

# The Impact of Campus Green Space Physical Environments on Students: A Case Study of Copperbelt University

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## Abstract

Studies have found that the designed environment of the university can influence the degree of stress students may feel and there is a relationship between university student use of campus green spaces and their perceptions of quality of life at a university. This study investigates the impact and usage of campus green spaces among 370 students from eight faculties at Copperbelt University using quantitative research methods. The research aims to explore the benefits of green spaces for students, including their capacity to restore attention and facilitate social interactions. Questionnaires and on-site observations were employed to measure design factors and students' perceptions, impact and their usage of campus green spaces. The results revealed that 70% of the participants appreciated the aesthetic contribution of green spaces to the university. However, a majority of students were found to be unaware of the numerous benefits these spaces offer, leading to limited interaction. The survey findings indicated that open spaces with abundant green cover were perceived as beautiful and enhanced the campus image, while those with easy accessibility facilitated higher usage. These results underscore the need to revisit campus green space design and provide valuable insights for sustainability policymakers and campus landscape designers to improve the overall appearance and promote diverse usage of these spaces. Dressing the current demand for student-valued features in campus green spaces, the university can create a more attractive and functional environment for its students.

## Keywords

Campus Green Spaces, Student Perceptions, Attention Restoration, Social Interactions, Design Factors, Usage, Sustainability, Landscape Aesthetics, University Environment

## 1. Introduction

Green spaces play a crucial role in university campuses, reflecting the demand for greenery among students and contributing to the overall perception of a “green environment”. Well-designed green spaces are not only aesthetically pleasing but also enhance the student experience and the university’s image. As students spend a lot of time on campus participating in activities which might result in fatigue, in this regard, campus environments that provide opportunities for direct contact with nature, such as through windows or photographs, have been shown to have a rejuvenating effect and promote healing (Gulwadi et al., 2019).

The recent trend of integrating campuses within urban settings has led to the adoption of biophilic design techniques, aiming to create resilient, healthier, and more productive urban landscapes. This approach emphasizes the incorporation of nature into various elements of built environments, including roads, walls, buildings, and watercourses. Therefore, by adopting such an urban campus model, the public would be put forward by its presence and voice, resulting in a dynamic relationship between the campus and its urban context (Haar, 2011).

Campus green spaces play a vital role in the planning and management of university Campuses, contributing to the overall development and attractiveness of cities. Understanding how students perceive and utilize these spaces is crucial for effective design and management. This study focuses on students’ usage patterns and perceptions of campus green spaces, aiming to provide insights for improving landscape aesthetics and meeting the diverse needs of students. By prioritizing well-designed green spaces, planners can enhance the student experience, foster community engagement, and contribute to the sustainability of both the campus and the surrounding urban environment (Misiune et al., 2021). Furthermore, the research seeks to determine the extent to which landscape aesthetics influence user perception and provide effective design recommendations for future green space projects. By raising awareness of the displacement of natural green spaces by concrete and asphalt due to urbanization, this study emphasizes the importance of preserving natural areas like forests and well-maintained lawns on university campuses. It calls upon city planners and local authorities to recognize that urbanization does not have to eradicate living nature, but rather encourages the adoption of a biophilic design concept that integrates nature into future green open space designs (Cabanek et al., 2020).

The findings of this study underscore the significance of campus green areas in students’ lives and highlight the strong connection between universities and cities in improving social interactions and user satisfaction.

## 2. University Green Space

The literature shows that many studies have been done to try and gain knowledge of green environments. These include studies on awareness, attitudes and perceptions of green building practices and principles, valuing urban green spaces in some residential areas, the nature of and challenges behind the deterioration and

poor management of urban green spaces, the use of GIS technologies in analyzing challenges and opportunities for the management of urban green spaces, sustainable green infrastructure, green neighborhood environments and their implications for health promotion, physical activity and well-being, and green spaces preference, perceptions and barriers in a rapidly urbanizing city (conducted a study on awareness, attitudes and perception of green building practices and principles in the Zambian construction industry (Mulenga et al., 2015). The study found that those who took part in sustainability construction projects showed greater awareness and knowledge than those who did not. Further, that knowledge gained was dependent on education levels.

Studies on the need for a green environment have also been done in other countries and regions in the developing world such as China, Asia and Latin America.

The younger generation is perceived to be at a higher risk for developing mental health disorders compared to their predecessors (Eleftheriades et al., 2020). University students confront problems of anxiety, fatigue, or depression given the academic and socio-economic pressures they face. Several studies have investigated the effect of schools' or universities' outdoor areas on students' wellbeing and academic performance. However, most studies are conducted in Europe, North America, China, and Japan.

### 3. The Copperbelt University

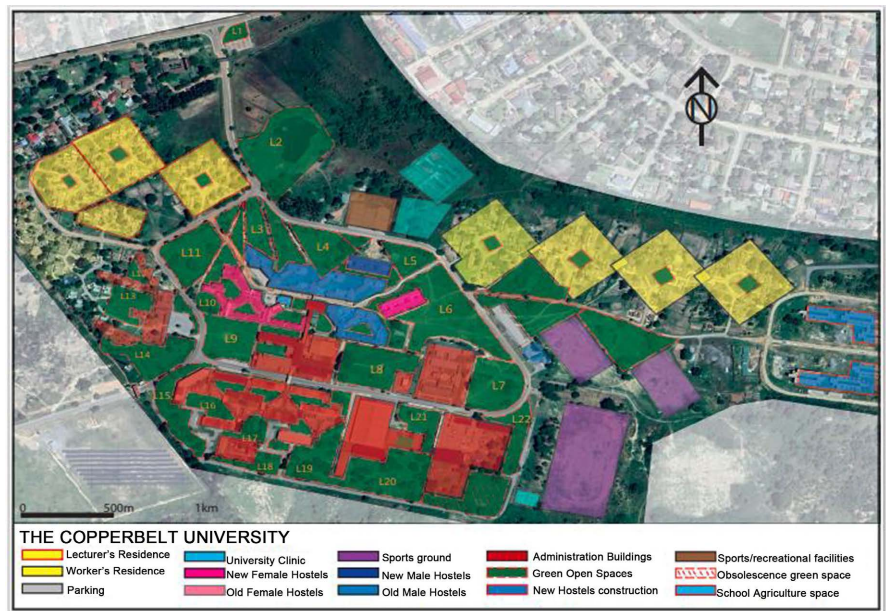
The Copperbelt University holds the distinction of being Zambia's second-highest institution of higher learning and is situated in the Riverside area of Kitwe, off Jumbo Drive. Its precise geographic coordinates are situated at the intersection of longitude 028°14'25"E and latitude 012°48'20"S. Established in 1987, the university's infrastructure was meticulously constructed utilizing natural stone, bricks, and concrete. At present, the sprawling main campus encompasses a range of administrative buildings catering to diverse faculties, such as Business, Natural Science, Mathematics, Built Environment, Engineering, Mines, Medicine, and the Faculty of Distance Education. Complementing the administrative structures are purpose-built teaching facilities, separate hostels catering to male and female students, a university hospital, a central library, and well-equipped laboratories. The campus is also equipped with sports facilities to cater to the holistic development of its student body as shown in **Figure 1**.

In line with the institution's growth and evolving educational requirements, additional construction endeavors have been undertaken to augment the existing infrastructure and facilitate the ever-increasing student enrollment. The strategic positioning of the campus along major thoroughfares ensures convenient accessibility for students and visitors alike (Li et al., 2019).

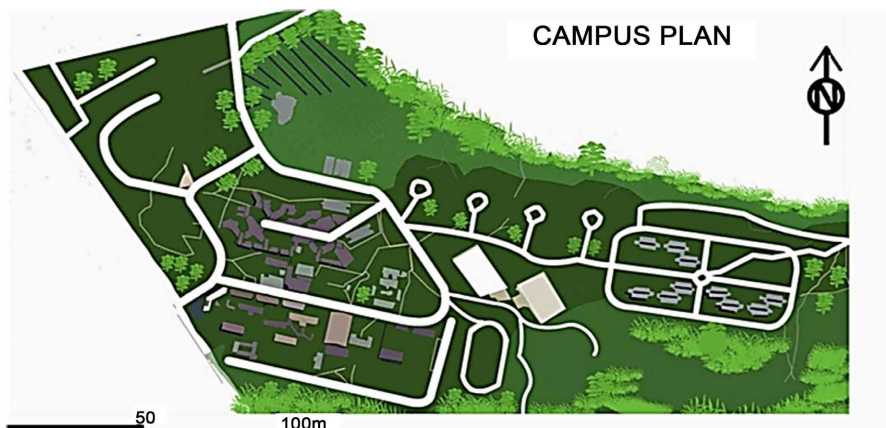
#### **Green Spaces in University at Copper belt University**

Green area in university is a very important entities to the students. Conferring to (Asamoah et al., 2017). a green area at the university is an area defined as a space covered with plants and good infrastructure. The research study covers

respondents from different faculties in the university as in **Figure 1**.



**Figure 1.** Copperbelt University land use map (<http://www.google.com/QGS/images/maps>).

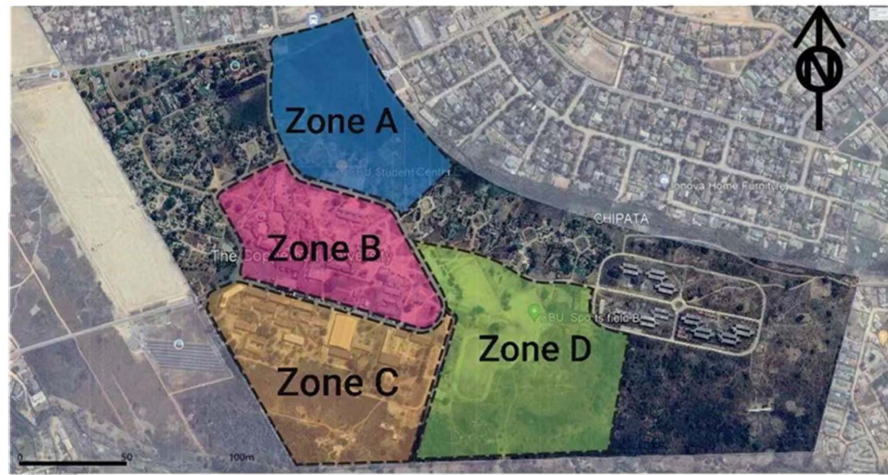


**Figure 2.** Campus plan (<http://www.google.com/QGS/images/maps>).

The site plan of Copperbelt University prioritizes green spaces, which serve various purposes. These areas, including parks, gardens, and walkways, enhance aesthetics, provide relaxation, and encourage social interaction. They also contribute to sustainability and biodiversity conservation, mitigating the heat island effect, improving air quality, and reducing noise as shown in **Figure 2**.

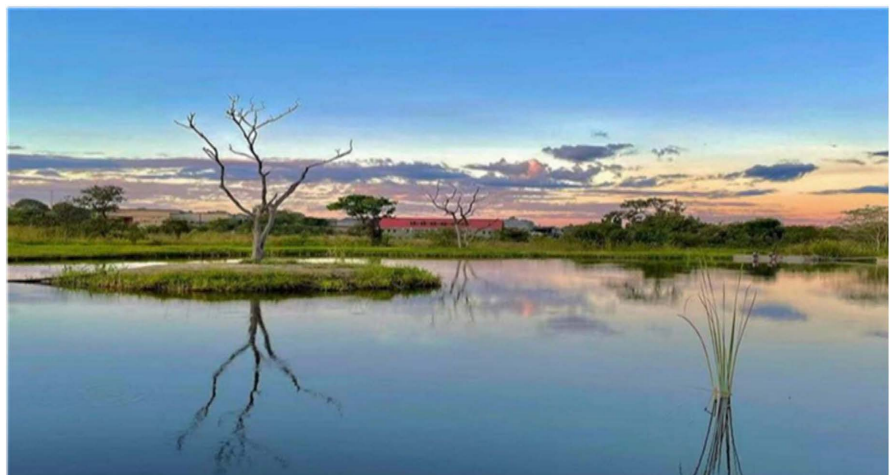
This entire plan can be subdivided into four greenspace zones (A, B, C, D). The purpose of conducting a zone analysis is to thoroughly assess the variations in setup, purpose, and outcomes of each zone. This analysis delves into specific details such as size, seating capacity, and the presence of green spaces. Additionally, site photos offer valuable in-sights, aiding in the understanding of different zones, facilitating the creation of analysis maps, and forming the basis for on-site

development as the map in **Figure 3** below shows:



**Figure 3.** Zone breakdown (<http://www.google.com/QGS/images/maps>).

The state of conservation of green spaces was assessed using seven attributes: Comfort, Maintenance, Accessibility, Usage and Activity, Inclusiveness, Attractiveness and Appeal, and Safety and Security. Comfort focuses on features that promote a sense of ease and deter antisocial behavior, making the space inviting for a diverse range of users. Maintenance assesses cleanliness and the availability of facilities like waste bins and benches. Usage and Activity consider the variety of activities supported without conflicts, fostering user engagement. Accessibility ensures equal access for all users regardless of age, race, class, gender, or physical abilities. Inclusiveness aims to serve different user groups while maintaining a balance of interests. Attractiveness and Appeal pertain to sensory qualities that make the space appealing. Safety and Security evaluate lighting, surveillance, information/complaint centers, and policies on animals and criminal activities.



**Figure 4.** Zone A—Natural Landscapes (Sinkala et al., 2002).

Zone A encompasses an expansive area of 12.92 hectares and is positioned to the left of the main gate's driveway as shown in **Figure 4**. Formerly waterlogged and marshy, this zone imparts a riverside-like ambiance to the institution's landscape. It has become renowned for attracting exotic bird species like Kiwis and Storks, drawn to the abundant prey residing in the wet grassy lands. Notable features within Zone A include the campus bar and basketball court. It is a favored spot for student relaxation, offering natural seating options like logs and rock formations. The flourishing flora and fauna in this marshy environment contribute to a distinctively cool atmosphere, which undoubtedly enhances its appeal as a popular retreat for students.



**Figure 5.** Zone B—Well maintained lawns (Sinkala et al., 2002).

Zone B covers a total area of 11.54 hectares. This particular region encompasses the vicinity surrounding key facilities such as the administration block, male and female hostels, library, and cafeteria as shown in **Figure 5**. The green space within this area is primarily dedicated to indoor seating, with limited outdoor seating available. The lawns are diligently maintained and well-manicured. Notably, the front side (east side) features the university statue and flags, indicating its purpose as an aesthetically pleasing space. The overall landscape aims to project a professional and serious ambiance, aligning with its proximity to the university's administration offices. Additionally, a well-maintained and secured fish pond can be found within this area, further contributing to the overall aesthetic appeal of the campus. The combination of lawns, neatly trimmed hedges alongside roads and walkways, and vibrant flowers all contribute to the pleasant surroundings.

**Figure 6** shows Zone C which encompasses class rooms and departmental offices, primarily serving as the home to the School of Built Environment. Spanning a total area of 17.3 hectares, this zone caters to student needs with ample seating options such as benches, logs, and rocks for relaxation before and after classes. The carefully maintained lawns provide a man-made green space, while the nearby forests offer a serene atmosphere. These forests harbor a diverse array of small animals, including squirrels, birds, and an abundant variety of insects, notably an impressive assortment of butterfly species.



**Figure 6.** Zone C—Maintained lawns (source: by author).

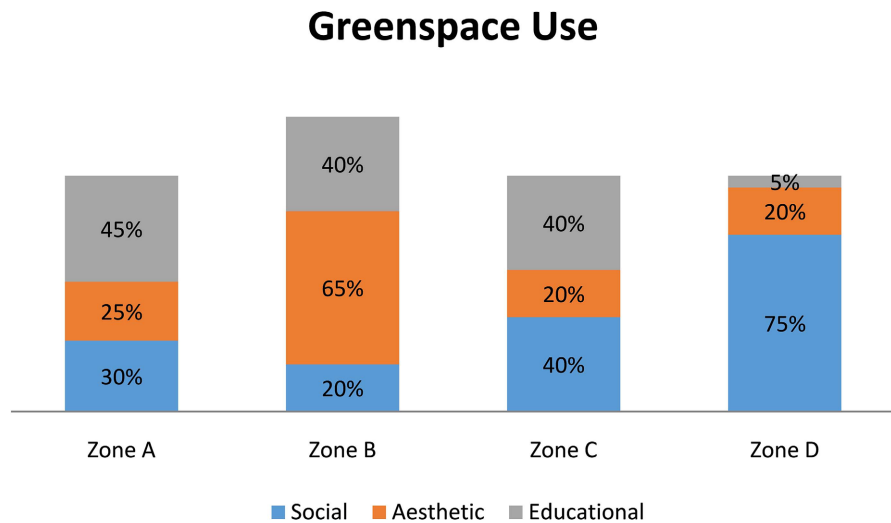


**Figure 7.** Zone D—Overview (source: by author).

Zone D encompasses a vast area of 32.18 hectares, this particular zone features a football pitch, two basketball courts, and a volleyball court, all nestled amidst natural vegetation as shown in **Figure 7** shown above while the football pitch may require further maintenance, the surrounding natural forests offer a picturesque backdrop. These forests thrive on the nourishment provided by the stream that runs along the institution's boundaries. Beyond their aesthetic appeal, the trees in this area serve a practical purpose, providing shelter for both spectators and players off the pitch.

**Figure 8** shows the graph of how students use the green spaces per zone. As the figure shows Zones A and C are used more for academic purposes such as studying and group studies and discussions by students during their break times and even over Weekends. Zone B has the highest levels of aesthetic as it has received the most attention in maintenance and variety of greenery. Zone D is highest in

social activity as it hosts students that play sports and others that enjoy sitting round the sporting areas.



**Figure 8.** Use the green spaces.

## 4. Materials and Methods

The case studies were conducted among students at universities around Selangor state by using quantitative methods to collect all the data needed. The methods used in this research are questionnaire survey and visual study to (n = 300) randomly selected students to receive the questionnaire via E-mail, Facebook, Instagram and WhatsApp groups. Students accessed the survey from the link and agreed privacy and consent information and acknowledged that he/she understood that the participation in the study was voluntary. According to [Divaris et al., 2008](#), stated that student's perceptions provide an important perspective for an educational setting. Finally, data collected were analysed using SPSS (The Statistical Package for the Social Sciences).

### 4.1. Sample Questions

- 1) How the students felt affected by the green spaces?  
( Don't like,  like,  don't mind)
- 2) How do you feel when around the green spaces?  
( Felt relaxed,  felt sleepy,  felt nothing)
- 3) Why do you visit the green spaces?  
( For walks,  for study,  for relaxing)
- 4) What are green spaces in university used for?

### 4.2. Research Design

The study employed a mixed-methods research design, comprising a structured questionnaire and direct observation by the researcher. The research aimed to

comprehensively understand students' perceptions of green spaces on campus throughout different seasons. The quantitative component involved a survey questionnaire, while the qualitative component utilized focus group interviews. This approach facilitated data triangulation, ensuring a comprehensive analysis of student perceptions.

The survey questionnaire was carefully designed based on a literature review, covering various aspects such as visit frequency, duration, satisfaction, perceived benefits, and design preferences. A stratified sampling strategy was used to select a diverse sample of undergraduate and graduate students, ensuring representation across gender, age, and academic majors. The sample size was determined to achieve data saturation.

The qualitative component involved semi-structured focus group interviews, moderated by experienced facilitators. These interviews delved into themes like the social role of green spaces, impact on mental health and stress levels, and the sense of belonging and attachment to the campus environment.

Data analysis encompassed both quantitative and qualitative approaches. Descriptive statistics were employed to analyze quantitative data, identifying patterns and trends. Qualitative data underwent thematic analysis, identifying recurring themes and patterns.

The integration of these two data types provided a comprehensive understanding of student perceptions.

Ethical considerations were paramount throughout the study, ensuring informed consent, privacy, confidentiality, and minimizing harm to participants. Measures such as pilot testing the survey questionnaire and using experienced moderators enhanced the validity and reliability of the data.

In conclusion, the mixed-methods research design effectively examined student perceptions of campus green spaces. The combination of quantitative and qualitative approaches allowed for a nuanced and comprehensive understanding, valuable to both re-searchers and practitioners involved in campus planning and design.

### **4.3. Data Analysis Procedure**

A mixed-methods approach was employed to analyze the data collected from the survey questionnaire and focus group interviews. Quantitative data obtained from the survey were subjected to descriptive statistical analysis to identify patterns and trends. SPSS software was utilized to generate frequency tables and charts to visualize the quantitative data.

For the qualitative data derived from the focus group interviews, thematic analysis was applied. The transcripts were thoroughly examined multiple times to identify relevant codes and themes. The codes and themes were carefully reviewed and refined until a consensus was reached regarding their meaning and significance. These themes were then compared with the quantitative data to ensure a comprehensive analysis of the overall dataset.

To enhance the reliability and validity of the findings, data triangulation was employed. This involved comparing and contrasting the quantitative and qualitative data to identify areas of convergence and divergence. The outcomes of the analysis were presented using tables, charts, and narrative summaries to effectively communicate the findings.

In summary, the data collection process for this study encompassed both survey questionnaires and focus group interviews. The sample size for the survey questionnaire was determined based on a 95% confidence level, a 5% margin of error, and a population size of 15,900. Conversely, the sample size for the focus group interviews was determined through data saturation. The data analysis procedure incorporated a mixed-methods approach, encompassing both quantitative and qualitative data analysis.

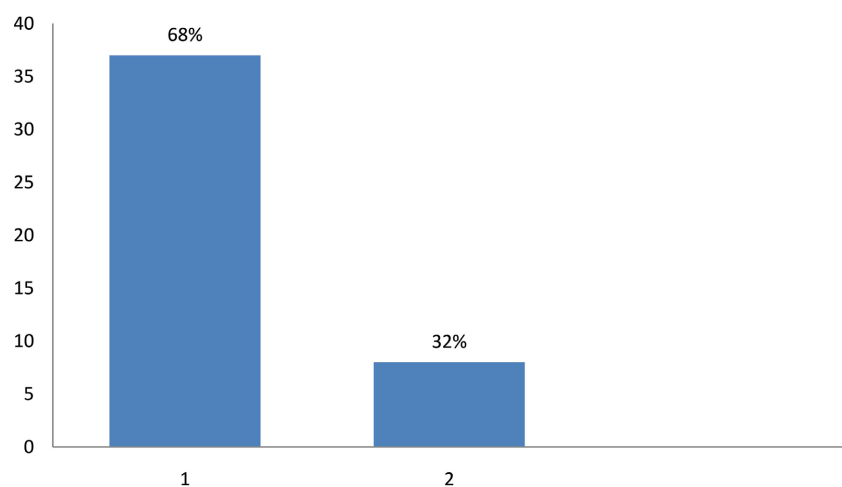
## 5. Results

The findings of the data analysis are presented in two sections. The first section focuses on analyzing the characteristics of users in each location using on-site observation techniques. This section provides insights into the behavior and patterns of users based on direct observations. The second section delves into the opinions and perspectives of users who took part in the survey interviews. It explores their views and experiences to gain a deeper understanding of their perspectives.

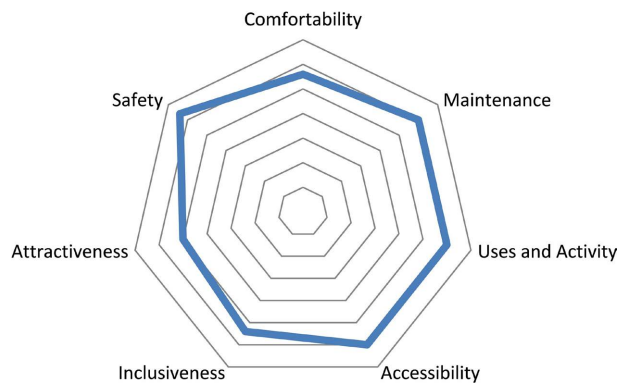
### Direct Observation

The direct observation process is divided into four sections, each focusing on specific aspects of the Copperbelt University. In each section, the raw data collected is presented and analyzed within the context of the university. To account for variations in population density across different zones, the number of people at each site is compared as a percentage of the total number of people observed over the seven-day period. Spatial analysis and direct observation techniques are utilized to examine and analyze the data comprehensively.

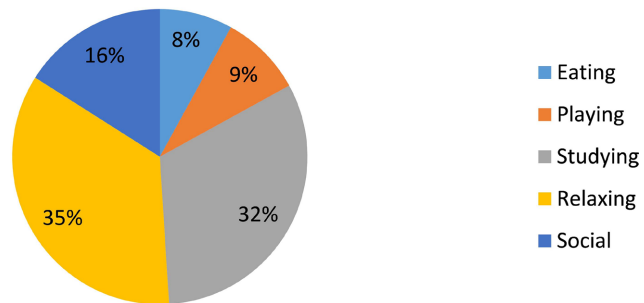
#### Zone A:



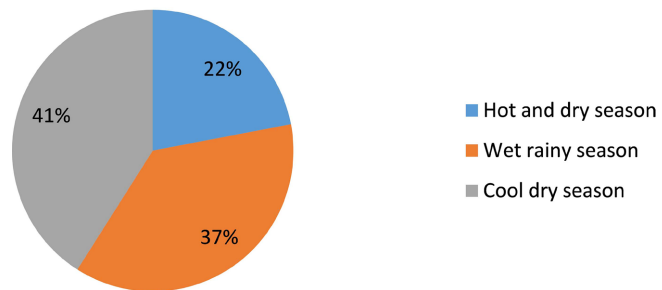
### DESIGN ATTRIBUTES



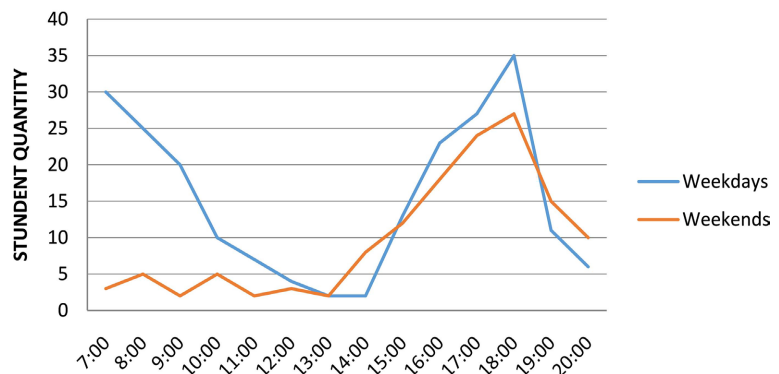
### MAIN ACTIVITY



### SEASONAL PATTERN VISIT



### Frequency of Visit

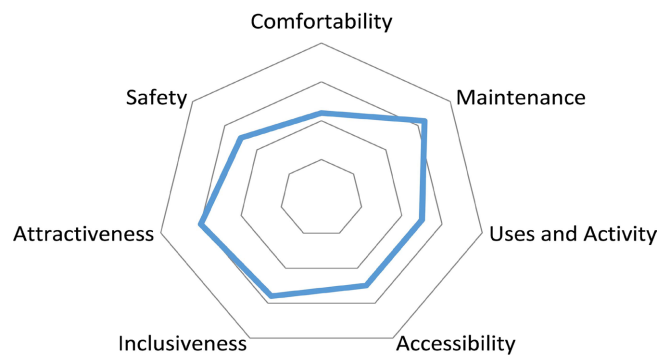
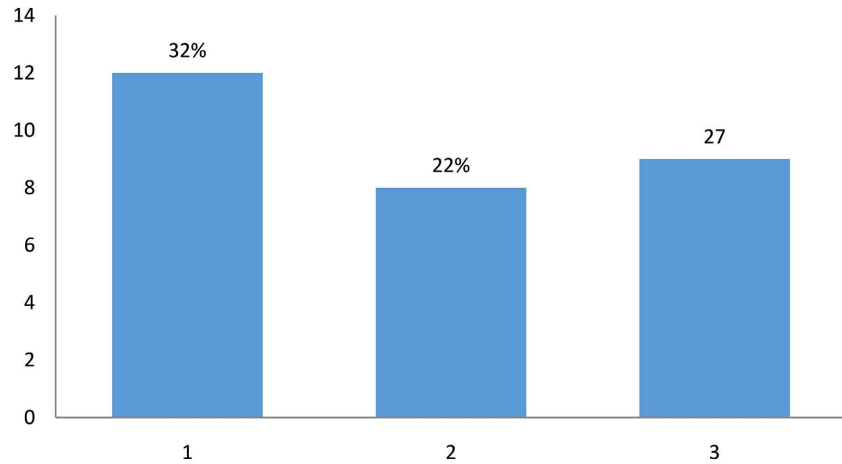


Regarding Zone A, the findings indicate an average daily count of 45 students during the seven observed time periods. In terms of its design attributes, the space is easily accessible and provides several seating areas. However, there were only a few bins observed in the vicinity. The area surrounding the space is well-maintained and has dedicated cleaning staff.

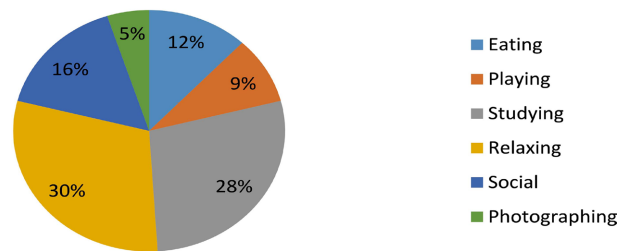
In terms of security, Zone A benefits from having a small police station near the main entrance gate. However, there are no CCTV cameras installed in the area. The zone features large trees, rocks, and a small stream. Students utilize the space to alleviate stress, either by walking along the trail or sitting on the rocks next to the stream. It was also noted that the space serves as a popular meeting spot for students and facilitates social interactions.

While most students described the space as a private and beneficial spot for stress relief, some also use it for studying, and a few engage in playing chess. Due to its location at the main entrance (east gate), the area experiences significant traffic and usage, particularly in the morning between 7 o'clock and 9 o'clock, when many students board outside the campus. Similar patterns are observed at noon and in the afternoon from 6 o'clock when students return to their homes and hostels. The majority of users in Zone A were male students between the ages of 24 and 29, primarily in their first and second years of study.

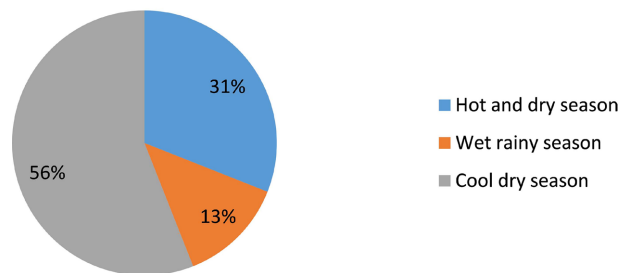
**Zone B:**



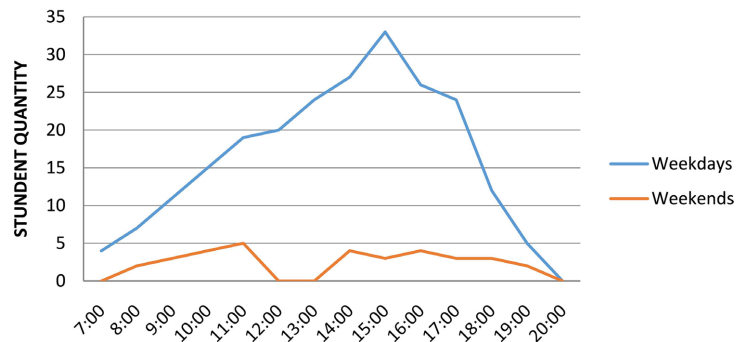
### MAIN ACTIVITY



### SEASONAL PATTERN VISIT



### Frequency of Visit

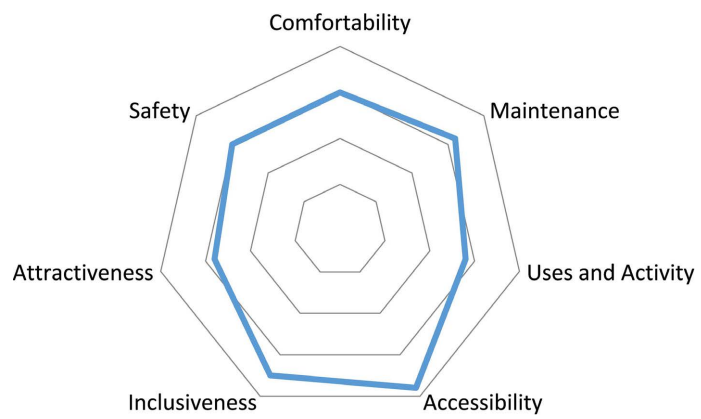
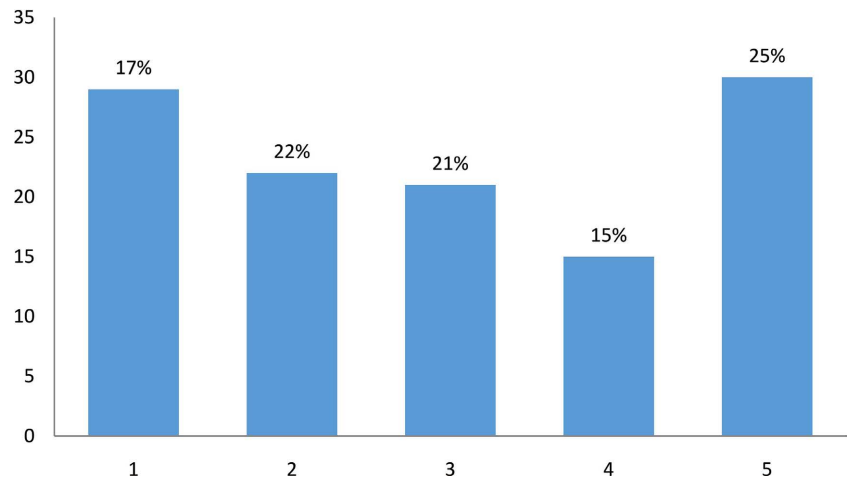


Regarding Zone B, it is widely acknowledged as the most attractive space, as confirmed by numerous students. The area is considered private and typically restricted to the general public. However, in the seven-day period observed, Zone B had the lowest daily average visitation of 37 students among the four zones.

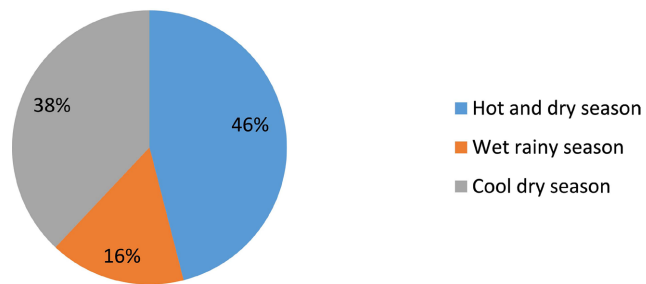
Despite the relatively low footfall, various activities take place in the zone, including group meetings, choir and drama rehearsals. The space offers a limited number of benches along the surrounding hedge, where people can be seen sitting, eating, and socializing. Interestingly, there was a slightly higher proportion of females using the space compared to males.

Typically, the space sees more activity in the afternoon, after classes, with students congregating in different groups. It is primarily utilized by students between the ages of 18 and 23, particularly 4th-year students and 1st-year students. Furthermore, the majority of users in Zone B belong to the Faculty of Medicine.

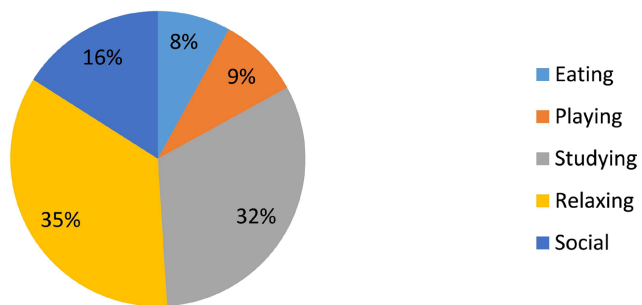
#### Zone C:

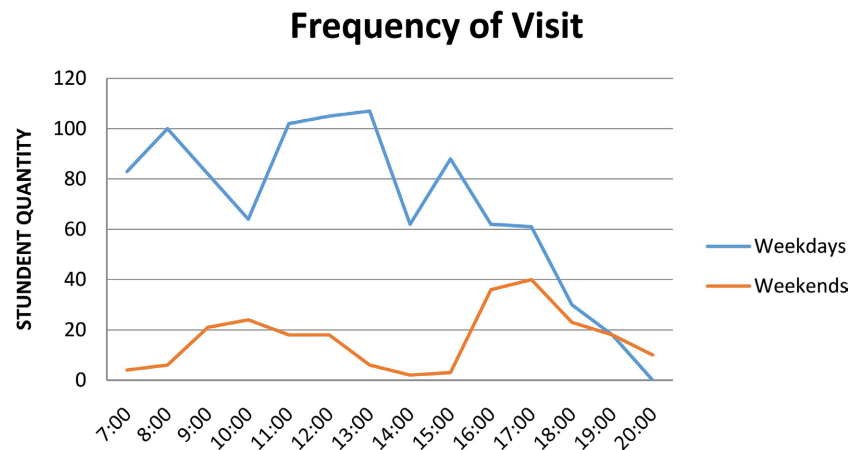


### SEASONAL PATTERN VISIT



### MAIN ACTIVITY





Zone C, which is surrounded by the School of Built Environments, experienced the highest number of visitors among the four zones, with an average of 118 students over the seven-day period. The state of conservation in this zone is excellent, as it benefits from exclusive cleaning staff dedicated to the square. Additionally, there is a small police station located in one corner, ensuring security in the area.

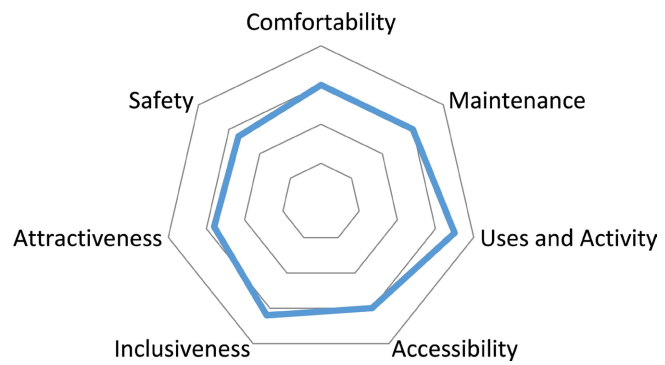
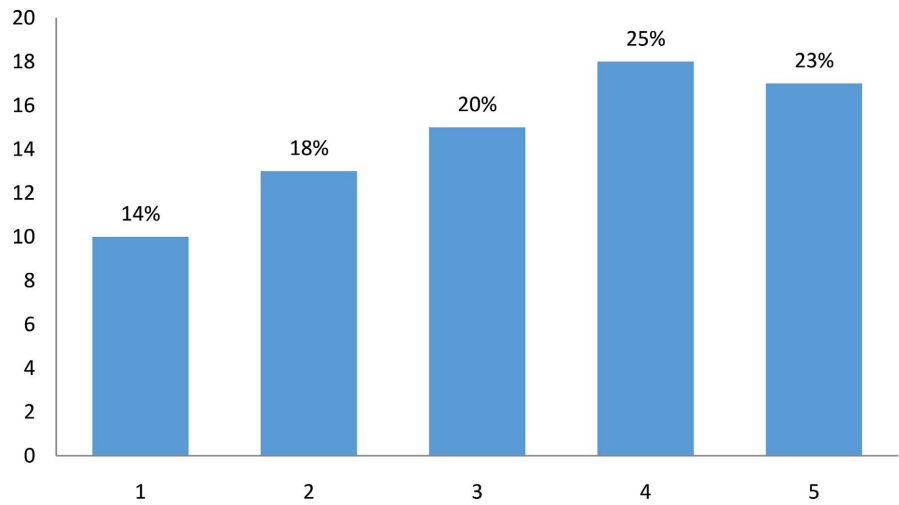
The space in Zone C tends to be crowded during the morning rush between 7 a.m. and 8 a.m. as students navigate their way to class. Another peak in activity occurs around 12 p.m. during the lunch break. The green spaces in this zone are adorned with benches situated beneath tall trees, which serve as popular spots for students to enjoy their meals after purchasing food from nearby canteens. Many students utilize these green spaces for relaxation and studying during their free time.

In terms of user demographics, there is a higher percentage of male users compared to female users in Zone C. Overall, the space is predominantly used by first and second year students.

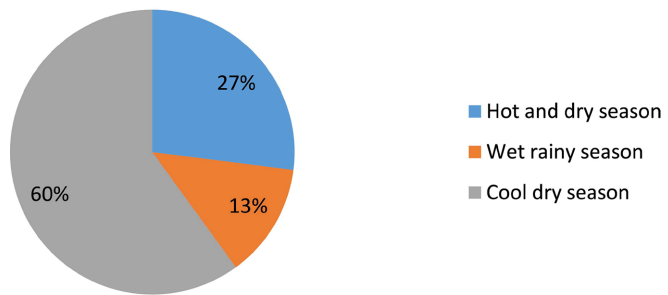
The presence of large trees creates an environment where students can shift their focus and appreciate the tranquility and natural beauty of their surroundings. The elevated border of trees and plants that enclose the space offers a sense of seclusion, allowing students to momentarily detach themselves from the rest of the campus. The foliage of the trees acts as a shield, providing privacy and enabling students to escape from the view of others. This seclusion and immersion in greenery offer students a respite from the busyness of campus life, diverting their attention from academic obligations and evoking a sense of calm.

These green areas provide students with a sense of privacy and the opportunity to experience a gentle fascination with nature. Students can easily disconnect from the demands of their rigorous school schedules and campus life, finding solace in the serenity of these green spaces. It allows them to take a mental break and indulge in the enchantment of nature between classes, providing a much-needed respite from the intensity of their academic pursuits.

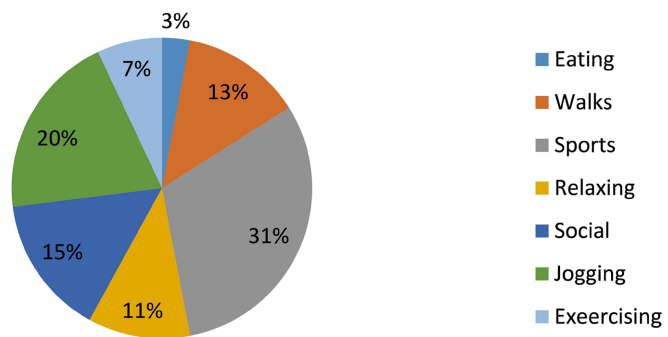
#### **Zone D:**

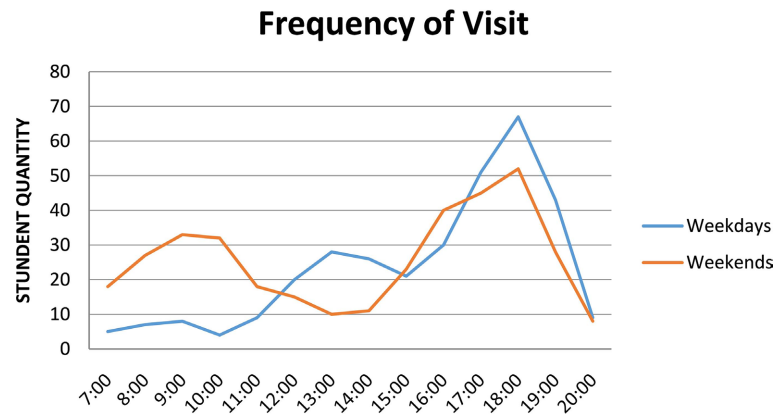


### SEASONAL PATTERN VISIT



### MAIN ACTIVITY





Zone D, despite its distance from the dormitory and teaching buildings, is the second most frequented zone on the campus, with an average of 73 visits per day. This zone is renowned for hosting major sports events, as it features a football ground and a basketball court. Although the amount of green space in Zone D is relatively limited, a significant number of students visit the area primarily for socializing, particularly during weekends when inter-university competitions are held.

On weekdays, the usage of the space is highest between 18:00 and 20:00, as many students come for evening walks, jogs, and exercises. However, during weekends, the lack of sufficient benches becomes apparent, with students often seen standing or walking around. Nonetheless, the presence of natural trees surrounding the space offers some shelter, especially during the summer season.

Zone D exhibits a balanced distribution of gender among its users, and students from various academic years utilize the space. Moreover, Zone D demonstrates a high level of user diversity, owing to the range of activities that take place within its boundaries.

Regarding Zone D, the data reveals that the main emotions associated with this zone are stimulation, excitement, happiness, frustration, and boredom. The majority of participants, particularly male students, reported feeling stimulated and excited in Zone D. This can be attributed to the presence of a soccer field and a basketball court, where students can engage in recreational activities and enjoy themselves with friends. The sports facilities in this zone serve as venues for major tournaments, including inter-departmental and inter-university competitions, creating a memorable place for many students.

However, it is important to note that feelings of frustration were expressed among female students in Zone D. This could be attributed to their relatively lower participation in the activities that take place in the area. As a result, some female students may feel excluded or less engaged in the overall experience of Zone D compared to their male counterparts.

## 6. Discussion

The findings regarding student usage patterns of the campus green spaces provide

valuable insights into their preferences and behaviors. Understanding how students engage with these areas is crucial for designing and managing the spaces effectively to meet their needs.

The data revealed that students visit the green spaces during different times of the day and on different days of the week. Zone A and Zone B were most frequently visited during lunch breaks, suggesting that students perceive these spaces as suitable for relaxation and socializing during their midday break. On the other hand, Zone C exhibited a more diverse pattern of usage, with students utilizing it in the morning, during lunch breaks, and in the evening. Zone D attracted fewer visits in the morning but had a significant number of visitors during the evening and weekends. These usage patterns highlight the importance of providing a range of spaces and amenities that cater to students' diverse schedules and availability.

In terms of the duration of time spent in the green spaces, variations were observed across the zones. Zone A and Zone D had a higher percentage of users spending more than two hours, indicating a higher level of engagement and enjoyment. This could be attributed to specific features present in these zones, such as well-maintained lawns in Zone A and sports facilities in Zone D, which attract students and encourage prolonged stays. Conversely, Zone B had the lowest percentage of users spending more than two hours, possibly due to its restricted access and limited seating options.

The main purposes for which students used the green spaces differed across the zones. Zone A was primarily perceived as a place for relaxation, eating, and studying. The well-maintained lawns and proximity to the main entrance contributed to its positive perception and multifunctional use. Zone B, being a private space, was predominantly utilized for meetings and special gatherings. In Zone C, students viewed it as a space for eating, relaxation, and studying. Zone D, with its sports facilities, was considered a space for social activities and recreation. These findings underscore the importance of providing diverse spaces that cater to various student needs and interests.

Perceptions of the attractiveness of the green spaces varied across the zones. Zone B received the highest satisfaction ratings, likely due to its aesthetic appeal and well-maintained environment. Zone A also garnered favorable ratings, highlighting the significance of landscape aesthetics in enhancing the overall experience. However, Zone C and Zone D had mixed satisfaction levels, indicating the need for improvements in certain aspects, such as the provision of more seating facilities, additional greenery, waste bins, and enhanced security measures.

The emotional responses of students towards the different zones further illustrate the impact of green spaces on their well-being. Zone B predominantly evoked positive emotions, particularly happiness, which can be attributed to its pleasing aesthetics. However, the lack of seating options and restrictions on activities resulted in feelings of boredom for some individuals. Zone A was associated with positive feelings of relaxation, safety, and happiness, attributed to its well-maintained lawns and round-the-clock surveillance. Zone C elicited feelings of

inspiration, calmness, and happiness, primarily due to the presence of trees from the nearby forest and the social interactions facilitated by seating facilities. Zone D evoked mixed emotions, with male students feeling stimulated and excited due to the sports facilities, while some female students expressed frustration due to their limited involvement in the activities taking place there.

These findings highlight the importance of considering students' perceptions, preferences, and emotional responses when designing and maintaining campus green spaces. By addressing their needs and providing accessible, well-designed, and well-maintained spaces, universities can create environments that positively influence student well-being, foster social interactions, and enhance the overall campus experience. Moreover, improving security measures, particularly in public spaces, is crucial for ensuring students' comfort and sense of safety while utilizing these areas.

In conclusion, the results of this study provide valuable insights into student usage patterns, preferences, and emotional responses towards campus green spaces. These findings should inform future initiatives aimed at optimizing the design, management, and utilization of these spaces, ultimately contributing to a more student-centered and inclusive campus environment.

## 7. Conclusion

In conclusion, this study provides valuable insights into student usage and perception of green spaces on campus. The results emphasize the significance of both private and public green areas in shaping students' experiences and overall campus perception. Students' awareness of these spaces influences their attitudes and responses towards them. The findings underscore the importance of accessibility in determining the utilization of open spaces. Zone C, being the most easily accessible, emerged as the most frequently visited by students, particularly those from the School of Built Environment. The convenience of accessing these spaces contributes to their popularity and usage. Design attributes of the green spaces also have a significant impact on student perceptions. Factors such as a pleasant landscape, tranquil ambiance, and the opportunity to connect with nature were highly valued by students. The presence of large trees, rocks, and streams in certain zones provided opportunities for stress relief, meditation, and socializing. Additionally, the cleanliness and dedicated cleaning staff assigned to maintain the spaces further contributed to their positive perception.

Security considerations also influenced students' preferences. The presence of a small police station in Zone A and the provision of 24-hour security in Zone A contributed to students' feelings of safety and comfort, leading to longer periods of stay in these areas. The attractiveness of green spaces was associated with the percentage of green area coverage. Zone B, with a higher proportion of green space, was regarded as visually appealing compared to Zone D, which had the least green coverage. Inclusiveness and social diversity were observed in Zone D, where students from various backgrounds and academic years utilized the space. The

availability of a wide range of activities in this zone attracted students from different groups.

Overall, this study highlights the importance of greenspaces on campus in enhancing student experiences and well-being. The findings emphasize the need for accessible, well-designed, and well-maintained green areas that offer opportunities for relaxation, connection with nature, and social interaction. By considering students' perceptions and preferences, universities can create environments that foster a sense of belonging, support academic success, and promote student well-being. These insights can inform future campus planning and design strategies to create vibrant and inclusive green spaces that cater to the diverse needs of students.

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## Conflicts of Interest

The authors declare no conflicts of interest.

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