

Usage of Informal Learning Spaces among Students from Academic Units with versus without Dedicated Buildings on Campus

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This paper examines Informal Learning Spaces (ILS) usage among students from colleges with versus those without a dedicated building in a university, using a mixed method approach. The library is the most visited ILS, while convenience and locales of colleges determine student traffic behavior and ILS usage. Students from dedicated buildings that have ILS, such as a resource center, are more likely to be diverted from the library. Despite 60% of students favoring a decentralized ILS development, a two-prong strategy is recommended to satisfy the diverse needs of students. Food is an important ILS driver to keep students on campus.

1. Introduction

In recent decades, university teaching has shifted from conventional lecture to emphasizing student collaboration and engagement (Kolb & Kolb, 2005). To provide a better learning environment and experience for students, universities strive to offer diverse and innovative facilities for students, such as informal learning space (ILS); it was reported that only 20 percent of students' time is spent on classroom learning (Radloff, 1998). ILS is defined as "non-discipline-specific spaces frequently used by both staff and students for self-directed learning activities, which can be within and outside library spaces" (Harrop & Turpin, 2013, p.59). ILS has become increasingly important in creating a better environment, supporting students' learning as well as social exchange.

Universities tend to undergo expansion with increased student enrollment and more program offerings. Under some circumstances, offices are added to existing buildings as extensions. Some academic units also identify needs and secure resources to build facilities that house the entire college as a dedicated, standalone entity. However, not every college or department can secure a dedicated building due to financial or circumstantial constraints. For example,

urban universities may not be able to construct a new building due to scarce land resources. In such cases, several departments from different disciplines may need to share the same building for research, teaching, and learning, which includes ILS.

Even though ILS aims to provide an environment for studying and socialization for everyone, dedicated buildings, despite their obvious advantages, may shield students from interacting with peers from other disciplines. In dedicated buildings, teaching and research facilities are typically housed under the same roof. This study explores students' ILS behaviors and usage in colleges with dedicated buildings, as well as those with offices, research, and teaching facilities in separate locales. The research objective is to understand ILS usage behaviors and needs by comparing students from colleges located in dedicated buildings to those from colleges that are located in various campus locations.

In this article, the case of The Hong Kong Polytechnic University (PolyU) was used as an example to answer two key questions: (1) What are the differences in ILS usage and behaviors between students from colleges located in a dedicated building versus those that are not? (2) Is it better for a university to have all ILS located under one roof? This study provides insights for university management going through ILS planning, and supports a fact-based approach to campus ILS planning and development.

2. Literature Review

Students come to university to learn; learning is a complex process that is a product of interactions between teachers,

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students, and the college environment. The Learning Processes and Learning Outcomes (LEPO) model suggests that learning outcomes are influenced by learning environments, while the learning environments facilitate the learning processes, which lead to learning outcomes (Phillips, McNaught & Kennedy, 2012).

Learning environment includes formal as well as informal learning spaces. Informal learning is a type of learning that exists outside the classroom and with a high degree of freedom (Callanan, Cervantes & Loomis, 2011). Jackson and Shenton (2010) highlighted two important features of ILS, which include the provision of spaces and learners' interaction with other learners. Thus, ILS ideally serves as an environment to facilitate the informal learning processes, and the attributes of ILS encourage students to have more informal work at individual and group levels (Painter et al., 2013).

Recently, increased research works have been focused upon potential influences of ILS, such as impact on socialization (Matthews, Andrews & Adams, 2011; Jackson & Shenton, 2010; Matthews, Adams & Gannaway, 2009; Temple, 2008), academic success (Matthews, Andrews & Adams, 2011), and student behaviors (Phillips & Trainor, 2014; Chang et al., 2009; Tanner, 2000). There is general consensus that a positive relationship exists between students' use of ILS and engagement with the university, because the environment facilitated by ILS encourages more social interaction among peers. Meanwhile, other findings suggested that social/informal learning spaces enhance students' engagement, but the spaces cannot directly impact academic success (Matthews, Andrews & Adams, 2011). Academic success, attributed from ILS, usually cannot be accurately measured due to methodological challenges, as there are many ILS and other non-ILS variables interacting together (Temple, 2008). To sum up, while ILS may not directly impact students' academic result in higher education, it could enhance students' engagement and learning experience. Hence, ILS has an essential role to play within the learning context.

3. Methodology

3.1. Research Methods

In order to answer the research questions, an exploratory case study was conducted. A mixed-method research approach was adopted, using both qualitative and quantitative techniques. For the qualitative component, in-depth and focus group interviews were conducted with undergraduate students. Participants were recruited through the university mass email system under the banner invitation of the University's Working Group for Innovative Learning Spaces. Students were selected based on discipline,

year of study, and residency (i.e., residence hall members versus commuters). Individual interviews allowed more in-depth understanding of the motivation of using ILS and daily routine of a student. Focus groups allow students to discuss and brainstorm ideas for recommendations that are important to them.

Ten in-depth interviews were conducted, with the average interview time being 30.1 minutes, ranging from 25 to 40 minutes. Four focus groups were conducted with 6 to 8 students per group. The duration for focus groups averaged 63.6 minutes, with a range from 52.5 to 82 minutes. Data saturation was reached with ten in-depth interviews and four focus group sessions. All in-depth and focus group interviews were digitally recorded and transcribed for content analyses. The interview results also helped develop user-generated definition of ILS, and provided relevant questions and attributes for a questionnaire employed in the quantitative study.

For the questionnaire survey, students were invited to evaluate the ILS on campus, describe their usage and behaviors in ILS, and report their academic major. A 7-point Likert-type scale was adopted, with some open-ended questions. The questionnaire was reviewed and fine-tuned by three academics in relevant fields to improve face validity, and pilot-tested with 30 students before putting into the field. An online survey was completed using Qualtrics with undergraduate students being recruited from the university email system. A total of 999 usable responses were received. However, six of those did not report their current college of affiliation; thus, 993 responses were deemed valid. The data were then analyzed using SPSS (version 25).

Finally, a global positioning system (GPS) tracking study was conducted to identify students' actual usage of ILS on campus. This GPS tracking study, using the Happy Tracker mobile app, was conducted for two weeks, collecting nearly 2,000 travel routes from 268 undergraduate students from different disciplines. The Happy Tracker recorded students' routes during the day and the total number of hours spent at each location, supporting the quantitative and qualitative findings.

3.2. Introduction to the case – PolyU

Located at the heart of Hong Kong, PolyU, is very accessible to the city center and nearby commercial districts. The university campus is located at the Southern tip of the Kowloon Peninsula, on a 9.46-hectare site adjacent to the Cross-Harbour Tunnel, a major thoroughfare between Kowloon and the Hong Kong Island. The University is close to a vibrant tourist and commercial district. The abundant attractions and hotels make the district a popular tourist area. Therefore, PolyU, being located in one of the busiest

spots in Hong Kong, delivers a unique learning atmosphere and lifestyle for students.

PolyU's motto, "To learn and to apply, for the benefit of mankind" expresses the drive for nurturing students to contribute to society. The University offers a wide range of programs under eight colleges (the term "faculties" is used at PolyU in the Hong Kong context to denote colleges). In 2017-2018 there were 27,088 students in total, with 78.6% full-time and 23.5% part-time. PolyU is a well-known university globally, ranked 91st on QS World University Rankings 2020, with nearly one-quarter of the student body coming from outside of Hong Kong.

The campus offers comprehensive facilities for staff and students, such as interactive classrooms, laboratories for science disciplines, and other academic buildings and facilities. Many colleges have their offices and laboratories housed in different locations as they expanded, given the paucity of land and space. Despite this, three colleges have their offices and classrooms located within dedicated buildings, whereby most of the research and teaching activities are housed under one roof. These include the School of Hotel and Tourism Management (SHTM), the Faculty of Construction and Environment (FCE), and the School of Design (SD). Other colleges, including Faculty of Applied Science and Textiles (FAST), Faculty of Business (FB), Faculty of Engineering (FENG), Faculty of Health and Social Sciences (FHSS), and Faculty of Humanities (FH), are not housed in dedicated buildings, and their facilities and offices are scattered around campus.

4. Findings

ILS behavior and usage results were compared between colleges that have dedicated buildings and those that have separated locales.

4.1. Popularity of the Library

From the student quantitative survey, other than for School of Design, the Library is the most visited ILS amongst students from all colleges at PolyU (Table 1). Although some differences can be observed, results of Chi-square tests comparing students from various colleges are statistically insignificant at $p < .05$ level. In general, 72.2% of all students go to the Library most often outside the classrooms, and the figures exceed 60% for all colleges, except for SD. The vast majority of business students (83.8%) visit the Library most often; this figure being the highest amongst all colleges. The results underscore the importance of the Library as a place of choice for studying outside classrooms. For SD, the top ILS (22.7%) is the third floor common area of the building, which houses the School. This may be because design students need a specialized studio to work.

Only half (53.2%) of the students from SHTM visit the Library most often. This is probably due to the convenience factor, as nearly 30% of SHTM students visit the SHTM Resource Center, a specialized "library" with ILS, which is housed on the fourth floor of the SHTM building. As FCE does not have a similar facility, 70.4% of FCE students visit the Library, even though the walk is longer than that from SHTM to the Library. This indicates alternative access to the Library, such as the presence of a well-designed ILS, may have some influence on visiting the respective facilities. Whether the college has a dedicated building seems to be less relevant to the frequency of visiting the Library and other ILS, supported by the insignificant Chi-square test results.

4.2. Drivers of usage

Since most ILS from colleges with dedicated buildings are located indoors (e.g. the Resource Center at SHTM, study area at Core Z, and School of Design), this research examined the drivers of usage for indoor ILS to understand student preferences. Student quantitative survey (Table 2) revealed 'convenient location' is rated as the most important feature for students (31.8%). 'Low noise level' (14.9%), 'shade/covered area from sun and rain' (9.1%), 'comfortable tables and chairs' (7.9%) and 'good ventilation' (7.1%) are also important drivers for students. These features are broadly similar for most colleges, with some exceptions. Students from SD rank 'good ventilation' (18.2%) over 'low noise level' (13.6%) where it ranks second in all other colleges. FH and FENG students rank 'comfortable tables and chairs' in the third place at 11.8% and 9.6%, respectively. 'Availability of computer and software' is essential for FCE students (7.8%) and 'adequate lighting' is important for FAST (6.0%) and SHTM (8.5%) students. In general, 'convenient location' and 'low noise level' are undoubtedly the most important drivers for students' ILS usage.

The differences between units with dedicated building versus those with facilities in separate locales are examined by using "N-1" Chi-square test (Campbell, 2007). The test reveals that there is a significant difference in 'convenient location' between the two groups, $\chi^2(1, n=993) = 4.634, p < .05$. It is an expected result because over one-third (37.4%) of students from FCE, 36.4% from SD, and 42.6% from SHTM report that 'convenient location' is the most important feature. The high percentage of SHTM students selects 'convenient location' as the most important driver, pulls up the mean for colleges with dedicated building to 38.6%. These percentages not only exceed the overall percentage of 31.8%, but they are also the highest amongst all colleges. The high percentages may be explained by both the specific nature of the discipline (such as SD where most work is done in the studio) and locale (such as FCE and SHTM with

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Table 1. Students' most visited ILS by college									
		Colleges with facilities in separate locales					Colleges with facilities in dedicated buildings		
	Overall	FAST	FB	FENG	FHSS	FH	FCE	SD	SHTM
n	999	83	173	240	262	51	115	22	47
Most visited	Library (72.2%)	Library (75.9%)	Library (83.8%)	Library (65.4%)	Library (77.1%)	Library (66.7%)	Library (70.4%)	SD 3/F (22.7%)	Library (53.2%)
2 nd most visited	Core A Podium (2.2%)	Core A Podium (3.6%)	Core A Podium, CD Wing Podium, DE Wing Podium, Block M 1/F Rear, Main Lawn, Block VA Upper Podium, BC Wing 3/F (1.2% each)	Department Lab (5.4%)	CD Wing Podium (2.3%)	Core A Podium (9.8%)	Block ZN 4/F (7.0%)	Library (18.2%)	SHTM Resource Center (29.8%)
3 rd most visited	CD Wing Podium (1.6%)	CF Wing Podium & Core P Podium (2.4% each)		CF Wing 3/F (4.2%)	Core A Podium, GH Podium Annex, CILL (1.9% each)	HJFG Podium, CILL, Core M Computer Room (3.9% each)	Block ZS (4.3%)	Block VA Podium, SD 4/F (13.6% each)	Block VA Podium (4.3%)
<p>Q: To the best of your knowledge, please let us know the five places you spend most amount of time outside of classrooms. Source: Student Quantitative Survey (n=993)</p>									
<p>Note:</p> <p>(1) PolyU buildings are labeled alphabetically from A to Z. "Core" represents the main buildings, "Wing" is the entire building structure between two cores, and "Block" is a separate identifiable structure.</p> <p>(2) The Center for Independent Learning (CILL), which is located at Core A 3/F.</p>									

buildings located at the two ends of the university perimeter, being less convenient to the facilities on central campus). However, the other drivers, such as 'low noise level' ($p=.73$), 'shade/covered area from sun and rain' ($p=.86$) 'comfortable tables and chairs' ($p=0.16$) and 'good ventilation' ($p=.33$) are not statistically significant from the "N-1" Chi-square test.

4.3. Student preferences of ILS distribution

Overall, 61% of the students preferred decentralized ILS, while 39% preferred a centralized ILS from the results of the student quantitative survey (Table 3). Although the result may advocate a decentralized strategy for development, a 39% student preference on centralized ILS does suggest a sizable preference for "one-stop shop"-type environment, or some form of zoning/theming to capitalize on dedicated resources, which allows naming that would result in awareness and usage (Morison, Murry, Wilson, Clarke & Lukas, 2018). The feasibility and attractiveness of such design could be investigated further.

A chi-square test was performed to examine the difference between the preferences of ILS distribution and colleges in separate locales and those in dedicated buildings. The result was not statistically significant, $X^2(1, n=993) = 1.044, p=.307$. However, there are also some noticeable differences among students from various colleges. For example, 72.5% of students from Faculty of Humanities (FH) prefer decentralized ILS, the highest among all colleges (Table 3). Colleges within the central campus can visit proximate locations by a short walk. For colleges with facilities in separate locales, a decentralized development strategy in ILS may be suitable, as the offices and teaching locales are already dispersed. However, FCE has only 53.9% of the students who prefer decentralized ILS. Since FCE students need to pass a footbridge from their academic home to reach the central campus, a centralized ILS location may be a time-saving option because they can visit an all-inclusive ILS spot without scouting around campus for suitable ILSs. On the other hand, For SHTM, given it has a Resource Center, a preference to develop ILS on a decentralized basis (63.8%) is expected. For SD, due to the studio-focused nature of students' work, they would prefer a decentralized ILS as they already have one on the third floor within their own building.

4.4. Traffic path and behaviors

A person is a creature of habit. Results of in-depth student interviews suggest student habits are driven by their class schedules. For example, one student mentioned that "the daily routine depends on the lecture locale on the particular day" (Interviewee 12). Most students decide to stay in the Library before or after classes because the Library is located in the

center of campus, and students can go to different parts of the campus with a short walk. Certain ILSs, which are also centrally located, are relatively popular due to convenience for group discussion or dining.

An interesting finding from the student interviews is that students seldom leave campus during the day. For example, "When there are no classes, we may go to a common room or some common area to work and chat" (Interviewee 6). Even though PolyU is located at the heart of the city with many attractions surrounding the campus, students are reluctant to leave the campus to engage in study-related activities, such as self-study and group discussions. Students usually exit the campus after they finish their daily itinerary and seldom return after departure. This phenomenon applies to all students regardless of whether their academic homes are in dedicated buildings or scattered around the campus. The Happy Tracker from the GPS study provides similar observations, with nearly 60% of students never leaving the campus during the day, visiting multiple locations in a day. Their footprint is largely affected by the locale of their classes; whether they gather in an ILS, study in places such as the Library and Resource Center, and where they eat.

Dining is a popular driver of traffic for students. Other student interviewees mentioned "I have lunch on campus and return to the Library after lunch for self-study" (Interviewee 7) and "If there is nothing to do, we go and eat at the canteen" (Interviewee 10). The student canteens on campus accommodate large number of students. However, the need for dining can be a double-edged sword that can affect student behavior. For instance, an interviewee claimed that, "If there is one to two hours break, we tend to stay on campus. But if there are more than two hours, we may leave the campus and eat" (Interview 4). This has implications on subsequent activities, as students may not return to the campus once they leave.

For FCE, although it is somewhat out-of-the-way, it has an on-site student canteen for staff and students. The canteen does not have any competition in the building. However, if time allows, students may walk to the central campus (about 10-15 minutes) for dining, given there are more food options. Since the footbridge and underground tunnel by FCE only connect to the central campus and are not directly accessible to off-campus areas, students there would have a lower intention of dining off-campus. For SD, given the building is located at the center of the campus, like any other colleges, there is convenient access to campus eateries, as well as restaurants outside of campus with a short walk.

As SHTM is located at the edge of a commercial district, students may dine there since it is closer than walking over the footbridge to the central campus. Moreover, the footbridge that connects SHTM and the central campus, also connects to the busy city center and transport station. This

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Table 2. Drivers of indoor ILS usage											
Drivers				Colleges with facilities in separate locales					Colleges with facilities in dedicated buildings		
	All	Colleges in separate locales	Colleges in dedicated building	FAST	FB	FENG	FHSS	FH	FCE	SD	SHTM
n	999	809	184	83	173	240	262	51	115	22	47
1st	Convenient Location (31.8%)	30.4%*	38.6%*	Convenient Location (34.9%)	Convenient Location (30.1%)	Convenient Location (30.4%)	Convenient Location (29.0%)	Convenient Location (31.4%)	Convenient Location (37.4%)	Convenient Location (36.4%)	Convenient Location (42.6%)
2nd	Low noise level (14.9%)	15.1%	14.1%	Low noise level (14.0%)	Low noise level (16.2%)	Low noise level (11.7%)	Low noise level (17.2%)	Low noise level (13.7%)	Low noise level (13.0%)	Good ventilation (18.2%)	Low noise level (17.0%)
3rd	Shade / covered area from sun and rain (9.1%)	9.1%	8.7%	Shade / covered area from sun and rain (9.6%)	Shade / covered area from sun and rain (9.8%)	Comfortable tables and chairs (9.6%)	Shade / covered area from sun and rain (9.9%)	Comfortable tables and chairs (11.8%)	Shade / covered area from sun and rain (10.4%)	Low noise level (13.6%)	Adequate lighting (8.5%)
4th	Comfortable tables and chairs (7.9%)	8.7%	Good ventilation 6.5%	Appropriate temperature (7.2%)	Comfortable tables and chairs (8.7%)	Shade / covered area from sun and rain (9.2%)	Good ventilation (9.5%)	Electric outlet for electronic devices (9.8%)	Availability of computer and software (7.8%)	Electric outlet for electronic devices (9.1%)	Shade / covered area from sun and rain (6.4%) &
5th	Good ventilation (7.1%)	7.3%	#Availability of computer and software 6.5%	Adequate lighting (6.0%)	Appropriate temperature (7.5%)	Good ventilation (8.8%)	Comfortable tables and chairs (8.8%)	Good ventilation (7.8%)	Good ventilation (7.0%)	/	Comfortable tables and chairs (6.4%)

Q: For indoor informal learning space, which of the following functions/ features are the five most important to you?
 * p<.05
 Source: Student Quantitative Survey (n=993)

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Table 3. Students' preferences of ILS distribution											
				Colleges with facilities in separate locales					Colleges with facilities in dedicated buildings		
	Overall	Colleges in separate locales	Colleges in dedicated buildings	FAST	FB	FENG	FHSS	FH	SD	FCE	SHTM
n	999	809	184	83	173	240	262	51	22	115	47
Centralized	39.0%	38.3%	42.4%	45.8%	43.9%	37.1%	35.5%	27.5%	36.4%	46.1%	36.2%
Decentralized	61.0%	61.7%	57.6%	54.2%	56.1%	62.9%	64.5%	72.5%	63.6%	53.9%	63.8%

Source: Student Quantitative Survey (n=993)

Table 4: Students' sense of belonging to academic home and to PolyU									
	/	Colleges with facilities in separate locales					Colleges with facilities in dedicated buildings		
	Overall	FAST	FB	FENG	FHSS	FH	FCE	SD	SHTM
n	999	83	173	240	262	51	115	22	47
Academic home	/	4.42	4.47	4.63	4.81	4.84	4.47	5.0	4.85
Overall Mean	4.69			4.65 ***				4.63	
PolyU	/	4.76	4.95	4.95	4.65	4.96	4.75	4.91	4.79
Overall Mean	4.84	4.83 ***					4.78		
t-value		-5.126							

Q: To what degree do you agree with "I feel a sense of belonging to my Department at PolyU"? & To what degree do you agree with "I feel a sense of belonging to PolyU"?

*** p<.001

(1=Strongly disagree – 7=Strongly agree)

Source: Student Quantitative Survey (n=993)

creates a traffic diversion; the subway and buses allow students to leave, without passing through the central campus, and go to other parts of Hong Kong. This may reduce the opportunities for SHTM students to integrate with other students and engage in activities on central campus; hence, they may become more segregated.

4.5 Sense of belonging to college and university

ILS becomes an important part of the learning experience, affecting students' attitudes and impressions toward their academic home and the university. Where a college is housed within a dedicated building, one would suspect given activities and students are more closely located and that the sense of belonging to the academic home would be stronger when compared to colleges with separate locales. Although not statistically significant, there is directional indication that students from colleges with facilities in dedicated buildings have a higher sense of belonging, based on results of the student quantitative survey. SD has the highest sense of belonging to the college ($M=5.0$), followed by SHTM (Table 4). FCE has a mean of 4.47, which is at par with colleges without dedicated premises. This may be due to the fact that there are departments under FCE, making the sense of belonging more diffused. Interestingly, there is a statistically significant difference between sense of belonging to the department and to PolyU ($p<0.001$) for students in colleges without a dedicated premises. These students may have more chances to explore the campus if their colleges are not located in a single building. Students may be more mobile around campus when they are not confined to departments with dedicated buildings. Happy Tracker (GPS study) data also showed that students generally walk around the campus throughout the day, as illustrated by the route map (Appendix 1). Therefore, by exploring the campus, students may enhance their sense of belonging to the University.

5. Discussions and Implications

5.1 Differences in ILS usage and behaviors

This section answers the first research question, "What are the differences in ILS usage and behaviors between students from colleges located in a dedicated building and those are not?" Generally, students' requirements for ILS are quite basic: convenient location, low noise level, electric outlets, and good ventilation; reflecting the drivers of using ILS do not differ much across the two types of colleges.

Similarly, the ILS usage does not have a substantial difference from one college to another. The preceding sections suggest outside classroom, the Library is the most visited ILS. This is understandable given that for generations, students have been acculturated to study in the

Library after class. Over time, the Library serves many purposes, evolving from the traditional usage of searching for physical books and studying in a quiet atmosphere, to having designated places for group work and discussions, partitioned cubicles for one or two students, use of computers alone or in group setting, holding workshops, and use of 3D printing services.

However, some usage variations were observed among students from colleges with dedicated buildings. For SHTM, for instance, library visits drop from the university average of 70%+ to 53.2%, as traffic gets diverted to the School's Resource Center (29.8%), which is more convenient. Going to the Library entails a short walk crossing the footbridge, which is a natural barrier to the central campus. This means that convenience trumps everything, which ranks first in drivers of usage. Which ILS students visit is a function of what they are doing, where they were before, and what they will be doing after the ILS visit as well as what the nearby ILS options are. The Resource Center, in many ways, acts like a small library, as it provides many features and functions that the main Library serves, except having its size and location. In fact, the Center provides 262 seats, 24 computers with internet access, a quiet study room, vending machines, and an open learning space encouraging group project discussions and presentations in an area of 4,350 square feet. Given SHTM is out of the way from the central campus, it would be rare if students from the central campus would visit the Resource Center (even if they gain access). This also suggests that within dedicated buildings not centrally located on campus, a dedicated ILS such as the Resource Center could be a viable option, as this would help alleviate the pressure on the main library traffic. With students congregating in the same place to study (albeit smaller than the main library), this also helps intra-college communication and builds a culture that exemplifies the college. Having an ILS within the SD which is centrally located, offers similar observations.

For FCE, in another standalone, dedicated building, there are only simple facilities such as tables and chairs where students can congregate before or after lectures and tutorials in the same building. Such a lack of well-designed ILS limits the socialization process within the locale. Furthermore, providing additional ILS in the building could help enhance students' sense of belonging to the college, as in the case of SHTM and SD. In doing so, their sense of belonging to the University does not appear to be negatively affected, as the means reported by SD, SHTM and FCE students are quite similar. Thus, students who study in a dedicated building tend to use the Library less and have a higher sense of belonging to their respective college.

5.2 Decentralization

This section answers the second research question, “Is it better for a university to have all ILS be located under one roof?” In general, the findings suggest a slight majority of students prefer ILS be developed on a decentralized basis, regardless of their academic home. Yet, close to 40 percent of the students would prefer centralized development of ILS, with FCE being the highest amongst all colleges (46.1%) (Table 3). While centralized development of ILS such as a Student Union Center (i.e., in many institutions, this is the place for gatherings, commonly known as “the pit” or “the hub”) with multiple facilities and services would suit the needs of these 40% of students, this is not always possible because of lack of space and the need for huge capital expense.

Given the lack of space and student preference, ILS could be developed in decentralized locations whenever possible, for example, capitalizing on various unused space in corridors and corners. By providing common theme in renovation and décor, small areas can be interconnected so departments in the same college would share a common identity. As well, a zoned approach using a common theme, with different technology support levels for different ILS, would provide students with the services and facilities needed in different zones (Souter et al., 2011). A common theme approach would allow naming and strengthen marketing efforts, which helps increase awareness and usage (Morieson et al., 2018). This approach lends itself to an overall master planning scenario whereby different zoning would work together under an overall theme, creating an inviting and welcoming atmosphere for students to transit from one zone to another (Harrop & Turpin, 2013). Each zone should have its own uniqueness in terms of technology features and functionalities, so individual zones serve different purposes as opposed to becoming replicas of one another. For example, one zone within the broad engineering area could be a technology zone that is opened 24/7, with engineering-specific technologies for all engineering students, regardless of their sub-disciplines. This would provide an identity of a dedicated place, despite the fact that the college may not have a dedicated building.

5.3 Overcrowding at the Library

With the growing university population and change in pedagogy involving more group projects and assignments, there has been a growing demand in the use of the University Library. There were over 2.9 million visitor counts to the PolyU Library annually (Library Staff, personal communication, 2018). This has resulted in immense pressure on library capacity, not to mention the Library also serves other academic institutions, outsiders, and alumni;

the number of visitor counts can exceed 19,000 per day. Although there are 3,900 seats, the Library is still overcrowded and has recently made significant adjustments to cater to the growing demands (Hong Kong Polytechnic University, 2019). These include vacating infrequently borrowed books and shelves to off-campus storage, digitizing library collections, and building another floor on top of the four-floor structure to provide additional space. The University needs to develop new strategies to meet the growing demand of students. For example, as more decentralized ILS facilities become available, students could be diverted to those locations to meet their informal learning needs, as the digital Library resources can be made available anywhere anytime with any device to support learning.

5.4 Important traffic generator: Food

If the eating outlet portfolio is not well managed, students would be driven away! The interview results suggest that students would prefer to stay on campus if they can. Yet, once they leave the campus it may be difficult for them to return. Radloff (1998) believes that most of the learning takes place after classes, which justifies the need to keep students on campus for as long as possible. This line of thinking suggests that any activities or interactions with other students would provide opportunities to develop social communication skills and to engage in peer learning.

Within the Asian culture, dining is an important social occasion, which provides opportunities to bond, socialize, and learn from one another (Smith, 2005). Yet, one traffic generator for students to go off campus is food. Once students go off campus, there is a possibility that they do not return and/or they are not consuming the food with their study peers on campus. Findings from student focus groups suggest that students prefer cafe-style restaurants, and there is a need to understand food consumption in a more holistic basis. Given food and restaurants are integral parts of ILS usage, it makes sense to have campus dining planning and development be considered as part of the master planning process for ILS. The university does have advantages to lure desired foodservice brands on campus, given it charges a very reasonable rent, which in turn allows operators to offer discounted prices of 15% to 30% below other locations of the same brand off campus.

Currently, for colleges with dedicated buildings but located on the far ends of the campus, the issues are food variety and convenience. For FCE, there is only one food outlet with limited choices, and students have to walk across to the central campus for more food choices. For SHTM, food is very accessible through a short walk to the commercial district, but this also limits the ability to keep student activities on campus. Given the lack of food choices, an immediate possibility is to have coffee and sandwich/snack

carts available in accessible areas so that have more choices for breaks and meals. The more proximate the lecture and ILS locations are to eating places, the stronger the attraction is to those places.

6. Conclusion

The study achieves the objective of providing insights for university management in the ILS planning process by answering the two research questions. To begin with, the findings show some differences in ILS usage behaviors and preferences between students from colleges and schools with dedicated buildings versus those from colleges located in various locations. Dedicated premises tend to have ILS in their own building, and an ILS for students to congregate could partially replace their visits to the University's main library. It is apparent that the specific locale of the colleges and the building offerings would have more bearing on the preferences and behaviors of ILS usage. The notion of whether the university should have a central ILS (i.e., a hub concept) is still up for debate. Despite not being the majority, a substantial number of students (40%) prefer a centralized ILS; this may suggest a two-prong strategy to be employed. That is, building localized ILS and at the same time having a central ILS, such as a hub concept in the center of the main campus. There are also directional indications that a central ILS would result in a higher sense of belonging to the university. From an operational and logistics point of view, it may make more sense to adopt a zoning strategy to achieve the look and feel of a dedicated area. As food is a driver, it is advisable to develop attractive food service and eatery establishments as part of the master plan. This is one case featured in the Hong Kong setting and multiple case studies in the future would help provide triangulation and generalization of findings.

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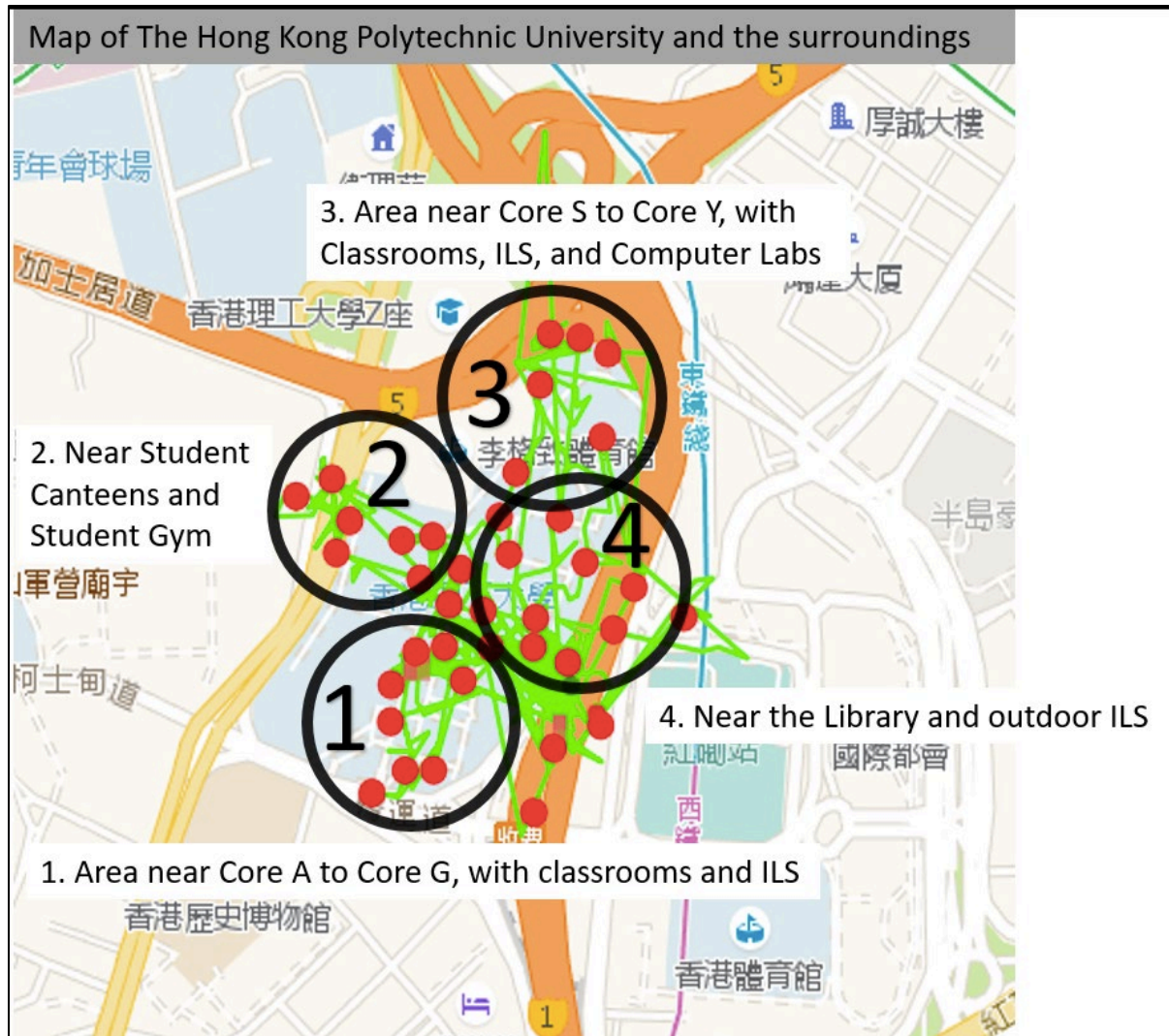
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Appendix 1. Route map for students



Notes: The red dots indicate the location that students visit and the green lines represent the route that students walk around on campus, recorded by GPS.

Source: Happy Tracker