



(RESEARCH ARTICLE)



## Green spaces on the campus of a tertiary institution in Guyana: A preliminary study of students' perceptions

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### Abstract

Green spaces are areas of vegetation often found in busy areas like neighbourhoods and campuses. They may take various forms such as gardens and parks. Green spaces have a variety of positive influences on the health and well-being of humans, including physiological and psychological benefits. Students of tertiary institutions are also able to benefit from the existence of green spaces at their institution. Studies have shown that green spaces in and around campus settings may serve to enhance mental and physical health, decrease stress and anxiety, and serve for a plethora of everyday uses. This study utilised probability sampling and surveyed fifty (50) respondents who were students of the tertiary institution, to gain their perspectives on the green spaces that exist on the campus. Based on the results, it was found that students demonstrated a high level of awareness and acceptance of green spaces, and were mostly satisfied with the existing green spaces. Most students indicated that they use the green spaces to relax and socialise. Males, however, preferred to play sports on these green spaces. Overall, most students noted that the green spaces helped them to relax, focus and be calm. It is recommended that the green spaces are improved by providing extra seating facilities and being more inclusive of those needing active recreation. This would contribute to the overall health and well-being of students who utilise these spaces.

**Keywords:** Green space; Academic; Perceptions; Guyana

### 1. Introduction

Though urbanisation is on the increase, persons are still often desirous of finding a sanctuary amidst busy places [1]. These sanctuaries often occur in the form of green spaces. A green space can be defined as land with vegetation (partially or wholly) that facilitates the growth of grass or trees. This space is often a designated space that may appear as a park, garden, meadow, woodland or other. Despite urbanisation, green spaces enhance aesthetic value of the areas they are a part of [2]. Green spaces are often called green lungs or urban oases, and introduce welcoming spaces in busy landscapes [3]. Green spaces are open to the public [4], with a representative percentage of vegetation (without paved surfaces), that are used for recreation or to promote a positive influence on the environment. Despite its definition, one mode of thought holds true: green spaces are often welcomed more than rejected. Urbanisation has forced the development of big structures with reduced greenery and this has led to pollution, less healthy lifestyles, compromised biodiversity and overall public health concerns [5]. There is a strong relationship between green spaces and the well being of humans. For instance, persons living in urban areas with green spaces have reported that they feel healthier since they are able to walk, run and jog, and carry out other physical and mentally stimulating activities in these areas. These urban green spaces are also psychologically beneficial since they help reduce the negative effects of depression, antagonism, and other psychological disorders.

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Green spaces provide many opportunities for recreation which are often sought amidst busy lifestyles [6]. Depending on where these green spaces occur, there are different benefits that may be provided. For example, gardens provide daily exposure to nature, while parks provide green blankets for picnics or recreational activities [7]. Due to changes in seasons, flowering patterns, general tree shape or form, and olfactory pleasures, many benefits can be derived from green spaces [8]. Green spaces may actually have the capacity to enhance the physical health of humans [9]. In fact, studies have shown that green spaces may encourage physical outdoor exercise [10], lower blood pressure [11], and reduce diseases [12]. Green spaces also positively affect psychological well-being [13] including positive behaviours, decreasing stress, limiting aggression and mitigating fatigue [14]. Many social interactions also take place at ease in green spaces. Due to a more relaxed psychological well-being, there is a lot of collaboration among green space users [15]. Additionally, green spaces provide opportunities for teaching, learning and general education. There is also an abundance of flora and fauna which provide illustrations for application and teaching [16]. Green spaces, therefore, provide a plethora of benefits for users that come into contact with them. They are useful for social activity, aesthetic benefits, lessons for nature, recreational activities and improved health.

Physiological and psychological (cognitive) benefits have often been the focus of some research on green spaces. Green spaces may have a positive influence on health resulting in fewer physical complaints when patients were exposed to natural settings [9]. Green spaces also provide a natural space for exercise [17], where mood and self-esteem can be boosted [18]. They serve as purifiers of the environment, because they are able to function as noise buffers [19], absorb pollutants and stabilise dust [20]. The physiological benefits of green spaces can be summarised as affecting the health and well-being of human beings positively [21]. Natural areas like green spaces also decrease stress and restore attention [22]. In fact, green spaces could also sustain attention for longer periods of time [23]. Behaviour could also be controlled by exposure to green spaces because there is a reduction in disruptive, anti-social and inattentive behaviours [24]. There is a direct relationship between stress and green spaces where blood pressure, cortisol levels, and salivary secretions are used as indicators for stress [25].

University campuses offer academic benefits to students who often spend most of their time on campus in an often fast paced environment requiring attention and focus, and concentration [26]. Many students also find their social identity at the university [27]. For university students, much of their time is spent in and around the campus they attend. During this time, they conduct research, take tests and complete examinations and assignments. Based on their individual backgrounds, they may also be dealing with underlying stressors like financial issues, lagging academic pursuits, and evading time. Some students even suffer medical mental issues regarding treatment. All of these can have a somewhat adverse impact on their overall physical and mental health. It is therefore possible that green spaces could benefit university students, as they do in normal situations where green spaces occur [28].

The campus of the tertiary institution that was investigated, has several green spaces. The general makeup of these green spaces includes flat lands (Figure 1), decorative trees and other vegetation (Figure 2), and shaded seating areas (Figure 3).



**Figure 1** Green Space immediately near main entrance of the campus



**Figure 2** Green Space featuring decorative trees and other vegetation



**Figure 3** Shaded seating areas in one of the green spaces

Wi-fi can also readily be accessed within or near those spaces. From observation, many students utilise these green spaces (near or around) to relax, socialise or play sports. There have been few studies that have delved into the benefit of green spaces on campus. Nevertheless, some studies have presented valuable information in this regard. Some studies have found that the presence of trees and grass has an adverse impact on the willingness to spend time in green spaces [29] used where campus goers preferred to spend their time when on campus because they found it useful for the social interaction aspect of their life on campus. At Liverpool University, students reported that relaxation and social interaction were the main reasons they used the green spaces provided on their campus [30]. Some students have also agreed that green spaces encouraged enhanced mental and physical health, including opportunities for exercise, recovery from academic events, improved academic performances, decreased stress, less anxiety and opportunities to enjoy biodiversity especially birds and insects [31]. Among students in a United Kingdom University, green spaces had

a positive correlation with enhanced quality of life [32]. In fact, college students in classrooms with a view of green spaces may perform better academically as compared to those without a view of green spaces [33].

This study investigated the perceptions of students about green spaces on the campus of a tertiary institution in Guyana, with focus on validating the importance of green spaces on the campus. Locally, there are no studies that seek to correlate green spaces with academics, more definitively in terms of how students feel about green spaces. This preliminary study has as its primary goal, to determine the perceptions and uses of green spaces on the campus of the institution. There is already emergent literature on the topic globally, so this research has developed along similar lines. The specific objectives of the study were:

- To investigate the awareness of students about green spaces on campus
- To determine how green spaces are used on campus
- To make suggestions on ways how to improve or preserve the green spaces on campus

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## 2. Material and Methods

Probability sampling is the technique that was utilized in this research for survey respondents, where all student members of the population had an equal chance of being selected to participate in the research. This method operated as a means to ensure that a more generalised conclusion could be formed from the results [34]. The survey link was created and shared within a Current Students Group on Facebook. This link was left accessible for two (2) weeks, after which it was closed. The sampling frame for the survey was fifty (50) respondents who were either current or past full-time or part-time students. They were representative members of each Faculty of the institution. All survey questions were compulsory. Some questions required only one answer while others encouraged participants to select all that applied. Participants clicked to agree that they were completing the survey anonymously and agreed for the results of the study to be published. Statistical analysis, using the chi-square test was performed at the 0.05 significance level using SPSS.

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## 3. Results

### 3.1. Respondents' Characteristics

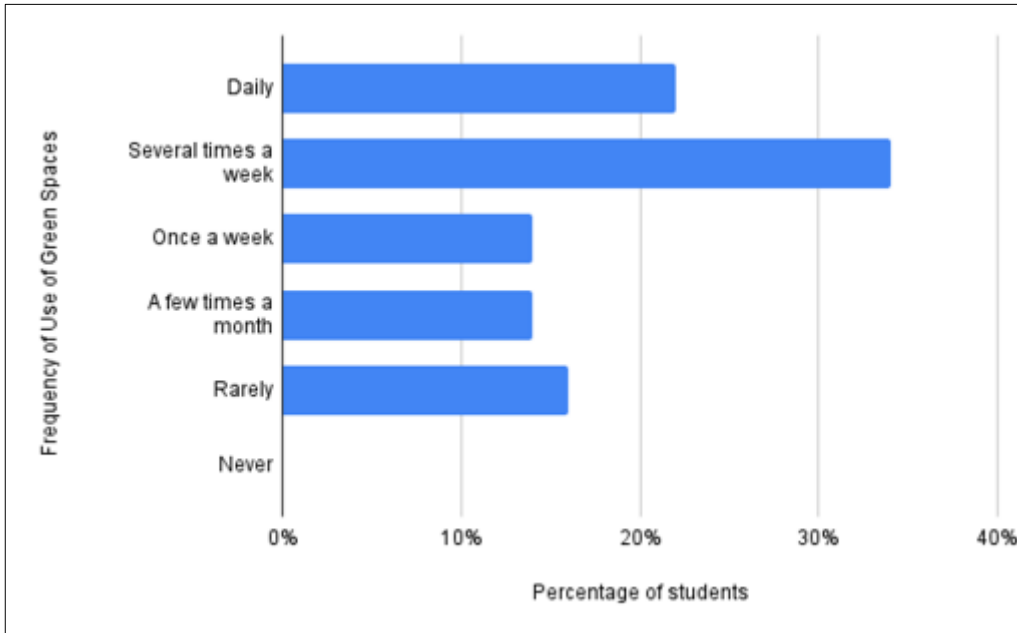
There were 50 respondents who participated in the survey, where 39 (78%) were females and 12 (22%) were males. 70% of the respondents were aged between 17 and 29 years, while 30% of respondents were between 29 and 45 years. None of the respondents were over 45 years of age.

### 3.2. Familiarity with the term 'Green Spaces'

Most of the respondents (62%) indicated that they were familiar with the term 'green spaces' before being introduced to the survey, while 20% of respondents indicated that they were not familiar with the term before taking the survey. Only 18% of respondents knew very little of the term 'green spaces' before taking the survey. There was a significant relationship observed between upper age of participants and familiarity with green spaces ( $p < 0.05$ ).

### 3.3. Frequency of Use of Green Spaces

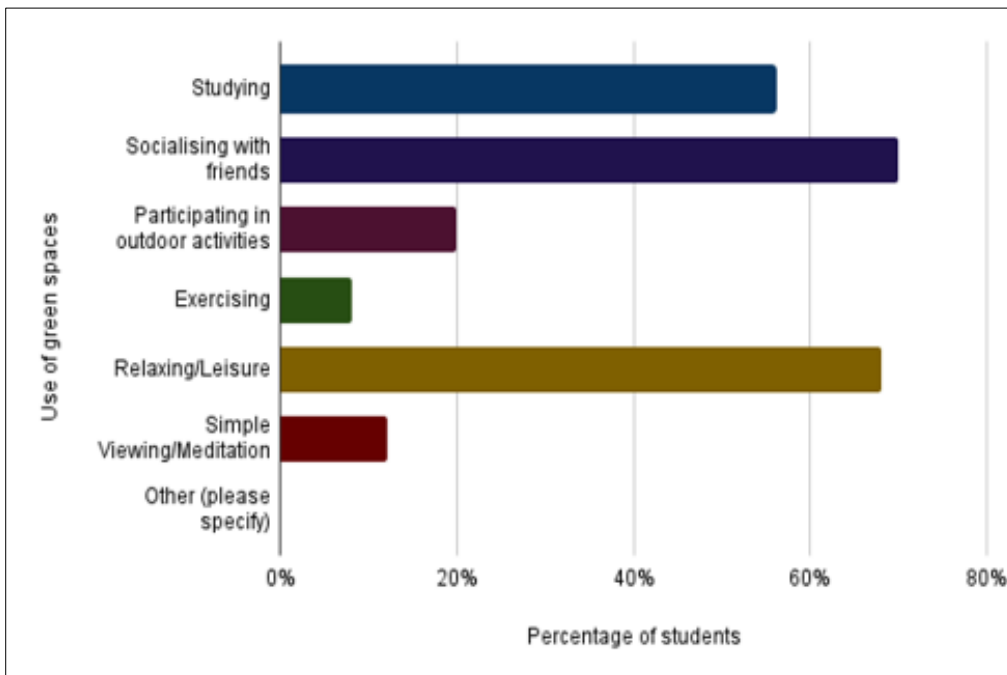
Respondents were asked how often they used the Green Spaces on campus. 34% of respondents indicated that they were frequent visitors to Green Spaces on campus. 22% of respondents used the Green Spaces daily. All of the 22% of respondents were females, while the other responses were from both male and female respondents. 16% of all respondents indicated that they rarely used the green spaces, while equal percentages (14% each) used the green spaces once a week and a few times a month respectively.



**Figure 4** The frequency of the use of Green Spaces on the campus

### 3.4. Use of Green Spaces on Campus

Respondents were asked to select all of the responses that applied, regarding the use of Green Spaces on Campus (Figure 5). 70% of respondents indicated that they used Green Spaces to socialise with friends. A small percentage (12%) indicated that they used Green Spaces on Campus for simple viewing and meditation. 8% of respondents used the space for exercising, 56% for studying, 20% for outdoor activities, and 68% for relaxing/leisure. The use of green spaces and males was found to be significantly associated ( $p < 0.05$ ) with all males selecting sports more than any other use



**Figure 5** How Green Spaces on the campus are used

### 3.5. Satisfaction with quality of green spaces

50% of respondents indicated that they were satisfied with the quality of Green Spaces. 20% of respondents indicated that they were very satisfied with the quality of Green Spaces. 20% of respondents indicated that they were neutral in their feelings while 10% of respondents indicated that they were dissatisfied with the Green Spaces.

### 3.6. Features found most interesting

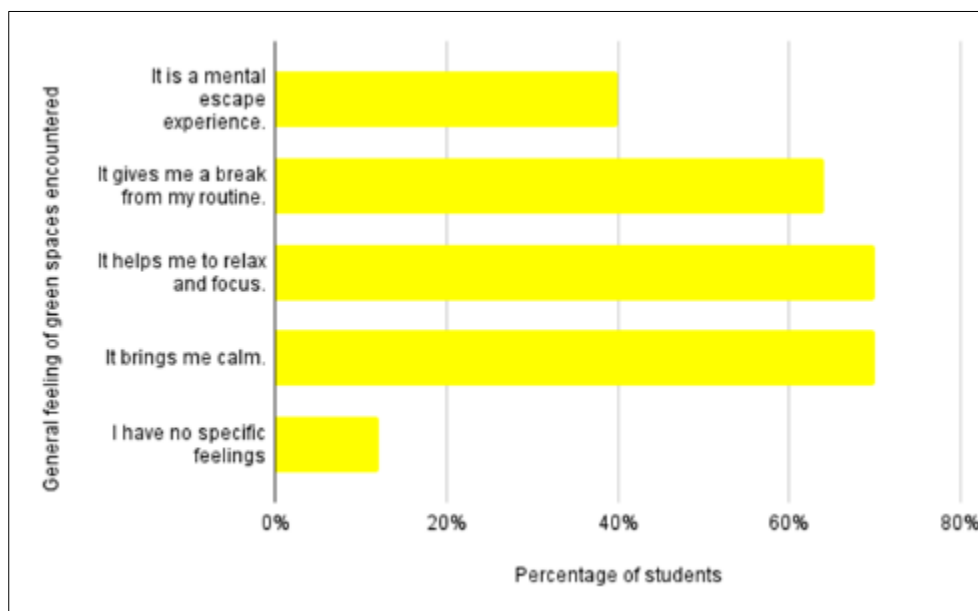
Respondents were asked to select which feature of the green spaces they found most interesting. 70% of respondents found the trees, flowers or other vegetation as the most interesting feature, while 20% of respondents found the social aspect or viewing of people to be most interesting. Animal life and accommodation received 5% each (respectively) of the respondents nod while no respondent chose 'other'.

### 3.7. Contribution to overall health and well-being

60% of respondents selected 'yes, somewhat' in answer to if the green spaces on campus contribute to their overall health and well-being. 20% of respondents selected 'yes, significantly', while the remaining 20% of respondents selected 'not sure' as their response.

### 3.8. Overall feeling about green spaces on Campus

Respondents were asked to select all that apply to their overall feeling about green spaces on the campus. Based on the results (Figure 6), 70% of respondents chose 'it helps me to relax and focus' as their overall feeling of the green spaces on the campus. The same percentage of respondents indicated that green spaces bring them calm. 64% of respondents also selected 'it gives me a break from my routine' as their overall feeling. A little less than half of the respondents (40%) chose 'it is a mental escape experience' while only 12% had no specific feelings on the topic under consideration.



**Figure 6** Depicting the general feeling of green spaces encountered on the campus

## 4. Discussion

The results of this study yielded some interesting insights into the perception of green spaces on the campus of the tertiary institution. Generally, students demonstrated a high level of awareness of green spaces and the way that they are perceived. In fact, most of the respondents indicated that they frequented these green spaces often (several times a week or daily) demonstrating that such spaces are able to provide some form of rest, opportunity to refocus, depending on the nature of the activity done there [26]. Based on the responses from the respondents, the green spaces on the campus served a variety of purposes and a high degree of variation of the contributions of the green spaces to the well-being of respondents was also observed. Overall, the results mostly supported the findings of previous research. There was generally a high level of familiarity with the term 'green spaces' across genders (males and females). The age ranges were classified according to groups, and not direct ages. However, based on the results, it could be concluded that



familiarity with the term green spaces may likely have been due to experience as a result of the age of the respondent [16], since all in the upper age range selected were familiar with the term 'green spaces'. It was not surprising that trees and flowers were selected by respondents as the most interesting features of the green spaces on the campus. In fact, shrubs and trees are a popular choice in landscapes for green spaces [30]. This demonstrated that aesthetics were likely a dominant factor in demonstrating favour to any green space on campus. There are many trees on the campus, so this could also have influenced respondents' choices. This would be a good driving force to promote tree or vegetation research, and conservation and preservation [16]. It is also likely to extrapolate from these results, that the implementation of more trees and flowers on the campus could be a welcomed activity by students [30]. Socialising with friends and relaxing/leisure were most selected as applicable for use of green spaces. From the researchers' personal observations, many students use these green spaces during the break from lectures and labs. It is often used as a location for spending time with friends. This implies that the green spaces are important to students for reducing stress, increasing social contact and minimising lonely feelings [27]. This could contribute to a better campus experience. Therefore, the students may very well have the desire for an escape and a means to relax. However, a very small number of students indicated that they used green spaces for seating. This is indicative of the fact that appropriate seating accommodation, as an important factor of green spaces, could be an important addition to the green spaces located on the campus. Had more seats been available at the green spaces, it could have likely impacted the results of the perceptions and observations of the students, since more students would have been able to sit and use the green spaces [29, 30] The researchers noted that proper seating, in the form of benches or chairs, was only provided within or exactly nearby five (5) of the green spaces identified on campus. More seats provided could mean greater use of these green spaces. Coupled with the fact that most students use the green spaces several times a week and even daily, this prospect is worth examining. Despite some shortcomings, most of the students indicated their satisfaction with the green spaces and this is indicative of willingness to use them even in their current state. All males indicated that they used the green spaces for exercise, or participating in outdoor activities. There may also be a need for recreational facilities for males in the green spaces on the campus. Males possibly see sport as a priority in comparison to their female counterparts. The green spaces should therefore be inclusive in purposes and features and cater for an array of users, instead of catering for those who like to be involved in more passive activities [21]. Relaxation, focus and calm, mostly selected by students in response to how green spaces affect their well-being, indicated that these green spaces demonstrate the potential of changing a negative state into a positive or upbeat one [13] [14] [15]. This could later be further examined by considering how the green spaces are able to capture or restore attention, or maybe impact academic performance [16]

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## 5. Conclusion

The findings of the research highlight that there is a high level of awareness about green spaces by the respondents, even crossing gender biases. Students regularly utilised these spaces especially for recreational activities and psychological relaxation purposes. However, there may be a need for including more seating or facilities within or near these green spaces. Additionally, the green spaces available need to cater for a diverse array of users' needs - particularly males who seek spaces for sport or other physical activities. One may also consider inclusion of facilities for the differently abled students. Not only do students relax in these spaces, but they also observe the various features, particularly trees, flowers and other vegetation. This demonstrates a keen appreciation for biodiversity and other aspects of the campus environment. A prominent outcome from the findings is that there is indeed a need for green spaces of the campus to be maintained, Therefore, preservation should be an immediate goal. It is clear that students can inform the goals and actions of green spaces since it is likely an intricate feature or aspect of their overall university experience. While academic attainment is the main goal of students attending the educational institution, administrators must be cognizant that these green spaces serve as an interface and temporary retreat for its main clients - the students. Therefore, high on the agenda, should be characteristic documentation of the green spaces located on the campus, enhancement and renovation of these spaces, and monitoring so as to enforce their preservation. These activities would contribute to the overall health and well-being of the students, and an overall better outlook for the future.

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## Compliance with ethical standards

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*Disclosure of conflict of interest*

The authors hereby declare that this manuscript does not have any conflict of interest.

*Statement of informed consent*

All authors declare that informed consent was obtained from all individual participants included in the study.

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