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## Effectiveness of overnight learning commons: A comparative study

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### ABSTRACT

This study explores the overnight usage of Chi Wah Learning Commons and The University of Hong Kong Libraries on the same campus. By adopting quantitative research, it investigates students' preferences in these areas and levels of social capital in the library, further, it explores the similarities and differences of user behavior between the university's undergraduate and postgraduate students. Our findings showed that HKUL had not taken full advantage of its prime location and comprehensive collection in the main library, and the full potential of overnight services. The results of this study contribute to the library management in understanding the changing needs of users and propose the potential enhancements on social capital among students and the community.

### Introduction

Starting from the 21st century, most academic libraries from western countries have undergone a remarkable transformation to develop learning commons because of emerging technology trends and classroom evolution (Accardi et al., 2010). Libraries are not only places for independent studying and reading in a quiet environment, but also for group collaboration and discussion, technological creations, leisure and relaxing, and social activities (Sullivan, 2010). To accommodate students' ever-changing overnight needs, academic libraries have started to extend their typical opening hours to 24 h a day, five days a week (24/5), and even seven days a week (24/7) during examination periods, with extended academic support services (Moore & Wells, 2009).

Social capital can be defined as “networks together with shared norms, values, and understandings that facilitate co-operation within or among groups” (Keeley, 2016, p. 103). Different studies have highlighted the potential uses of the library and learning commons as places for building social capital, as learning commons are bringing social benefits to all users especially because collaboration results in the integration of academic and social life (Bennett, 2003; Moore & Wells, 2009). Despite some prior studies on the social capital of public libraries (C. Johnson, 2012; Khoir et al., 2017; Ramsey, 2016), scant studies focus on social capital at academic libraries, especially learning commons in an overnight setting in East Asia. Therefore, we developed this study to explore overnight facilities provided at two main 24-h study spaces of the University of Hong Kong (HKU), the HKU Libraries (HKUL) and Chi Wah Learning Commons (CWLC) in terms of students'

overnight usage, preferences for services, facilities, and technical support, as well as the contribution of these spaces for social capital among students. With such overnight facilities provided in the HKU campus, undergraduate (UG) and postgraduate (PG) students are anticipated to have different usage in these two locations because of different curricular requirements (Lau et al., 2017). The following research questions (RQs) guide our research:

RQ1: What is the extent of social capital in these overnight student facilities?

RQ2: How can the library improve its contribution to building up the levels of social capital in these spaces?

RQ3: What are the similarities and differences of the PG and UG students in their overnight usage of HKUL and CWLC?

### Background

#### University of Hong Kong (HKU)

Established in 1911, HKU is the oldest university in Hong Kong, and currently an international comprehensive research university with nearly 30,000 students. It is a member of the Universitas 21 (<https://universitas21.com/>) and a member of iSchools (<https://ischools.org/>).

#### University of Hong Kong Libraries (HKUL)

Established in 1912, the HKUL is the oldest academic library in

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Hong Kong. Now it consists of the Main Library and six branch libraries. In the latter half of 2012/13, the HKUL had started to follow the trend and successful examples from western academic libraries and developed a new learning common-style facility on the third floor (Level 3) in the Main Library to support research, studying, and group collaboration. 24-h Study Zone, a private place for reflective research and studying, was opened to support students' overnight needs in the Main Library. (P. Sidorko & Chin, 2013). Moreover, the Library Corner, located on the Ground Floor of the Main Library, was also opened for overnight use in April 2013, which featured dining booth seats as well as movable desks and chairs to support collaborative learning.

To meet the increasing demand for collaborative and quiet space, in September 2019, the 24-h Study Zone and the Library Corner have been newly renovated to support different learning styles, such as deep-quiet studying, private and reflective research, leisure reading and relaxing, and socialization (P. Sidorko & Chin, 2019).

#### *Chi Wah Learning Commons (CWLC)*

In late 2012, HKU established new premises named Chi Wah Learning Commons (CWLC) in the Centennial Campus to provide technology-rich learning and interactive space for students and teachers. This facility provides 24/7 access to its Level 1 (CPD-1) with various spaces and areas, such as quiet study areas, reading areas, individual workstations, and group study rooms to support individual and self-paced learning as well as collaborative learning (Learning Environment Services Team, 2012).

### Literature review

#### *Overnight services and facilities in the library*

There is an increasing trend of academic libraries developing their midnight services for their patrons in the 21st century. From the study conducted by the Association of Research Libraries. (2008), they surveyed 113 member libraries and found that 43 academic libraries (38%) were open 24/7 regularly by providing collaborative and individual study spaces with extended service hours. Further, 58% and 19% of libraries even offered circulation and reference services, respectively.

To support overnight services, librarians have provided different facilities and changed their policies. Georgia Southern University extended opening hours to access all floors of the library and employed staff to provide reference service, technical support, and immediate assistance (Smith, 2008). Taking the example from Zone24 of the Hong Kong Design Institute (Yip et al., 2019), vending machines are provided to students during their night learning, which aims at creating a relaxing atmosphere for them. To support Belk Library's 24/5 operation, the library management allows a coffee shop with computers to be opened near the library (K. Johnson & McCallister, 2015). Bowman (2013) reports that the Georgia Southern University Library also allows food and drink during their 24-h service. The University of Denver Library has successfully boosted its population by offering 24-h services (Sewell, 2013).

#### *Library and learning commons as contributors to social capital*

Social capital can be beneficial to an organization in terms of information transfer, knowledge creation, and accumulation (Arregle et al., 2007). In the 21st century, academic libraries have started to transform to support informal learning spaces (Bailin, 2011). Gayton (2008) suggests that the reasons for shifting to social spaces are based on three factors: increased usage of electronic resources, dropping circulation of print copies, and declining library usage from students. Sinclair (2007) named a physical place as "Commons 2.0," which provides wireless communication and flexible spaces to promote social

activities and collaboration. Such areas should support peer learning and recreation, making users feel comfortable and relaxed as well as encouraging creativity. Students enjoy different learning styles at one time, like studying, research, and socializing (Cunningham & Walton, 2016). Keeping with more flexible commons spaces to support multiple learning styles, the Belk Library & Information Commons provide a wide variety of facilities to their users, such as computers, group study rooms, and digital media studios (K. Johnson & McCallister, 2015).

In the educational context, Bennett (2003) points out that learning commons are bringing social benefits to all users, which not only share information but also turn information into knowledge or even wisdom. Moore and Wells (2009) also show that students collaborating in a learning environment results in the integration of academic and social life. Besides, Kranich (2001) highly recommends librarians to cooperate with campus faculties and departments to build social capital, which can facilitate students' participation in communities' activities, strengthen their relationship and collaboration, and integrate community engagement into research and learning.

Different studies have highlighted the potential uses of the library and learning commons as places for building social capital. Acker and Miller (2005) points out that libraries serve as an essential location of a community meeting place for creating social cohesion and trust among the community. Similarly, Malapela and De Jager (2018) premise that the library is a social construct and hence generates a social capital value. Further, C. Johnson (2012) points out that the libraries' key role is being a generator of social capital, and openness leads libraries to ideal places for gathering people, gaining knowledge from the information they need, and communicating people with new ideas. Moreover, the library cafe can enhance social capital as it can serve as a multi-functional hub for learning and socializing purposes (Deng et al., 2019). Diers and Simpson (2009) also propose that a new library cafe can enhance the library to a community space in bringing in more patrons and keeping their staying time. Interestingly, coffee has been considered as a very successful way to increase library loan, facilities usage, and social activities in libraries (Harris, 2007). Besides, Bennett (2003) suggests that learning commons bring people together with shared learnings task, which may not happen in traditional common rooms.

#### *Research gap*

To enhance library services and understand users' needs, there is much need for research on the evaluation of overnight library services. However, there are scant studies on overnight spaces, especially in East Asia. A qualitative study explored the 24-h learning space in the Hong Kong Design Institute Library (Yip et al., 2019) has motivated this research. On the other hand, while there are studies on the social capital of public libraries, there are scant studies on the social capital of learning commons, especially in an overnight setting. Therefore, we seek to fill this gap in this study.

### Methodology and data collection

For a consistent and structured method, a survey was used for data collection to probe into the three RQs of this research (Creswell & Creswell, 2017). An online survey using Google Forms was employed to store the responses into the database, which could minimize the possibility of data entry errors. An online survey is also convenient for participants to join voluntarily, depending on their preferences.

This online survey aims to examine the use of overnight open areas in their learning process and sociable communication. The survey comprised a total of 19 questions which could be classified into four major parts, including 1) Participants' demographic information, 2) overnight usage in the HKUL and CWLC, 3) Participants' preferences on the overnight facilities under various scenarios, and 4) the potentials of building social capital in the community (see Appendix A). Most of the

**Table 1**  
Demographic of respondents (n = 100).

Gender	
Male	41 (41%)
Female	59 (59%)
Level of study	
Undergraduate (UG)	51 (51%)
Postgraduate (PG)	49 (49%)
Age	
18–20	37 (37%)
21–24	19 (19%)
25–29	25 (25%)
30–34	11 (11%)
35–39	4 (4%)
40 or above	4 (4%)
Faculty	
Architecture	3 (3%)
Arts	13 (13%)
Business and Economics	10 (10%)
Dentistry	3 (3%)
Education	29 (29%)
Law	5 (5%)
Medicine	6 (6%)
Science	13 (13%)
Social Science	18 (18%)

questions employed a Likert scale to provide reliable and statistical measures of opinions and behaviors (Creswell & Creswell, 2017). We targeted all HKU students as the research population to understand why or why not they used these overnight facilities. Participants included UG, taught PG, and research students from the HKU. The link of the survey was shared via the HKU Moodle platform, and QR codes were distributed at HKUL and CWLC. Participation in this study was voluntary, and no incentives were provided for data collection.

Descriptive analysis and statistical analysis were adopted for the interpretation of collected data. The data were analyzed using IBM SPSS Statistics Version 26 and Microsoft Excel. In particular, the Mann-Whitney *U* test was used to investigate any two-tailed significant differences between the levels of respondents' study and gender, while Pearson's correlation coefficient test was used to determine possible correlations between respondents' accommodations and traveling time to home with visiting frequency and staying time at HKUL and CWLC (Mann & Whitney, 1947).

A total of 100 usable responses for this study was collected. Table 1 shows a total of 41 male and 59 female responses collected from targeted groups, with 51 UG and 49 PG students. 37% of the participants are iGen category ranging from 18 to 24 years old. A majority of the participants are from the Faculty of Education (29%), followed by Social Science (18%), Arts (13%), and Science (13%).

## Results and data analysis

### Frequency of overnight visit and staying time

This study explores the overnight usage of Chi Wah Learning Commons (CWLC) and The University of Hong Kong Libraries (HKUL) on the same campus. Table 2 shows overnight usage at both locations by patrons of different levels of study and gender, respectively. For overnight visits, both UG and PG respondents visited CWLC more often than HKUL and stayed longer in the former. In general, respondents visited CWLC once a week, conversely, less than once a month to HKUL, plus they spent 1 to 2 h longer in CWLC. Notably, UG respondents visited overnight more frequently than PG in CWLC. Both male and female respondents visited CWLC more often and were willing to stay longer than HKUL. However, there is no significant difference in the number of overnight visits for HKUL and CWLC between genders.

### Correlation between frequency visit and traveling to the home

Table 3 shows the Pearson's Correlation Coefficient to test for any correlation between respondents' accommodations and traveling time to home with visiting frequency and staying time at HKUL and CWLC. Not surprisingly, students who live far from the HKU campus tended to spend less time to stay at HKUL and visit CWLC less frequently as the opportunity cost to study there may be higher.

### Overnight facilities and services used

Table 4 shows the overnight usage of HKUL and CWLC facilities for different purposes. In general, technology and individual studying/learning were the most frequently used facilities in both overnight areas. Comparatively, both UG and PG respondents used less technical facilities in the HKUL than the CWLC, including on-site computers, printers and copiers, power socket, and free-Wi-Fi network, particularly on-site computers were the least used in HKUL. We also observed that both groups rarely overnights at the research carrels in HKUL and the quiet study area in CWLC.

The results revealed some significant differences between the usage behavior of UG and PG respondents. For individual studying and learning, UG students were more engaged to spend almost half of their visiting time in using HKUL's single study tables overnight, compared with PG students. For group studying and learning, although both groups seldom used the facilities in HKUL, PG students used more seminar rooms and collaboration tables than UG students. On the other hand, UG respondents used group workrooms and collaboration tables in CWLC more frequently. For technology facilities, UG groups used power sockets and printers/copiers more frequently than PG groups in both locations.

### Reason for not using HKUL overnight

Concerning the low usage of many facilities and resources in the HKUL overnight open area, we summarized the reasons for not choosing the HKUL under five main areas in Table 5: 1) location, 2) environment, 3) facilities, 4) services, and 5) library policy. Both UG and PG respondents reflected that the location was favorable due to their central location on the main campus. However, they agreed that the environment was unclean and uncomfortable, and facilities to support their learning, socializing, and resource access was inadequate. They also considered the policy to ban food and drinks in the library as a barrier to visiting the library overnight. Notably, UG respondents significantly agreed that "no staff on duty for information seeking help," compared to the PG subjects, was one of the critical reasons for not choosing the overnight open area of HKUL.

### Preferred 24-h locations for learning and recreational purposes

In comparison with other overnight locations, this study also investigated HKU students' preferred location choices for different purposes, such as individual learning, group learning, technical support, and recreation. Table 6 indicates 47% of respondents preferred the overnight open area at HKUL for their individual study for tests or examinations, and more than half of the respondents also did research and reading academic articles there. Similar to the results in Table 6, over 50% of respondents preferred the technical support provided in CWLC. In particular, the majority of them preferred to collaborative project-based learning with their classmates (78%) and used the on-site computers (62%) there. Besides, 40% of respondents preferred their recreational reading at cafes near campus, and over 40% of respondents preferred other 24-h locations due to relaxing, quiet, and hygienic environments.

**Table 2**  
Frequency of overnight visit and staying time at HKUL and CWLC by study level and gender.

		Overall (n = 100)	Study Level			Gender		
			Undergraduate (n = 51)	Postgraduate (n = 49)	Z-score	Male (n = 41)	Female (n = 59)	Z-score
Frequency of visit	HKUL	2.35	2.53	2.16	-1.60	2.49	2.25	-0.70
	CWLC	3.43	4.02	2.82	4.58***	3.54	3.36	-0.66
Staying time	HKUL	3.57	3.86	3.27	-1.45	3.63	3.53	-0.44
	CWLC	4.55	4.8	4.29	-1.45	4.41	4.64	-0.44

(1) Scale for the frequency of visit: 1: Never; 2: Less than once a month; 3: Once a month; 4: Once a week; 5: Several times a week; 6: Everyday.

(2) Scale for staying time at the overnight facilities: 1: Never; 2: Less than 30 min; 3: 30 min to 1 h; 4: 1–2 h; 5: 2–3 h; 6: More than 3 h.

(3) Z-score is obtained from the Mann-Whitney *U* test: \*\*\**p* < 0.01; \*\**p* < 0.05; \**p* < 0.1.

**Table 3**  
Pearson Correlation between students' residence and traveling time with the frequency of overnight visiting and staying at the HKUL and CWLC.

	HKUL		CWLC	
	Frequency visit	Staying time	Frequency visit	Staying time
Residence in halls or colleges	0.056	0.151	0.060	0.080
Residence in private operated dormitories	0.143	0.036	0.105	0.007
Traveling time to home	-0.153	-0.258**	-0.218*	-0.138

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

**Table 4**  
Overnight use of HKUL and CWLC for different purposes.

Purposes	Locations	Facilities	UG (n = 51)	PG (n = 49)	Overall (n = 100)	Z-score
Individual studying and learning	HKUL	Single study tables	3.14	2.45	2.80	-2.13**
		Research carrels	1.76	2.00	1.88	-0.89
	CWLC	Study tables	2.63	2.45	2.54	-0.64
Seeking information	HKUL	Quiet Study Area	1.82	2.12	1.97	-0.83
		Facilities				
		Self-check machines	2.33	2.27	2.30	-0.36
		Catalogue searching (OPAC)	1.41	1.63	1.52	-0.57
		Collections				
		Leisure reading collection	1.57	1.69	1.63	-0.46
		Po Ching & CEO collection	1.24	1.39	1.31	-0.51
Group studying and learning	HKUL	Main books and serials (Class. 600 and 800)	1.80	1.59	1.70	-0.80
		Seminar room	1.29	1.55	1.42	-1.69*
		Group collaboration table	1.47	1.84	1.65	-2.11**
	CWLC	Study rooms or group workrooms	3.86	2.82	3.35	-3.29***
		Group collaboration table	3.73	2.78	3.26	-2.94***
Technologies	HKUL	PC	1.55	1.84	1.69	-1.23
		Free-wifi network	2.98	2.80	2.89	-0.60
		Power sockets	3.22	2.55	2.89	-1.87*
		Printers and copiers	2.37	2.35	2.36	-0.10
		PC	3.27	2.82	3.05	-1.53
	CWLC	iMac	1.47	1.84	1.65	-1.46
		Free-wifi network	3.27	3.04	3.16	-0.67
		Power sockets	3.82	3.12	3.48	-2.12**
		Printers and copiers	3.45	2.51	2.99	-2.97***
		Sofas and chairs	1.67	1.90	1.78	-1.15
Leisure purposes	HKUL	Staircase in social space area	1.51	1.47	1.49	-0.46
		Sofas and bean bags	1.73	1.82	1.77	-0.61
	CWLC	Sofas and bean bags	1.73	1.82	1.77	-0.61
		High tables and chairs	1.63	1.84	1.73	-1.29

(1) Scale: 1: Never; 2: Rarely; 3: About half time; 4: Frequently; 5: Always.

(2) Z-score is obtained from the Mann-Whitney *U* test: \*\*\**p* < 0.01; \*\**p* < 0.05; \**p* < 0.1.

#### Levels of social capital in overnight areas

Table 7 shows different measures of social capital in overnight areas, and the user perceptions of social capital were generally low (below 3). The results showed that respondents were more positive about social networking in terms of willingness to share comments or experiences on social networks and providing feedback. On the other hand, both groups disagreed with using overnight facilities for making

new friends and playing online games with friends. In contrast to UG respondents, PG respondents were significantly more positive and outgoing in most measures of social capital. For example, PG students tended to have better perceptions of other overnight users and about using overnight facilities to improve their interpersonal skills.



**Table 5**  
Reasons for not choosing the overnight open area of HKUL.

Reasons	Undergraduate (N = 51)	Postgraduate (N = 49)	Overall (N = 100)	Z-score
Location	3.37	3.76	3.56	-1.21
Environment				
1. Uncomfortable and noisy environment	4.37	4.43	4.40	-0.26
2. Unhygienic environment	4.45	4.43	4.44	-0.35
3. Inadequate lighting	4.25	4.27	4.26	-0.15
4. Reading atmosphere	3.94	4.02	3.98	-0.13
Facilities				
1. Inadequate support on studying	4.57	4.41	4.49	-1.10
2. Limited facilities to get access to resources	4.43	4.37	4.40	-0.35
3. Inadequate support on socializing	4.31	4.24	4.28	-0.49
4. Inadequate support on creation and innovation	4.31	4.20	4.26	-0.92
Services				
No staff on duty for information seeking help	4.47	4.16	4.32	-2.23**
Policy banning food and drink	4.53	4.37	4.45	-1.15

(1) Scale: 1: Strongly disagree; 2: Disagree; 3: Neutral; 4: Agree; 5: Strongly agree.

(2) Z-score is obtained from the Mann-Whitney U test: \*\*\*p < 0.01; \*\*p < 0.05; \*p < 0.1.

### Potential development on community-level of social capital

As shown in Table 8, most of the respondents welcomed the idea to build social capital in HKU. Notably, respondents agreed that “open 24-hour library cafe nearby the HKU Main Library” and “develop virtual reference and information services midnight” have high potentials for developing social capital. Besides, more PG students preferred to “allow other types of users accessing overnight open areas.”

We also investigated the respondents' expectations of overnight services and facilities (see Table 9). Respondents were keen on looking for both formal and informal learning on campus. For HKUL, both UG and PG respondents had high expectations for individual study, learning, seeking information, and group collaboration, while more PG respondents preferred creation and lessons. For CWLC, both respondents also had high expectations for group collaboration, while UG groups preferred relaxing, creation, and socializing.

### Discussion

#### Social capital in these overnight student facilities

In general, although the mean scores on user existing perceptions of social capital in overnight areas were low (see Table 7), the scores of the potentials for developing social capital were high (see Table 8). The inadequate facilities and services that could not meet user expectations might lead to fewer visits and shorter stays, which hindered the development of social capital in these spaces. In particular, regarding the facilities, the majority of respondents agreed that they were not choosing overnight areas of HKUL due to inadequate support on socializing (see Table 5), which was in line with the finding that they had higher expectations for CWLC for socializing (see Table 9).

Regarding the services, respondents agreed that inadequate staff on duty for information seeking help was one of the reasons for not choosing the overnight area of HKUL (see Table 5), but staff on night duty often contribute the building of deeper connections with patrons (Blakely & Mobley, 2019). Besides, PG respondents were still more

**Table 6**  
Preferred 24-h locations for learning and recreational purposes (n = 100).

Purposes	Main Library overnight open area	Medical Library 24-h Study Rooms	Chi Wah Learning Commons (Level 1)	Cafes near campus	Other locations
Individual learning					
1. Studying for test/examinations	47 (47%)	8 (8%)	20 (20%)	2 (2%)	23 (23%)
2. Doing assignments	32 (32%)	4 (4%)	37 (37%)	4 (4%)	23 (23%)
3. Doing research	66 (66%)	5 (5%)	18 (18%)	2 (2%)	9 (9%)
4. Reading essays or scholarly reading	63 (63%)	3 (3%)	20 (20%)	5 (5%)	9 (9%)
5. Preparing a presentation	13 (13%)	1 (1%)	76 (76%)	2 (2%)	8 (8%)
Group learning					
1. Collaborative project-based learning	15 (15%)	0 (0%)	78 (78%)	2 (2%)	5 (5%)
2. Formal meetings	19 (19%)	0 (0%)	54 (54%)	2 (2%)	25 (25%)
3. Video interviewing	16 (16%)	1 (1%)	62 (62%)	2 (2%)	19 (19%)
4. Preparing a presentation	13 (13%)	1 (1%)	76 (76%)	2 (2%)	8 (8%)
Technical support					
1. Computer use	22 (22%)	2 (2%)	62 (62%)	2 (2%)	12 (12%)
2. uPrint	25 (25%)	4 (4%)	68 (68%)	0 (0%)	3 (3%)
3. Software use like SPSS, Endnote	23 (23%)	1 (1%)	59 (59%)	0 (0%)	17 (17%)
Recreational activities and environment					
1. Recreational reading	27 (27%)	3 (3%)	15 (15%)	40 (40%)	15 (15%)
2. Internet for entertainment	11 (11%)	1 (1%)	44 (44%)	10 (10%)	34 (34%)
3. Relaxing	12 (12%)	0 (0%)	27 (27%)	19 (19%)	42 (42%)
4. Quiet environment	37 (37%)	6 (6%)	14 (14%)	2 (2%)	41 (41%)
5. Hygienic environment	24 (24%)	8 (8%)	19 (19%)	3 (3%)	46 (46%)

**Table 7**  
Different measures of social capital in overnight areas.

	UG (n = 51)	PG (n = 49)	Overall (n = 100)	Z-score
<b>Making new contacts</b>				
1. I usually make new friends in overnight open areas.	1.37	1.80	1.58	-2.67***
2. I sometimes chat with other users in overnight open areas.	1.55	2.10	1.82	-2.43**
3. I can recognize other users in overnight open areas.	1.86	2.37	2.11	-2.12**
4. Users of overnight open areas are nice.	2.12	2.65	2.38	-2.05**
5. I trust other visitors in overnight open areas.	2.37	2.96	2.66	-2.35**
6. My interpersonal skills are improved by using overnight open areas.	1.86	2.47	2.16	-2.77***
<b>Seeking help</b>				
1. I shall seek help in overnight open areas when I encounter problems.	1.96	2.37	2.16	-1.76*
<b>Group collaboration</b>				
1. I usually hold meetings with my classmates in overnight open areas.	1.86	2.29	2.07	-1.60
2. Overnight open areas promote innovation and creation with groupmates.	1.88	2.43	2.15	-2.34**
<b>Social networking</b>				
1. I often stay at overnight open areas to play online games with friends.	1.24	1.63	1.43	-2.63***
2. I share comments or experiences of overnight open areas on social networks.	3.24	3.04	3.14	-0.78
3. If I have comments on overnight open areas, I will send my feedback.	3.29	3.39	3.34	-0.19
4. Overnight open areas serve for community engagement.	2.31	2.73	2.52	-1.98**

(1) Scale: 1: Strongly disagree; 2: Disagree; 3: Neutral; 4: Agree; 5: Strongly agree.  
 (2) Z-score is obtained from the Mann-Whitney U test: \*\*\*p < 0.01; \*\*p < 0.05; \*p < 0.1.

engaged in building up social capital with others, such as making new friends, chatting with others, and improving their interpersonal skills in the overnight open areas than UG students (see Table 7). Also, more PG respondents were positive about allowing other types of users to access overnight open spaces (see Table 8). The age of PG students is mainly from 25 to 29, who might need to develop their social network in their communities (Kranich, 2001). Libraries could play the role of a shared space for different groups within the community, accommodate diverse needs, and facilitate social interactions (Goulding, 2004). Also, as suggested by Melbin (1978), nighttime is a period of more helpfulness and friendliness than other portions of the day, which may imply that libraries may make better use of overnight time for providing more facilities for social activities and events, which may help improve building social capital.

*Suggestions for improving the levels of social capital in these spaces*

First, librarians should start with understanding their users' needs through surveys and focus groups regularly (Fong et al., 2020). As respondents were willing to share their comments or experience on their social networks and to send feedback to the management (see Table 7), the library should promote the overnight areas and related services and support more proactively on social networks while encouraging feedbacks (Cheng et al., 2020; Fong et al., 2020; Lam, Au, & Chiu, 2019; Witte, 2014).

Second, with the needs and expectations of a place for seeking information and socializing from students, information professionals,

supporting staff, and volunteers could be on duty during night time to provide reference services and immediate assistance to patrons (Greenwood & Bradshaw, 2009). In particular, staff and patrons may feel more of a connection at night (Blakely & Mobley, 2019). Also, librarians may hold more activities by collaborating with faculties members and student societies in earlier nighttime (Fong et al., 2020). These measures could improve social capital by connecting users, volunteers, and library professionals.

Third, as seen in Tables 4, 5, and 9, students desired to have meeting spaces for groups for their project discussions and social interaction. However, due to limited facilities in the overnight open area in the HKUL, students switched to the CWLC based on their list of preferences and requirements (Harrop & Turpin, 2013), another informal 24-h location to carry out their different learning purposes. As Putnam (2001) claimed, informal connections are also effective at building social capital. With the expectations of places for meetings and relaxing noticed from Tables 8 and 9, opening a 24-h library cafe near the main library can also provide an essential space for informal learning, providing a relaxing environment and atmosphere for their learning, recreational, and social activities overnight. (Deng et al., 2019; Hunter & Cox, 2014).

Fourth, from the perceptions of social capital in Table 7, PG students were more engaged with the HKUL overnight open area as a place for innovation and creation than UG students, and both groups expected a place for creation (see Table 9). Thus, HKUL can play a leading role in this area. After the massive renovation on the second floor of the Main Library, the Ingenium, which is an interdisciplinary space for the University community, is created to be inspired by and to interact with

**Table 8**  
Potential on developing community-level social capital in HKU.

	UG (n = 51)	PG (n = 49)	Overall (n = 100)	Z-score
1. Open 24-h library cafe nearby the HKU Main Library	4.43	4.43	4.43	-1.02
2. Develop virtual reference and information services midnight	4.16	4.14	4.15	-0.58
3. Unblock all open shelves for accessing resources and circulation	4.04	3.88	3.96	-1.28
4. Organize and cooperate classes, workshops, or events with faculties or departments during the weekend after 6 pm	3.88	3.82	3.85	-0.80
5. Allow other types of users accessing overnight open areas, e.g., alumni and consortium cardholders	2.80	3.51	3.15	-2.75***

(1) Scale: 1: Strongly disagree; 2: Disagree; 3: Neutral; 4: Agree; 5: Strongly agree.  
 (2) Z-score is obtained from the Mann-Whitney U test: \*\*\*p < 0.01; \*\*p < 0.05; \*p < 0.1.

**Table 9**  
Expectations on services and facilities provided by the HKUL and CWLC.

Expectations	Locations	UG (n = 51)	PG (n = 49)	Overall (n = 100)	Z-score
Place for a single study	HKUL	4.61	4.47	4.54	-0.96
	CWLC	3.49	3.82	3.65	-0.99
Place for learning	HKUL	4.45	4.31	4.38	-0.58
	CWLC	3.37	3.63	3.50	-0.97
Place for group collaboration	HKUL	4.22	4.16	4.19	-0.68
	CWLC	4.45	4.20	4.33	-1.43
Place for interviewing, meeting	HKUL	3.47	3.59	3.53	-0.36
	CWLC	3.92	3.90	3.91	-0.24
Place for socializing	HKUL	2.98	3.22	3.10	-1.05
	CWLC	4.10	3.65	3.88	-1.74*
Place for lessons	HKUL	2.88	3.51	3.19	-2.53**
	CWLC	3.78	3.59	3.69	-1.00
Place for creation	HKUL	3.39	3.80	3.59	-1.99**
	CWLC	4.18	3.84	4.01	-1.73*
Place for relaxing	HKUL	4.08	3.80	3.94	-1.21
	CWLC	4.41	3.59	4.01	-3.47***
Place for seeking information	HKUL	4.27	4.31	4.29	-0.06
	CWLC	3.47	3.88	3.67	-1.86*

(1) Scale: 1: Strongly disagree; 2: Disagree; 3: Neutral; 4: Agree; 5: Strongly agree.

(2) Z-score is obtained from the Mann-Whitney U test: \*\*\*p < 0.01; \*\*p < 0.05; \*p < 0.1.

technologies (Maceli, 2019; P. Sidorko & Chin, 2019). Comprehensive services and facilities are provided in this area, especially the Editing Rooms and One Button Studio in the Library Innovation Center, are fulfilling such needs and expectations. If this center can operate overnight for students, it will contribute much to the development of creations in an informal learning space among the students.

Fifth, there is a mismatch between low usage rates of collections and students' high expectations of place for learning and information seeking (see Tables 4 and 9). As one possible reason is that the overnight space on the ground floor of HKUL only provides limited resources on a few subjects, such as literature, science, and leisure reading, the library may consider the opening of other floors for accessing all library collections. Apart from the collections, Sanders and Hodges (2014) also suggested other areas of the library building should be open, not just only one floor at nighttime. For example, the Technology Zone and Collaboration Zone on Level 3 of HKUL should be open, featuring a learning-common style providing a variety of facilities, including computers, printers, and discussion rooms for supporting collaborative study and social activities.

Last but not least, from the result of Tables 8 and 9, students are expecting places for learning and lessons, and they are willing to support the library to cooperate with other faculties and departments to organize workshops or classes after regular hours and during weekends. Therefore, the library can collaborate and share the buildings with student associations and services like Centre for Applied English Studies (CAES) and Knowledge Exchange Office (KEO) to provide academic advising, research, and knowledge sharing talks. Partnering with these centers may connect students, as well as support them in building their network of relationships on campus and their social networks (Ramsey, 2016).

#### Similarities and differences of the PG and UG students in overnight usage

Overall, we observed that both UG and PG respondents had a lower frequency of visits and staying time at the HKUL compared to the CWLC (see Tables 2 and 3). They had similar reasons for not using the HKUL

overnight area for its uncomfortable environment, inadequate facilities in support of socializing, and the policy banning food and drinks (see Table 5). On the other hand, respondents used group workrooms in the CWLC more frequently than those in HKUL and much preferred to use the technical devices and support provided by the CWLC (see Table 4). In general, our results are coherent to contemporary university students' preference for learning commons instead of a traditional library setting as an ideal place for gathering people and exchanging knowledge (Cunningham & Walton, 2016).

This study also revealed some differences between UG and PG respondents in their user behaviors, perceptions, and expectations at HKU's overnight open areas. From the perspective of UG students, they preferred to use single study spaces in HKUL and group collaboration table in CWLC, and they are more engaged in using PCs, printers, and copiers in the CWLC than PG students. This may be caused by the limited facilities and spaces in HKUL (see Table 5). Not surprisingly, in comparison with PG respondents, our younger users may also be unsatisfied without adequate help from information professionals at nighttime. From the perspective of PG students, they were more positive in building up social capital with others than UG students and allow other types of users to access overnight open areas (see Tables 7 and 8).

Besides, both PG and UG students shared different views on characterizing HKUL and CWLC (see Table 9). For example, creational purposes in both HKUL and CWLC were expectedly by PG and UG students, respectively. Moreover, UG students highly expected CWLC as a place for socializing and relaxing while PG students expected it for information seeking. One possible explanation to such differences may be related to differences in curricular requirements, which PG students have more specialized information seeking needs (Conway, 2011), while UG students have more general and diverse programs (Lau et al., 2017). Although our study did not explore the causes of differences between UG and PG respondents wholly, we suggest that librarians may take the demands of different types of patrons into consideration when they implement the new services and facilities.

## Conclusion

Given the trends of academic libraries continually changing, libraries need to alert the patrons' preferences of overnight facilities and their expectations for fulfilling their needs. By adopting quantitative research, this study examined students' preferences in overnight areas of CWLC and HKUL on the HKU main campus, investigated the levels of social capital in the library, and explored the similarities and differences of user behavior between the university's undergraduate and postgraduate students. The pattern is generally in line with the pattern that postgraduate students have more intensive information seeking needs for their research-based subjects (Conway, 2011), while undergraduate students usually attend general structured learning programs (Lau et al., 2017).

Our findings showed that HKUL had not taken full advantage of its prime location and comprehensive collection in the main library, and the full potential of overnight services. In particular, regular collection of user comments and preferences is crucial to address users' needs so that librarians can offer satisfactory services and adequate facilities to the users, develop innovative new services (Wójcik, 2019), and increase the overall community engagement. The overnight open area should be more user-oriented with both formal and informal learning spaces. With the advantages of rich collections, information professionals, variety of facilities in HKUL, it is ideally positioned to develop the social capital of HKU students to a wider community to support their needs on formal and informal learning. We expect our findings can also benefit the libraries and university management of other countries and regions.



### Limitation and further research

We faced difficulties in recruiting respondents during the COVID-19 pandemic due to the closedown of university facilities. A total of 100 participants may not be adequate to represent the whole student population, though we attempted to recruit subjects from different study levels and majors and performed appropriate statistical tests. Our exploratory results are still useful to illustrate some key significant results. However, as most respondents have been using these overnight facilities, we plan to recruit more respondents who seldom use the physical library or pay overnight visits to understand whether overnight library use indeed leads to higher social capital. We also plan to extend our survey and compare the needs of different majors and genders. Qualitative studies, such as focus group interviews can be conducted to understand deeper the needs of overnight learning commons and the reasons behind.

As mentioned in the literature review, scant studies focus on the application of social capital in academic libraries, as most studies are focusing on public libraries (Ramsey, 2016). Bradley (2015) pointed out that studying other libraries' practices is an effective way to overcome weaknesses and turn them into advantages. Thus, in future studies, we would like to explore the values of overnight facilities in other academic libraries and study how they develop social capital in their communities. Besides, various challenges in staffing, funding, security, and ever-changing users' needs should also be considered (Blakely & Mobley, 2019; Fong et al., 2020; K. Johnson & McCallister, 2015; Lo et al., 2017).

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Appendix A. Questions used in the online survey

1. Gender.
2. Level of study.
3. Which faculty are you studying in?
4. Age.
5. Do you have a residence in university-operated halls or residential colleges?
6. Do you have a residence in privately operated dormitories?
7. Your approximate travel time from university to home.
8. How often do you visit the HKU Libraries' overnight open area?
9. Approximately, how long do you stay each visit at the overnight open area of libraries?
10. Rate how often do you use the following facilities when you access the library's overnight open area?
11. What are your expectations of the overnight facilities and services provided by University Libraries?
12. How often do you visit the Chi Wah Learning Commons' overnight open area?
13. Approximately how long do you stay each visit at the Chi Wah Learning Commons overnight?
14. Rate how often do you use the following facilities when you access the overnight Chi Wah Learning Commons?
15. What are your expectations on the overnight facilities and services provided by the Chi Wah Learning Commons?
16. Which 24-h locations would you prefer to visit based on the following purposes?
17. Do you agree with the following issues will affect your decision of not choosing overnight facilities in HKU?
18. Rate the following statements related to social capital (See Table 12).

19. Rate the following statements for future improvement in overnight facilities and services of University Libraries.
20. Please state your other suggestions here for the library to enhance social capital among students, the library, and the HKU community.

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