April 2017

Usage Of Green Spaces At The University Of Cape Coast By Non-African Foreign Students

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Recommended Citation

Asamoah, Yaw; Mensah, Ishmael; Adams, Osman; Baidoo, Paul; Ameyaw-Akumfi, Akosua B.; and Adjei Mensah, Collins Dr. (2017) "Usage Of Green Spaces At The University Of Cape Coast By Non-African Foreign Students," *Journal of Global Initiatives: Policy, Pedagogy, Perspective*, Vol. 11 : No. 2 , Article 5.  
Available at: [https://digitalcommons.kennesaw.edu/jgi/vol11/iss2/5](https://digitalcommons.kennesaw.edu/jgi/vol11/iss2/5)

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Cover Page Footnote
We are grateful to all participants in this study, and the Centre for International Education of the University of Cape Coast who granted us the permission to interact with the study participants.

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Abstract

Universities all over the world have green spaces (GS) as an integral part of their campuses because of the significant benefits derived from them. Aside enhancing the image of universities, GS influence the academic performance of students by reducing stress. This paper examines the preferences and uses of green spaces on UCC campus by non-African foreign students (NAFS). Data was collected through in-depth interviews, observations, and by the use of Arc-GIS 10.1 software. Sixteen NAFS were interviewed during the second semester of the 2013/2014 academic year. The study found that the usage of GS was influenced by factors such as easy access to Wi-Fi connectivity, proximity of GS to lecture and residential facilities, fresh air they provide, the aesthetic nature of those spaces, and the quiet/serene environment they offer. The respondents also lamented on the use of GS as pathways by other users. Hence, the study recommends that future development plans of the university in terms of siting of lecture theaters and residential facilities should be green space friendly.

Introduction

Green Spaces (GS) refer to all open spaces mainly covered by vegetation which are directly or indirectly available for human usage (Fratini & Marone, 2011). Examples include parks, gardens, forests, trees, farmlands, and wetlands. Several experts including psychologists, sociologists, and others concur that the quality of life within many environments depends largely on the amount and nature of green spaces available (Ahmed & Hassan, 2003; Cohen et al., 2006; Mensah, Andres, Perera, & Roji, 2016; Wolch, Byrne, & Newell, 2014). GS are basic to human existence. Frederick Law Olmsted, often referred to as the Father of Urban Parks,
classified GS, especially trees, as “the lungs of a city,” an expression that shows how green spaces serve as valuable assets to the overall wellbeing of city dwellers and the development of cities (Jennings, Johnson-Gaither, & Gragg, 2012).

GS are well acknowledged for the numerous social, environmental, and economic benefits they provide for humankind (Van Leeuwen, Nijkamp & de Noronha Vaz, 2010). Such benefits include improving air quality, ameliorating local climate, and conserving biodiversity, as well as providing venues for leisure and recreation, health benefits, creating job opportunities, and supporting child development. In line with these benefits, many studies have concentrated on exploring and analyzing how different aspects of human life are influenced by green spaces. These studies have centered on the mental health values of GS (Frumkin, 2001; Lee & Maheswaran, 2011), social, community, and economic values (Bell et al., 2008; Woolley, 2003), as well as environmental values (Alvey, 2006; Gill, Handley, Ennos, & Pauleit, 2007; Haq, 2011).

Notwithstanding the fact that much emphasis has been placed on the different benefits of GS, students’ experiences with GS on campus have received little attention especially in Africa. In Ghana, the three top public universities (University of Ghana, Kwame Nkrumah University of Science and Technology, and University of Cape Coast) offer admissions to thousands of Ghanaians and foreign students every year due to the wide range of courses they offer at the undergraduate and postgraduate levels. These large numbers of students, combined with stressful academic work, make it essential for many GS to be provided to cater for the recreational and health needs of the students since GS have been found to create a healthier academic environment (Speake et al., 2013). However, there has been no study on GS and students’ life at universities in Ghana and this makes it difficult to know how students rely on GS for different activities on university campuses in Ghana. It was therefore to fill this knowledge gap that this study was conducted using University of Cape Coast (UCC) as a case study.

The main aim of this paper is to examine the preferences and uses of GS on the UCC campus by non-African foreign students (NAFS). It also sought to map out, with the aid of Arc-GIS, the GS on UCC campus, to determine the nature of these spaces available for students. The rationale for focusing the study on NAFS is that most studies on GS have been carried out in developed countries where students have a particular inclination towards the use of such spaces (McFarland, Waliczek, & Zajicek, 2008; Speake et al., 2013). In addition to this, such students due to changes in environment often find it difficult to easily adapt to the Ghanaian lifestyle. Thus, they were selected in order to know the role GS play in their academic life as part of their adaptation to life on university campus in Ghana.

**Literature Review**

GS restore harmony to the environment and hence, play a vital social role in easing tensions (Ahmed & Hassan, 2003; Hague & Siegel, 2002; Milton, 2002). A probable reason is that green is the color which is most restful for the eyes, presumably because humans evolved in a predominantly green environment (Ahmed & Hassan, 2003).
Human-plant interaction has always existed—stemming from the backdrop that humans rely on nature for survival. However, the interaction exists on different levels—active and passive (McFarland, Waliczek, & Zajicek, 2010). For instance, studies have established that active interaction with nature, such as directly growing plants, has a direct consequence on improved psychological and physiological health such as increased self-esteem and reduced stress levels (Cammack, Waliczek, & Zajicek, 2002; Waliczek, Zajicek, & Lineberger, 2005). On the other hand, passive interaction with nature, which is more visual and observational in nature (Lewis, 1994), is capable of improving one’s life satisfaction (Zampini, 1994). Ulrich (1984) reported that patients in hospitals whose window faced natural areas were found to report less incidence of illness. While this may be true, one also needs to interrogate this in the light of all that come to play in ensuring good health. Kaplan (1992) is however quick to add that these reported benefits of human-plant interactions transcend physical borders; they are not restricted by culture, ethnicity, age, place of residence, or occupation.

This human-plant relationship with its benefits has permeated the entire fabric of human life, even the academic environment. Inspiration of human-plant relationship in the academic environment could be traced to Ancient Greece, where the Great Academy of Plato was actually a garden as opposed to a physical building (Internet Encyclopedia of Philosophy, 2005). It is also on record that Epicurus and Aristotle also taught in the gardens of Athens, and not in a physical building (Gager, 1937). All these are indications that education has traditionally taken place within the natural environment. This is perhaps due to the kind of association between students’ performance and the study environment.

In fact, Abu-Ghazzeh (1999) admits that people who patronize GS on university campuses have close ties with these spaces and hence those are the areas they remember so well even after they have left the campus. Specifically, these are places where students usually interact with each other, relax, and study. McFarland (2007) also attests to several studies which report that the academic performance of students is positively affected by the physical environment of the university where they study (McFarland, 2007; McFarland et al., 2008; McFarland et al., 2010; Speake, Edmondson & Nawaz, 2013). One of the earliest examples of this assertion about students and the environment was Karmel’s (1965) study which found out that high school students in rooms with windows were generally happier.

Griffith (1994) therefore suggests that universities should create attractive and relaxing campus environments that will help students deal with stress and improve on their academic performance. Caws (1970) is also of the view that universities should be designed to facilitate a certain quality of life. To this effect, Conners (1983) has stressed that since the designed environment (GS) of formal schools actually contributes to controlling the degree of stress of students it is essential for school authorities to pay attention to such facilities. Furthermore, Griffith (1994) posits that authorities of higher educational institutions should re-orient their priorities by adding to their programs, designing attractive and engaging campuses that are favorable to academic activities since “attractively landscaped formal open spaces or habitats left in their natural form, as woods and gorges, help establish a venerable campus identity, stir alumni sentimentalism, create a strong sense of
community, and curb escalating campus densities” (p. 648). In a similar vein, Think (2003) asserts that “a premium should be placed on ensuring that teaching environments provide the best possible conditions to stimulate learning” (p. 2).

Methodology

Study Area

UCC, which is located in the Cape Coast Metropolis of the Central Region of Ghana, is a sea-front university which lies between 5° 8’ 10” N, 10 17’ 56” W to NE and 5° 5’ 51” N, 10 16’ 43”W to SE. It is located along the shores of the Gulf of Guinea, which spans the west coast of West Africa (Figure 1). The main entrance to the university campus is 160 meters from the beach.

From an initial intake of 256 students in 1963-64 academic year, the University, as at 2013-14 academic year, had an undergraduate student population of 18,489 regular students, 978 postgraduate students, 5,195 sandwich (summer) students, and 37,606 distance education students. There are also 532 postgraduate students on distance education (Student Records and Management Information Section, 2014). The university admits both Ghanaian and non-Ghanaian students into various colleges including Agriculture and Natural Sciences, Education Studies, Health and Allied Sciences, Humanities and Legal Studies, and Distance Education. The university admits students into bachelor and master’s degree, as well as PhD programs. Since its inception in 1999, the Centre for International Education has been in charge of foreign students admitted into various programs. Nigerians form the majority of these foreign students. Others also come from neighboring francophone countries like Côte d’Ivoire and Togo, as well as the United States of America, Sweden, Netherlands, and Germany.

Since 1962 the university has witnessed various forms of infrastructural development with a concomitant improvement in the extent of GS from 2001 to 2008. Between 2001 and 2008, a number of new GS were created while the few old ones were redesigned at the Northern and Southern campuses. The university authorities as well as the Students’ Representative Council (SRC) have constructed a number of gazebos at some green locations on campus which serve as meeting points for group discussions, private studies, relaxation, waiting area, and for snacks.

Data and Sources

Data for this study was collected in the second semester of 2013-14 academic year. Pictures of various GS were also taken. Permission to conduct the study was sought from the Centre for International Education at University of Cape Coast and consent was sought from foreign students who were sampled.
Figure 1: Map of the University of Cape Coast

Source: Remote Sensing and Cartography Unit, UCC [RSCU-UCC], (2014a)
By resorting to the census approach, all 16 NAFS who had been admitted for the study of various programs in the mentioned academic year were sampled for the study. Census was resorted to because attempt was made to gather information from every member of this small some group of people. On the other hand, the qualitative nature of this study made it reasonable for 16 respondents to participate in this study (Mason, 2010). This point is defended by Ritchie, Lewis, and Elam (2003) on the grounds of saturation, thus, a point of diminishing return in qualitative data collection where anymore data collected does not necessarily lead to more information. Hence, content and quality of data collected, rather than number becomes paramount in this respect. Sandelowski (1995) concludes therefore that large numbers are unimportant in ensuring the adequacy of a sampling strategy.

Qualitative research techniques, in-depth interviews, and observation were employed. This was done to have deeper understanding of the topic under study. The in-depth interviews were conducted at respondents’ places of residence, lecture theaters, and other open spaces. With the help of two field assistants, interviews were conducted for 20 to 50 minutes and during periods that were convenient to respondents. This was usually between 9 am and 7:30 pm each day. The respondents preferred that the researchers wrote their responses instead of audio recording so this was duly followed. Data were collected with an interview guide that was designed to collect demographic information of the respondents, their knowledge and awareness of campus GS, and their use of campus green spaces. This offered respondents the opportunity to construct their own social reality. The data collected through in-depth interviews were manually coded into themes which were informed by the objectives of the study. Thematic analysis which is the most common form of analysis in qualitative research was utilized (Guest, MacQueen, & Namey, 2011). In line with the thematic analysis, the responses were manually transferred from the interview guide to broadsheets, and afterwards the data was coded. Responses with reoccurring patterns were assigned the same codes to reflect a theme. The themes that emerged were further reviewed until a clear pattern emerged. Names were then assigned to the themes that emerged. In addition to this, personal observation sessions were organized to observe various GS on campus to have a first-hand information of student activities that take on these spaces.

Apart from the qualitative data collected, spatial data were also used in the study. A Geo-eye image of the university campus dated March 2012 was sourced from the Geography and Regional Planning Department of UCC. This image served as the base for mapping the GS with the help of Arc-GIS 10.1 software. A polygon layer (shapefile) was created in ArcCatalog 10.1, and this was edited in ArcMap 10.1 by digitizing the shape of various GS from the image and their names assigned. In order to generate the areas for the various GS digitized, a new field (area in meters) was created in the attribute table of the GS shapefile. Geometry calculated tool was then employed to automatically generate the areas of various digitized GS. Also to verify whether digitized GS actually existed on the ground, ground-truthing was undertaken by loading the shapefile of digitized GS onto a Tremble Juno SD GPS. GS that did not correspond with what was observed during the ground-truthing were edited. Also locations of Wi-Fi devices were mapped using the Tremble Juno SD GPS device. The Wi-Fi had a range of 100-150 meters. The
mapped Wi-Fi spots were downloaded and overlaid with the mapped green spaces. In addition, a buffer was created with the maximum range (150m) of the Wi-Fi devices to know areas which are hotspots on campus for browsing.

**Results**

**Demographic Characteristics of Respondents**

A total of 12 females and four males between the ages of 20 and 24 years participated in the study. Out of this number, 11 of them were nationals of the United States of America while three and two were Swedish and Germans, respectively. The religion of the respondents were varied—ten Christians, an atheist, and the remaining five respondents were not affiliated to any religion but maintained that they believed in God.

The respondents, all undergraduate, were from the Faculty of Social Sciences, Faculty of Arts, and the School of Physical Sciences, studying courses such as Oceanography, Economics, Sociology, Computer Science, African Studies, Communications, Philosophy, Population and Health, and Development Studies. All respondents resided on campus with 11 of them in the Graduates Hostel, while the remaining five were at the Sasakawa Chalets. All the respondents were unmarried which is typical of most undergraduate students.

UCC has a number of GS which are either consciously or naturally designed for various purposes (Figure 2). As shown in Table 1, the university has a total of 4,818,307 square meters (m²) of GS, with 710,328.8m² being created reserves (natural and semi-natural including woodlands, forests, and wetlands that have been left for purposes of wildlife and biodiversity conservation). The natural and semi-natural GS form about 84% of the university’s total GS. Aside this, 9% of the total GS have been for the enhancement of the appearance of residential and other non-residential areas of the campus such as the halls of residence, lecture theatres, offices, and health facilities.

**Table 1: Area of Green Spaces in UCC**

<table>
<thead>
<tr>
<th>Green space</th>
<th>Area (m²)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amenity Green space</td>
<td>429944.8</td>
<td>8.94</td>
</tr>
<tr>
<td>Natural and Semi-Natural</td>
<td>4036752.2</td>
<td>83.92</td>
</tr>
<tr>
<td>Outdoor Sports Facilities</td>
<td>47349.51</td>
<td>0.98</td>
</tr>
<tr>
<td>Parks &amp; Gardens</td>
<td>47797.2</td>
<td>0.99</td>
</tr>
<tr>
<td>Farm</td>
<td>248649.2</td>
<td>5.17</td>
</tr>
<tr>
<td>Total</td>
<td>4810492.91</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: RSCU-UCC (2014c)
Figure 2: Green Spaces in University of Cape Coast

Source: RSCU-UCC (2014b)
Respondents’ Favorite Locations on UCC Campus

One major interest of this study was to find out respondents’ favorite locations on campus and the reasons behind their choices. The respondents indicated various locations for varied reasons—the aesthetic value these areas provided, including fresh air, presence of green vegetation, and access to Wi-Fi. Most of the favorite places mentioned were located at the north campus of the university, and included an area behind the university’s main library (the Sam Jonah Library Complex), “Parliament House” (a location where students practice mock parliamentary sessions), College of Education Lecture Theater (CELT) block’s surroundings, and lawns at the university’s Science Quadrangle (see Figures 3 and 4). Other places mentioned were the GS in front of the Graduate Hostel, Alumni Hostel, Senior Member’s Club House, Sasakawa Chalets, and the Casford Gardens. The only favorite location in the South Campus that was mentioned was the GS around the “Old Library” (a GS beside Oguaa Hall, a residential facility).

According to the respondents, the above-mentioned locations are their favorite places on the North Campus because of reasons such as fresh air provided by those areas, their beautiful nature, quiet/serene environment, and venues to socialize with friends and also get easy access to internet (Wi-Fi) (Box 1).

The fact that most of the GS on campus are located at the North Campus as opposed to the South Campus is not surprising because originally the university begun from the South Campus. It appears the original plan did not factor in GS especially in non-residential areas between Oguaa Hall and the Old Library block. In addition to this, limited spaces coupled with the locations of surrounding local communities like Apewosika did not permit further expansion of the university on the South Campus, let alone the creation of GS. It was evident that expansion of the university was concentrated on the North Campus, and that all new development projects being undertaken have largely factored in the need for GS.

Though it is touted as one of the finest green regions of the university campus, the Casley Hayford Hall garden, often referred as the Casford Gardens was not mentioned among the favorite locations by the respondents. This was due to the fact that apart from the place being far from lecture theaters it is also not close to the places of residence of the respondents. For instance, an American male respondent indicated that:

I don’t see the need to go there (Casford Garden) when there’s no business for me to do so. The place is far from lecture theaters and where I stay on campus. If I want to de-stress myself I prefer doing that on the green spaces around my hostel here at Graduate Hostel.
Figure 3: Green Spaces in the University of Cape Coast with Favorite Locations

Source: RSCU-UCC (2014d)
Box 1: Respondents’ Quotes Indicating Favorite Green Space Locations on UCC Campus

I spend most of my personal study time at the summer huts (gazebos) around the old library when am at the Old Site (South Campus) and those behind the university’s main library because there’s always nice breeze from the trees, and they’re so amazing and beautiful.
--Swedish female respondent

You don’t get to get Wi-Fi at most places on campus but I think it is pretty good at the “Parliament House,” and you get to meet a lot of funny and friendly guys. It’s so cool there
--German female respondent

There’s one thing I admire about “Parliament House.” You always have various Wi-Fi options to choose from when you go there to browse.
--American male respondent

I just love the lawns at the College of Education Lecture Theatre. They are so beautiful and well kept…I just love to see that place always.
--American female respondent

Use of Campus GS

We gathered from our study that the most important use of GS by the respondents was for relaxation, followed by use as a meeting point, waiting area for lectures, sports, browsing the of internet, and socialization. While males were using it for sports (on the Casford Field), the females mainly used it as a waiting area for lectures and browsing the internet. In all, it was realized that GS on the UCC campus were used for recreational, educational, and social purposes. Here are some examples of the use of GS by some respondents to reflect the various uses already mentioned:

I hang around the “Parliament House” to wait for my next lecture when it is going to be in the next few hours . . . and I take the chance to browse because the Wi-Fi is good here than the hostel I am.
--Swedish female student

I go to the area behind the main library to do my reading assignments because the library normally is too warm, and there is a lot of noise most of the time at the hostel.
--German female student

I always love to play soccer, and that is why I normally go to the Casford Field to play with the Ghanaian friend I have made here. It’s not all that good though because most parts of the field are bare; but that’s what we can get, I guess.
--American male student
The study further found situations where respondents referred to as worrying, the littering and the use of lawns as pathways. The respondents reported seeing litter on most lawns on campus, a situation which they blamed on the authorities of the university for failing to place waste bins at some vantage points on campus. They perceived littering as an attitudinal problem on the part of students and other users on the campus. It was realized that sometimes most users would walk on lawns as a shorter route to their destinations. This “common” act, according to some respondents, diminishes the beauty of the GS on the campuses. Again, the respondents blamed the university authorities for not doing enough to deter particularly students from walking on the lawns. Some students were observed walking on lawns when pathways have been provided and signpost erected (Figure 5). Interestingly, at a point, some NAFS took to this behavior of walking on the lawns too. This claim is backed by a response by a 23-year-old female national from Sweden who remarked as follows:
I think this it is so inappropriate to see almost everybody walking on the lawns, and they are not shy of it. But sometimes I think they are right that is why they are not condemned by anybody. So once a while, I walk in the lawns too.

**Figure 5: Lawns used as “Pathways” by Some UCC Students**

<table>
<thead>
<tr>
<th>Green space in front of the Faculty of Social Science</th>
<th>Green space at the Large Lecture Theater (LLT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green space around CELT</td>
<td>Green space at the Science Market</td>
</tr>
</tbody>
</table>

**Discussion**

The study found that most respondents preferred GS where there is access to Wi-Fi. Equally important were GS with seats where respondents could sit and wait for lectures and do other activities. However, no physical infrastructure was mentioned. The major reason was the benefits respondents derived from such locations including browsing of internet, relaxation, waiting area for lectures, sports, and others social activities. It was not surprising for respondents to mention “Parliament House” and other surrounding areas as favorite locations because of high concentration of operational and open access Wi-Fi connectivity in those areas (Figure 3). Additionally, “Parliament House” is a place at the UCC campus where
students hold mock parliamentary session, hence its attraction of many students. Lastly, “Parliament House” is centrally situated between College of Agriculture and Natural Sciences and Faculty of Social Sciences buildings where most lecture theatres on campus are found. Students can therefore wait or relax in this GS between lecture periods.

Korpela, Hartig, Kaiser, and Fuhrer (2001) had earlier made a similar finding that the favorite locations of college students were natural places, such as the beach because of the feelings of relaxation, calmness, and comfort that were associated with those places. In this study, it is evident that technology (in this case Wi-Fi) plays an instrumental role in attracting students to the GS.

The fact that Casford Gardens was listed as comparatively less favorite location was expected because of proximity. The garden is not close to respondent’s places of residence. Corroborating this finding was an observation made by some authors suggesting that the usage or non-usage of GS could be determined by proximity (Giles-Corti et al., 2005; Van Herzele & Wiedemann, 2003). On school campuses, Speake et al. (2013) opined that students have an immediate or close attachment to GS that are within their learning and living environments. Thus, students of Liverpool Hope University used GS adjacent to their classrooms where they could meet and wait for classes. This is also true in the case of the current study where respondents pointed to the GS at the Old Library as one of their favorite locations on campus, though the area is not within their residential facilities. Rather, the area is close to their lecture theaters where they could have their personal studies and wait between lecture hours. Again, the availability of operational open access Wi-Fi connectivity is a plausible reason.

Also important to this study was the use to which GS on the UCC campus were put. These spaces were used for different purposes including browsing the internet, relaxation, and waiting area for lectures. The use of GS for relaxation, places of meeting, waiting area for lectures, sports, and browsing the internet confirms the findings of Gearin and Kahle (2006). The respondents did not only use the GS for study purposes, but also for socialization and health purposes. This is one strong indication of the “social worth” that GS offer to those who utilize them. The ability of GS to bond two or more extreme cultures while reducing loneliness and eventually reducing academic pressure was phenomenal. This finding corroborates the observations made by Maas, Van Dillen, Verheij, and Groenewegen (2009), Dyment and Bell (2008), Kahn et al. (2008), Gearin and Kahle (2006), and Jim and Chen (2006), who in their studies found that apart from the academic and health relevance of GS, there are cultural and social bonds that GS establishes. The predominant usage of the GS by males for sporting activities also confirmed a study by Speake et al.’s (2013) research that revealed that males often use GS for sporting activities as compared to their female counterparts who mainly used it as a waiting area for lecture and browsing the internet.

Conclusion

As this study sought to achieve, GS map of the university was produced to indicate those which have either been consciously or naturally designed for various
purposes. Not only that, the map gives a pictorial evidence of the scope of greenery of the campus. Apart from this achievements, the use of ARC/GIS to map out the various Wi-Fi hotspots on the UCC campus gives indication of how technology combine with nature to attract users of green spaces.

The findings of this study is consistent with the results of similar studies on campus GS. Thus, GS, rather than physical infrastructure, were listed as the most favourite location at UCC by NAFS. Thus, the respondents being in a different environment (Ghana, which is a developing country) was not influential enough to thwart what they are used to since GS were used the same way they probably would in their homelands. In addition to the on-going discussion on the use of GS in schools’ campuses, this study has found out the significant role that modern technology plays in the use of GS. Thus, the study found that Wi-Fi hotspots located in and around GS contributed to the popularity of those places among students. Unfortunately, using campus GS as pathways by some users was identified by respondents, a behavior which some respondents eventually were enticed to do same.

**Recommendation**

Based on the above, respondents had some suggestions for making the university’s GS attractive to its users. These included the provision of seats at some GS locations to enable students have places for relaxation. A specific mention was made of Casford Field where the male respondents complained that one has to stand throughout to watch football or other activities. This suggestion seems to be very popular in most GS studies as noticed by Shaftoe (2008) and Bradley and Millward (1986). However, Shaftoe (2008) cautions that sitting on benches should be rightly and carefully located in order not to create nuisance on campuses. Others also recommended the construction of pathways at some convenient locations especially at the GS around Faculty of Social Science Car Park, planting more trees and shrubs, planting of more flowers to beautify the campus landscape, that GS should be regularly manicured to prevent overgrowing, and lastly building of fountains at some GS for attractions.

While it is important to keep and maintain the GS on the university’s campus by mowing overgrown lawn, trimming of hedges, creation of pathways, and provision of benches, caution ought to be exercise to avoid nuisance. Again, school authorities should rather educate and encourage students and other user of GS to use appropriate routes or pathways.

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