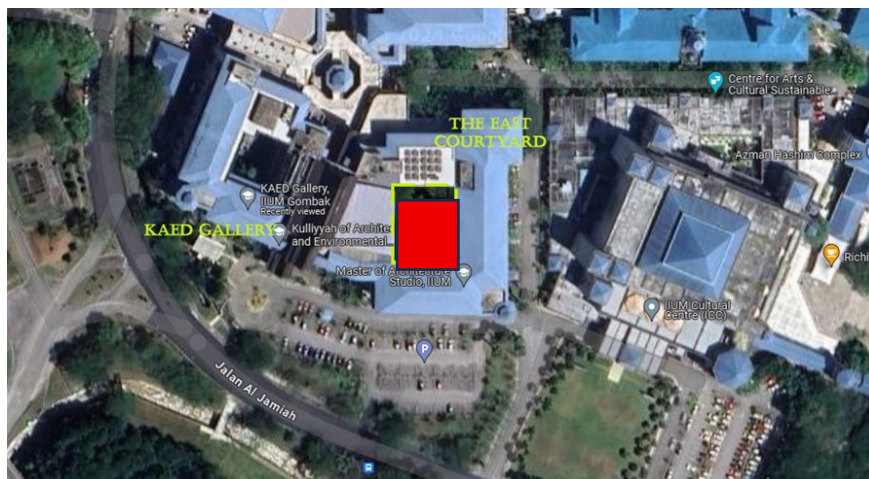


Figure 5: KAED Building of IIUM the location of case study courtyard within KAED's building.

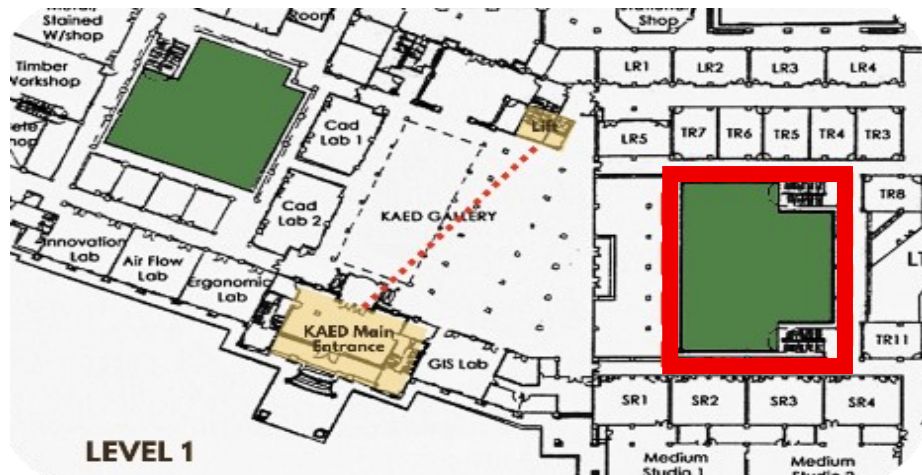


Figure 6: Floor plan of KAED Building, showing the location of courtyards.

ANALYSIS AND DISCUSSION

Analysis of Observation

KAED courtyard is one prominent space and centre of attention in the building. Each of the KAED courtyard is located at the East and West wing. The estimated area of the KAED courtyard is 25m X 30m. The layout of KAED courtyard is very straightforward; it is a rectangle layout with an open plan concept. No other wall or window attached to it apart from the main wall of KAED building. Figure 7 shows Partial Ground Floor Plan of KAED building, with the courtyard in the middle and highlighted access corridors. The plan shows the chosen KAED courtyard which is surrounded by classes, seminar rooms and design studios.

In terms of lighting and ventilation, KAED courtyard does not have to use any exterior lighting. It is an open courtyard where it receives natural ventilation and daylighting without having a roof. Figure 8 shows natural lighting illuminates the corridors along KAED courtyard in daylight. Since it is located in the middle of KAED building, KAED courtyard is mainly shaded except from the main part where it has all the natural features.

KAED courtyard is spacious enough for students to hold events or any activity involving a large number of students. In addition to that, KAED courtyard is directly facing the main hall of KAED building, hence it is very noticeable and most events will optimize the space at KAED courtyard. This shows that KAED courtyard holds an important role in making sure KAED building functionally good.

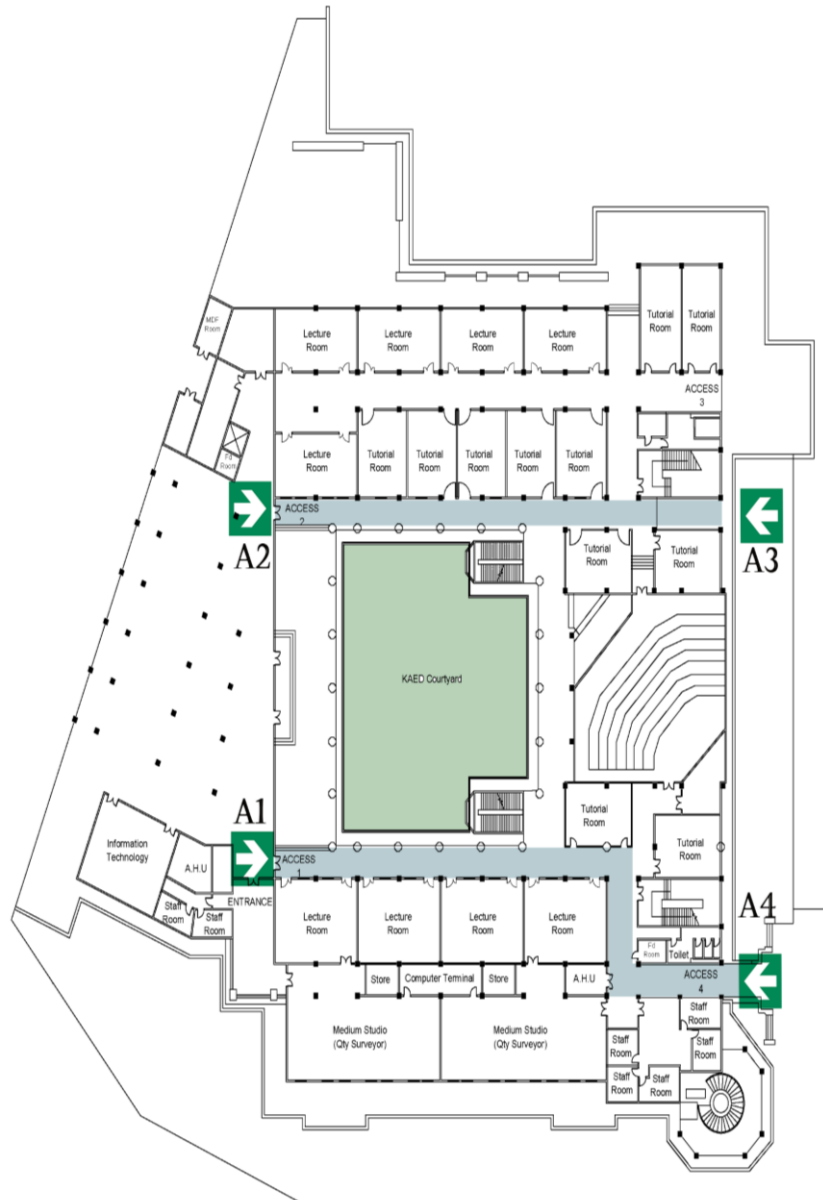


Figure 7: Partial Ground Floor Plan of KAED building,
 with the courtyard in the middle.



Figure 8: Partial Ground Floor Plan of KAED building, with the courtyard in the middle.

The access to KAED's courtyard is very simple. Students can enter from every corner of the building that leads to the parking area. Figure 9 shows the access for KAED courtyard. From the parking area, they will not be directly attached to the courtyard; however, they need to enter the KAED building until they find a door leading to the middle area. There are two doors which are available at one side of the courtyard separating it from KAED main exhibition hall. The other access is from another two sides which are semi open to the walkway heading to the back parking lot and centre of IIUM. Nonetheless, all access functions as they should and it is clear that KAED courtyard is very much accessible and easy to find.

The overall access to KAED courtyard is very easy to navigate due to the simple layout design. Figure 9 and 10 show the two accesses from the main entrance to KAED courtyard. KAED courtyard can accommodate people with disabilities to reach the courtyard which KAED building provides ramp at the entrance and also at one of the doors before entering KAED courtyard. However, no ramp was provided connecting the inner walkway and the centre of the courtyard.

KAED courtyard is located in the educational building which is accessible to all KAED's students hence, the social interaction of students can be seen. Furthermore, it is significant to the population of this study which is to measure the social interaction among higher education students. The accessibility and permeability of KAED courtyard are very high making it easy to observe for site investigation. Figure 11 shows the current condition of the KAED courtyard for the study.

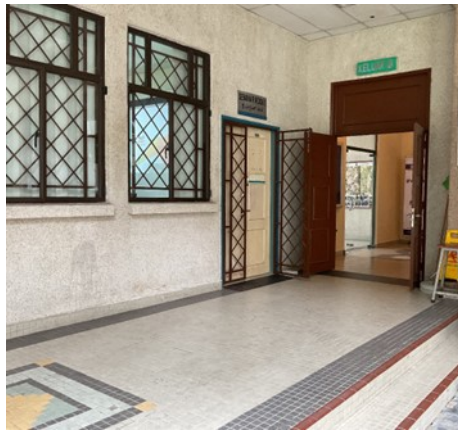


Figure 9: Access 1 to KAED Courtyard



Figure 10: Access 2 to KAED Courtyard

KAED courtyard is located in the educational building which is accessible to all KAED's students hence, the social interaction of students can be seen. Furthermore, it is significant to the population of this study which is to measure the social interaction among higher education students. The accessibility and permeability of KAED courtyard are very high making it easy to observe for site investigation. Figure 11 shows the current condition of the KAED courtyard for the study.



Figure 11: the current condition of the KAED courtyard

Assessing this courtyard helps to develop a proper understanding of what a courtyard should offer. It is also to measure the level of social interaction happening daily in institutional buildings. KAED courtyard probably offers distinctive insight into this main theme of the topic.

Analysis of Survey Questionnaires

This section presents and analyses the data collected through survey questionnaires. The analysis aims to discuss and interpret the findings in relation to the study's objectives. Specifically, it addresses the effectiveness of courtyard design attributes in fostering social interaction among students within the KAED building.

A total of 105 students ($n = 105$) from the International Islamic University Malaysia (IIUM), Gombak Campus, participated in the survey. The questionnaire was designed to assess students' perceptions of the factors that influence social interaction within the courtyard space. This research has a small sample size and non-random sampling because it does not intent to generate generation. Rather, this research findings is still significant to provide a foundation for institution-specific policies of campus planning.

A total of 105 students has submitted responses to these questionnaires. Figure 12 illustrates the percentage of students who agree their campus's courtyard is a good place for social interaction.

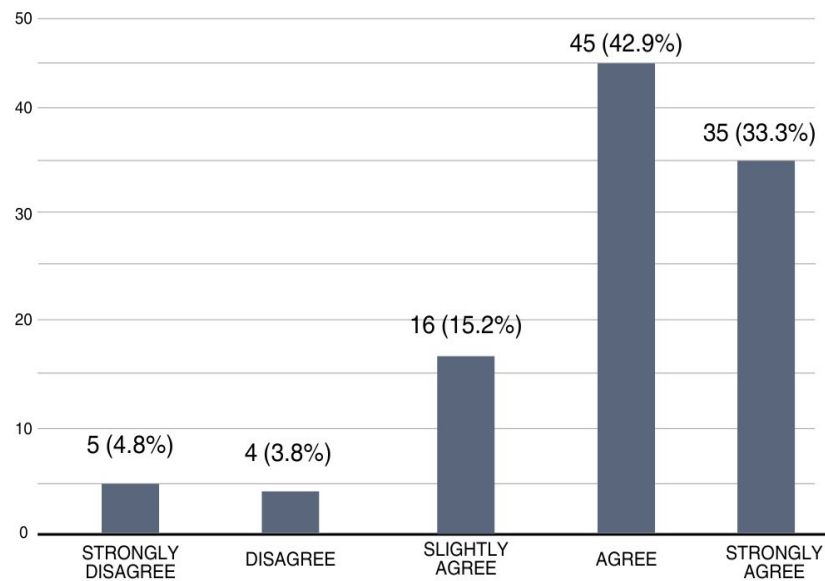


Figure 12: Bar Graph for Social Interaction

Figure 12 presents positive student responses on the courtyard as a social space. However, the analysis relies only on perceptions. Including photos or layout views of the existing courtyard would allow comparison between student feedback and actual design features, thus strengthening the findings.

The bar chart from figure 12 illustrates a visual presentation for the response of students towards their campus courtyard. The largest response group has recorded a total of 80 students who agree the campus courtyard is a good place for social interaction. This result suggested that the courtyard has successfully implemented features attracting more students to socialize.

The primary aim of this research is to evaluate the factors that contribute to social interaction among students. Hence, the high vote obtained probably because the courtyard has all the characteristics mentioned in a good courtyard design, such as the presence of natural elements, seating arrangement, accessibility and spatial design. The data in figure 12 specifically influenced by the positive response from students on their perception towards their campus's courtyard. Meanwhile, table 1 shows the rate of agreement from students towards the courtyard accessibility, seating areas, natural features and the gathering layout

which is strongly related with the response from figure 12. Table 3 shows data collected with a high percentage of agreement from students towards every characteristic of the courtyard.

Table 3: Level of Agreement towards Attribution of Courtyards to Social Interaction

Easily Accessible	Sufficient Seating Areas	Good Natural Features	Good Layout for Gathering
92.4% (Agree)	46.7% (Agree)	95.3% (Agree)	75.3% (Agree)
7.6% (Disagree)	53.3% (Disagree)	4.7% (Disagree)	24.7% (Disagree)

Upon examining the results, it shows that most students agree the courtyard is good for social interaction because it is highly accessible, has sufficient seating area, provides good natural elements and good layout for gathering. Most students with the percentage of 92.4% agree the courtyard is easily accessible and only 7.6% disagree, indicating that students have no problem accessing the courtyard making it easier for them to socialize. Hence, the results prove that accessibility, seating areas, natural features and layout are vital for designing a good courtyard that can encourage social interaction among students.

Findings on Perception and Recommendation

This section presents the data collected, to acknowledge respondents' opinion on their perception, recommendation and comments on the courtyard. This section shows design features that students prefer the most to be provided in the courtyard that can enhance their social interaction.

Figure 13 illustrates students particularly prefer seating areas the most in the courtyard followed by shaded areas and ICT facilities. The data indicates that to have a comfortable and functional courtyard, one needs to have a proper and sufficient seating area. The seating area is very important especially to enhance social interaction as students mostly come in groups and they need a comfortable place to gather and communicate among themselves. The next most important feature is the shaded area. Considering Malaysia's hot and humid weather, it is important for a courtyard to provide a shaded area so that people can gather and socialize whenever they want without having to worry about the weather. Hence, if these elements are implemented, the chances for social interaction among students in tertiary educational institutions is higher.

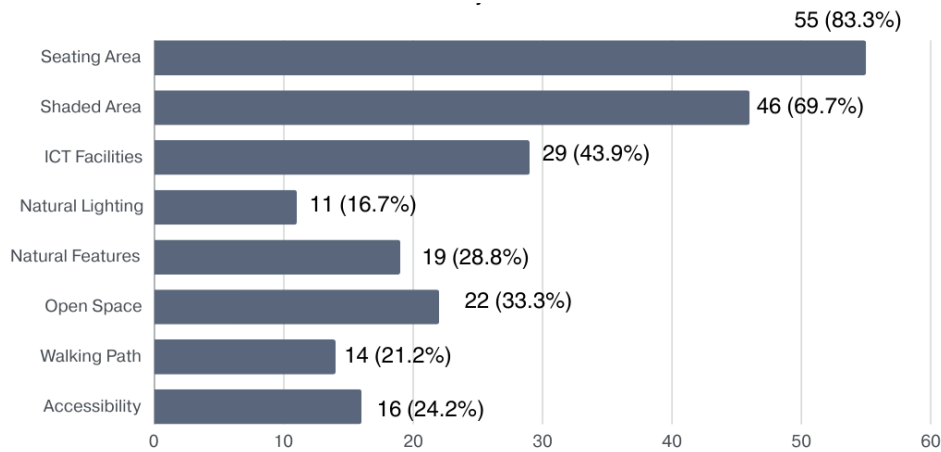


Figure 13: Bar Graph for Recommendation Survey

Discussion on Overall Survey Questionnaires

Courtyard has been a pivotal part of architectural design serving tranquility throughout the building. According to data collection and analysis, a courtyard can heavily influence social interaction among students. Courtyards should be designed with the needs of the users' mind as to serve the purpose of providing space for social interaction and not just aesthetically pleasing.

Based on the analysis of survey questionnaires, courtyard has the impact of providing a space that encourages collaboration for group work. Courtyards that offer spacious space, good seating areas and providing shaded areas can encourage students to engage in group work outside lecture rooms more often. Hence, this proves that courtyard design can be a factor contributing to social interaction among students in tertiary educational institutions. This result of the analysis can be a steppingstone for the courtyard to be provided with enough seating to attract students to come in within their break time to gather, relax and engage in conversation with their friends and even mutual friends from other departments. A good courtyard does have attribution to promote and enhance social interaction.

The overall results from data collection confirms with Kahu's ideas that the design character of physical spaces, specifically the courtyard, has a big impact on students' social interaction. The characteristics of the courtyard bring many values in terms of aesthetics, functions, and visuals and this can be proven by the result from students' preferences for elements to be provided in the courtyard.

CONCLUSION

In conclusion, this study emphasizes the critical role of social interaction among students in tertiary educational institutions and identifies the key factors that contribute to it. The findings highlight the significance of a well-designed and functional courtyard as a central spatial feature that fosters social engagement among students. Implementing essential design elements—such as adequate seating areas, the presence of natural features, and an effective spatial layout—is vital in creating a courtyard that supports both formal and informal social activities.

Specifically, the study underscores the importance of courtyard design in enhancing social interaction among students within the KAED building. A well-integrated courtyard equipped with natural elements, flexible seating, and shaded zones can significantly improve students' social dynamics. Beyond serving as a space for physical activity, the KAED courtyard acts as a social and recreational hub that positively contributes to students' psychological well-being.

Based on the findings, several design improvements can be introduced in the KAED courtyard to enhance social interaction among students. Future studies should be conducted to further evaluate and strengthen the courtyard's relevance as a social and communal space within the academic environment. Drawing from the literature and research outcomes, several design recommendations and considerations are proposed to create a more engaging and student-friendly courtyard experience:

- Incorporate interactive green spaces and flexible seating arrangements to provide students with personalized seating clusters while allowing them to enjoy the natural ambiance of the courtyard.
- Integrate interactive technological features such as wider Wi-Fi coverage and accessible USB charging ports to support both social and academic activities.
- Introduce more distinctive and architecturally appealing shaded areas to improve comfort, aesthetics, and usability throughout the day.

Moreover, proper maintenance of the courtyard's existing features is essential to ensure safety, functionality, and comfort. Although the current design of the KAED courtyard possesses notable strengths, there remains room for improvement to further enhance user experience and strengthen social interaction among KAED students.

REFERENCES

- Ab. Azis, S. S., Sipan, I., Sapri, M., Mohd Yusoff, N. S., & Abdullah Hashim, H. (2019). Comparison on energy saving: Green roof and green wall. *Planning Malaysia*, 17(9). <https://doi.org/10.21837/pm.v17i9.585>
- Ahmad, N., Ullah, U., & Zobia. (2024). Impact of school layouts on student learning and interaction: A comparative analysis of linear and courtyard designs in educational environments. *Annals of Human and Social Sciences*, 5(3), 299–311. [https://doi.org/10.35484/ahss.2024\(5-III\)28](https://doi.org/10.35484/ahss.2024(5-III)28)
- Almhafdy, A., Ibrahim, N., Ahmad, S. S., & Yahya, J. (2013). Analysis of the courtyard functions and its design variants in the Malaysian hospitals. *Procedia - Social and Behavioral Sciences*, 105, 171–182. <https://doi.org/10.1016/j.sbspro.2013.11.018>
- Aram, F., Higuera García, E., Solgi, E., & Mansournia, S. (2019). Urban green space cooling effect in cities. *Heliyon*, 5(4), Article e01339. <https://doi.org/10.1016/j.heliyon.2019.e01339>
- Arifis', Abdullah, S. S., Omar, N. E., Mohamed, N., Yusop, Y. M., & Hadi, N. M. H. (2023). The prevalence of mental health among Malaysian university students. *International Journal of Academic Research in Business and Social Sciences*, 13(12). <https://doi.org/10.6007/ijarbss/v13-i12/19796>
- Astell-Burt, T., & Feng, X. (2019). Association of urban green space with mental health and general health among adults in Australia. *JAMA Network Open*, 2(7), e198209. <https://doi.org/10.1001/jamanetworkopen.2019.8209>
- Bajirao, B. (2015). Importance of vegetation in urban environment. *International Journal of Scientific and Research Publications*, 5, 1–3.
- Berntsson, J. C. (2010). Green roof performance towards management of runoff water quantity and quality: A review. *Ecological Engineering*, 36(4), 351–360. <https://doi.org/10.1016/j.ecoleng.2009.12.014>
- Bradlow, E. T., & Fitzsimons, G. J. (2001). Subscale distance and item clustering effects in self-administered surveys: A new metric. *Journal of Marketing Research*, 38(2), 254–261. <https://doi.org/10.1509/jmkr.38.2.254.18837>
- Cantero, J. M. M., Mira, R. G., & López-Chao, V. (2016). Influence of physical learning environment in student's behavior and social relations. *The Anthropologist*, 25(3), 249–253. <https://doi.org/10.1080/09720073.2016.11892113>
- Chen, Y., Liu, T., Xie, X., & Marušić, B. (2016). What attracts people to visit community open spaces? A case study of the Overseas Chinese Town Community in Shenzhen, China. *International Journal of Environmental Research and Public Health*, 13(7), 644. <https://doi.org/10.3390/ijerph13070644>
- Cochran, W. G. (1977). *Sampling techniques* (3rd ed.). John Wiley & Sons.
- Department of Statistics Malaysia. (2023). *Department of Statistics Malaysia official portal*. <https://open.dosm.gov.my/dashboard/population>
- Diaz, D. (2022). The psychology of social interaction. University of Wolverhampton. Retrieved from <https://online.wlv.ac.uk/the-psychology-of-social-interaction/>
- Dunnett, N., & Kingsbury, N. (2008). *Planting green roofs and living walls*. Portland.
- Ervits, I. (2024). Developing indicators for the social benefits of university-industry collaborations. *International Journal of Corporate Social Responsibility*, 9(1). <https://doi.org/10.1186/s40991-024-00097-9>

- Ezzeddine, I., & Kashwani, G. (2019). Public squares in UAE sustainable urbanism: Social interaction & vibrant environment. *Architecture*, 9, 23–32. <https://doi.org/10.5923/j.arch.20190902.01>
- Feda, D. M., Seelbinder, A., Baek, S., Raja, S., Yin, L., & Roemmich, J. N. (2015). Neighbourhood parks and reduction in stress among adolescents: Results from Buffalo, New York. *Indoor and Built Environment*, 24(5), 631–639. <https://doi.org/10.1177/1420326X14535791>
- Feng, X., Toms, R., & Astell-Burt, T. (2022). The nexus between urban green space, housing type, and mental health. *Social Psychiatry and Psychiatric Epidemiology*, 57(9), 1917–1923. <https://doi.org/10.1007/s00127-022-02266-2>
- Galderisi, S., Heinz, A., Kastrup, M., Beezhold, J., & Sartorius, N. (2015). Toward a new definition of mental health. *World Psychiatry*, 14(2), 231–233. <https://doi.org/10.1002/wps.20231>
- Ghanad, A. (2023). An overview of quantitative research methods. *International Journal of Multidisciplinary Research and Analysis*, 6(8), 3794–3803. <https://doi.org/10.47191/ijmra/v6-i8-52>
- Guite, H. F., Clark, C., & Ackrill, G. (2006). The impact of the physical and urban environment on mental well-being. *Public Health*, 120(12), 1117–1126. <https://doi.org/10.1016/j.puhe.2006.10.005>
- Hall, R., & Goldberg, D. (1977). The role of social anxiety in social interaction difficulties. *British Journal of Psychiatry*, 131(6), 610–615. <https://doi.org/10.1192/bjp.131.6.610>
- Ibrahim, I., Al Badri, N., Mushtaha, E., & Omar, O. (2022). Evaluating the impacts of courtyards on educational buildings, case study in the University of Sharjah. *Sustainability*, 14(1), 141. <https://doi.org/10.3390/su14010141>
- Ismail, W. Z. W., Abdullah, M. N., Hashim, H., & Rani, W. S. W. (2018). An overview of green roof development in Malaysia and a way forward. *AIP Conference Proceedings*, 2016(1), 020058. <https://doi.org/10.1063/1.5055460>
- James, P., Hart, J. E., Banay, R. F., & Laden, F. (2016). Exposure to greenness and mortality in a nationwide prospective cohort study of women. *Environmental Health Perspectives*, 124(9), 1344–1352. <https://doi.org/10.1289/ehp.1510363>
- Jim, C. Y., & Tsang, S. W. (2011). Ecological energetics of tropical intensive green roof. *Energy and Buildings*, 43, 2696–2704. <https://doi.org/10.1016/j.enbuild.2011.06.018>
- Kaczynski, A. T., & Henderson, K. A. (2007). Environmental correlates of physical activity: A review of evidence about parks and recreation. *Leisure Sciences*, 29(4), 315–354. <https://doi.org/10.1080/01490400701394865>
- Kahu, E. R. (2013). Framing student engagement in higher education. *Studies in Higher Education*, 38(5), 758–773. <https://doi.org/10.1080/03075079.2011.598505>
- King, J., & Morris, S. (2021). Social interaction. In *Routledge eBooks* (pp. 313–324). <https://doi.org/10.4324/9780429321498-28>
- Krippendorff, K. (2018). *Content analysis: An introduction to its methodology*. Sage Publications.
- Lee, H. J., & Lee, D. K. (2019). Do sociodemographic factors and urban green space affect mental health outcomes among the urban elderly population? *International*

- Journal of Environmental Research and Public Health*, 16(5), 789.
<https://doi.org/10.3390/ijerph16050789>
- Lehmann, S. (2014). Low carbon districts: Mitigating the urban heat island with green roof infrastructure. *City, Culture and Society*, 5(1), 1–8.
<https://doi.org/10.1016/j.ccs.2014.02.002>
- Lo, S. M., Lo, A., & Yiu, C. Y. (2003). An analysis of attributes affecting urban open space design and their environmental implications. *Management of Environmental Quality: An International Journal*, 14(5), 604–614.
<https://doi.org/10.1108/14777830310495759>
- MacIntyre, T. E., Jones, M., Brewer, B. W., Van Raalte, J., O'Shea, D., & McCarthy, P. J. (2017). Editorial: Mental health challenges in elite sport: Balancing risk with reward. *Frontiers in Psychology*, 8, 1892.
<https://doi.org/10.3389/fpsyg.2017.01892>
- Madiah Mat Idris, Sibley, M., Hadjri, K., & Abd Manaf, A. (2021). Factors influencing the visit to the courtyard gardens in public hospitals in Malaysia. *Asian Journal of Environment-Behaviour Studies*, 6(20), 29. <https://doi.org/10.21834/e-bpj.v3i8.1413>
- Malaysian Mental Health Association, & Malaysian Psychiatric Association. (2021). *Mental health handbook*. <https://www.myhealthmylife.com.my//media/Project/Common/MyHealthMyLife/ComMY/Home/Mental-Health-Handbook-English.pdf>
- McMahon, E., & Isik, L. (2023). Seeing social interactions. *Trends in Cognitive Sciences*, 27(12), 1165–1179. <https://doi.org/10.1016/j.tics.2023.09.001>
- Misni, A., Jamaluddin, S., & Kamaruddin, S. M. (2015). Carbon sequestration through urban green reserve and open space. *Planning Malaysia*, 13(5). <https://doi.org/10.21837/pm.v13i5.142>
- Mofatteh, M. (2020). Risk factors associated with stress, anxiety, and depression among university undergraduate students. *AIMS Public Health*, 8(1), 36–65.
<https://doi.org/10.3934/publichealth.2021004>
- Ni, X., Li, X., & Wang, Y. (2020). The impact of family environment on the life satisfaction among young adults with personality as a mediator. *Children and Youth Services Review*, 120, 105653.
<https://doi.org/10.1016/j.childyouth.2020.105653>
- Nurul Syuhada Badrul Halim, et al. (2025). A mixed methods study on students' mental health challenges, treatment experiences, and care needs in a Malaysian public university. *International Journal of Research and Innovation in Social Science (IJRISS)*, 9(17), 569–584. <https://doi.org/10.47772/IJRISS.2025.917PSY0052>
- Omar, D., Omar, K. A., Othman, S., & Mohd Yusoff, Z. (2016). Walkability design for urban public housing park. *Environment-Behaviour Proceedings Journal*, 1(3), 311. <https://doi.org/10.21834/e-bpj.v1i3.375>
- Pope, D., Tisdall, R., Middleton, J., Verma, A., van Ameijden, E., Birt, C., Macherianakis, A., & Bruce, N. G. (2018). Quality of and access to green space in relation to psychological distress: Results from a population-based cross-sectional study as part of the EURO-URHIS 2 project. *European Journal of Public Health*, 28(1), 35–38. <https://doi.org/10.1093/eurpub/ckv094>

- Rezaei, M., Emmanuel, N., Kim, J., & Kim, D. H. (2021). Analyzing the impact of green roof functions on the citizens' mental health in metropolitan cities. *Iranian Journal of Public Health*, 50(5), 900–907. <https://doi.org/10.18502/ijph.v50i5.6107>
- Saadatjoo, P., Badamchizadeh, P., & Mahdavinejad, M. (2023). Towards the new generation of courtyard buildings as a healthy living concept for post-pandemic era. *Sustainable Cities and Society*, 97, 104726. <https://doi.org/10.1016/j.scs.2023.104726>
- Safarzadeh, H., & Bahadori, M. N. (2005). Passive cooling effects of courtyards. *Building and Environment*, 40(1), 89–104. <https://doi.org/10.1016/j.buildenv.2004.04.014>
- Salameh, M., & Touqan, B. (2020). Courtyard design in schools and its influence on students' satisfaction. *Proceedings of the 5th World Congress on Civil, Structural, and Environmental Engineering*. <https://doi.org/10.11159/icgre20.197>
- Sekaran, U., & Bougie, J. R. G. (2009). *Research methods for business: A skill building approach* (5th ed.). Wiley Publishers.
- Shamoo, A. E., & Resnik, D. B. (2009). *Responsible conduct of research* (2nd ed.). Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780195368246.001>
- Shamsuddin, S., et al. (2012). Relationship between the outdoor physical environment and student's social behaviour in urban secondary school. *Procedia - Social and Behavioral Sciences*, 50, 148–160. <https://doi.org/10.1016/j.sbspro.2012.08.023>
- Taylor, L., & Hochuli, D. F. (2017). Defining greenspace: Multiple uses across multiple disciplines. <https://doi.org/10.1016/j.landurbplan.2016.09.024>
- Trivedi, J. K., Sareen, H., & Dhyani, M. (2008). Rapid urbanization - Its impact on mental health: A South Asian perspective. *Indian Journal of Psychiatry*, 50(3), 161–165. <https://doi.org/10.4103/0019-5545.43623>
- Ulrich, R. S. (1986). Human responses to vegetation and landscapes. *Landscape and Urban Planning*, 13, 29–44. [https://doi.org/10.1016/0169-2046\(86\)90005-8](https://doi.org/10.1016/0169-2046(86)90005-8)
- Umberson, D., & Karas Montez, J. (2010). Social relationships and health: A flashpoint for health policy. *Journal of Health and Social Behavior*, 51(1_suppl), S54–S66. <https://doi.org/10.1177/0022146510383501>
- Vahid Bigdeli Rad, & Ibrahim Ngah. (2013). Public spaces and effective factors on social interactions. *International Journal of Current Engineering and Technology*, 3(1), 184–188.
- van Dillen, S. M., de Vries, S., Groenewegen, P. P., & Spreeuwenberg, P. (2012). Greenspace in urban neighbourhoods and residents' health: Adding quality to quantity. *Journal of Epidemiology and Community Health*, 66(6), e8. <https://doi.org/10.1136/jech.2009.104695>
- Vija Kumaran, V., Ismail, M. K., Thinagar, S., & Munawarrah, S. (2022). Mental health disorder among Malaysian universities students during COVID-19 pandemic. *Asian Journal of University Education*, 18(3), 735–744. <https://doi.org/10.24191/ajue.v18i3.18965>
- Weeland, J., Laceulle, O. M., Nederhof, E., Overbeek, G., & Reijneveld, S. A. (2019). The greener the better? Does neighborhood greenness buffer the effects of stressful life events on externalizing behavior in late adolescence? *Health & Place*, 58, 102163. <https://doi.org/10.1016/j.healthplace.2019.102163>

Fadzidah Abdullah, Nik Farhana Aminuddin, Nayeem Asif, Aliyah Nur Zafirah Sanusi, Aida Kesuma Azmin,
Zeenat Begam Yusof
ASSESSING COURTYARD DESIGN: KEY FACTORS INFLUENCING STUDENTS SOCIAL INTERACTION
IN HIGHER EDUCATION INSTITUTION

- Williams, K. J. H., Lee, K., Sergeant, L., Johnson, K., Rayner, J., Farrell, C., Miller, R., & Williams, N. S. G. (2019). Appraising the psychological benefits of green roofs for city residents and workers. *Urban Forestry and Urban Greening*, 126399. <https://doi.org/10.1016/j.ufug.2019.126399>
- Wood, L., Hooper, P., Foster, S., & Bull, F. (2017). Public green spaces and positive mental health - investigating the relationship between access, quantity and types of parks and mental wellbeing. *Health & Place*, 48, 63–71. <https://doi.org/10.1016/j.healthplace.2017.09.002>
- Yaman, M., et al. (2017). A review of criteria for outdoor classroom in selected tertiary educational institutions in Kuala Lumpur. *IOP Conference Series: Materials Science and Engineering*, 291, Article 012014. <https://doi.org/10.1088/1757-899X/291/1/012014>
- Zaliha KL has highest number of depressions, anxiety cases, says Dr Zaliha Mustafa. (n.d.). <https://www.bernama.com/en/bfokus/news.php?health&id=2191770>
- Zhong, W., Schröder, T., & Bekkering, J. (2021). Biophilic design in architecture and its contributions to health, well-being, and sustainability: A critical review. *Frontiers of Architectural Research*, 11(1), 114–141. <https://doi.org/10.1016/j.foar.2021.07.006>

Received: 3rd June 2025. Accepted: 3rd November 2025