Instagram for student learning and library promotions: a quantitative study using the 5E Instructional Model

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Abstract

Purpose – Libraries worldwide, including Hong Kong, increasingly use social media tools to introduce and promote their services and resources to users. Instagram, in particular, is used to target younger users. This study investigates the effectiveness of Instagram in promoting library services and university students' perceptions of the value of Instagram as a learning support tool.

Design/methodology/approach – A major academic library in Hong Kong was chosen for this study. Library users' habits, perceptions, preferences, and views on Instagram's effectiveness as a learning support tool were compared in two age groups. The data were collected using a survey based on the 5E Instructional Model.

Findings – Despite the significantly higher frequency of Instagram use by younger students, the results showed that Instagram was probably an ineffective promotion platform for either age group because of low user engagement, relatively neutral perception of Instagram as a learning support tool, and notably low user acceptance of Instagram as a promotional tool.

Originality/value – Studies of student perspectives on various social media tools have increased; however, few have explored the use of Instagram, especially in Hong Kong or Asia. This study provides researchers and librarians with practical insights into current Instagram users' engagement, perceptions, and preferences and their view of its effectiveness as a learning support tool. The study also provides suggestions for improving the current situation.

Keywords Library promotion, Social media, Instagram, 5E Instructional Model, User preference, User habit, User perception, User engagement, Age difference

Paper type Research paper

Introduction

Recent advances in the Internet and associated technologies have led to the wide adoption of numerous Internet-based systems, tools, and applications for promotion and learning. These tools include social media, which emerged in the 2000s and spread worldwide (Jain, 2014; Wong *et al.*, 2022). As of January 2020, the Internet was used by more than 4.5 billion people worldwide, and 3.8 billion Internet users actively used social media (We Are Social and Hootsuite, 2020). Furthermore, the average time Internet users spent on social media was more than one-third of their total time on the internet (We Are Social and Hootsuite, 2020). With the advancement of mobile technologies, university students have increased in their engagement in social media (Pang, 2020; Wang *et al.*, 2021; Yip *et al.*, 2021). Following social media's rise in popularity, academic libraries have begun using social media for promotions and the collection, dissemination, and sharing of information (Chan *et al.*, 2020; Islam and Habiba, 2015; Sahu, 2016).

Many scholars have studied libraries' use of social media from various perspectives regarding library promotions, including the application of social media tools (De Sarkar, 2017;

Garner *et al.*, 2016; Jain, 2014; Rachman *et al.*, 2018; Salomon, 2013; Wallis, 2014; Young and Rossmann, 2015), librarians' views on the use of social media tools (AlAwadhi and Al-Daihani, 2019; Islam and Habiba, 2015; Khan and Bhatti, 2012; Sahu, 2016), and content analysis of libraries on social media platforms (Chan *et al.*, 2020; De Sarkar, 2017; Rachman *et al.*, 2018; Webb and Laing, 2015). Some studies focus on specific social media tools, particularly Facebook (Cheng *et al.*, 2020; Islam and Habiba, 2015; Lam *et al.*, 2019). Few studies have explored Instagram, especially students' perspectives on Instagram (Brookbank, 2015; Chan *et al.*, 2020; Jones and Harvey, 2019; Webb and Laing, 2015). In particular, few have linked libraries' use of Instagram to learning outcomes, such as examining how library information disseminated on Instagram helps students' overall learning. Following Ajala's (2019) rationale, libraries may disseminate useful information on Instagram to enhance information literacy. Such Instagram posts aim to increase students' intrinsic motivations to apply the library's information resources, which could potentially assist their learning, improve their academic performance, and subsequently lead to favorable perceptions of the usefulness of the libraries' Instagram accounts.

In Hong Kong, social media is popular, with 5.8 million active users and a penetration rate of 78% as of January 2020 (We Are Social and Hootsuite, 2020). Young Hongkongers spend more time actively using social media applications than other age groups in Hong Kong (Chan *et al.*, 2020). As a result, most academic libraries in Hong Kong created social media accounts to disseminate information and promote their library services, collections, and events. For instance, the Chinese University of Hong Kong Libraries (@cuhklibraries, https://www.instagram.com/cuhklibraries/), Run Run Shaw Library of the City University of Hong Kong (@cityu.library, https://www.instagram.com/cityu.library/), Pao Yue-kong Library of the Hong Kong Polytechnic University (@polyu.library, https://www.instagram.com/polyu.library/), and the Hong Kong University of Science and Technology Lee Shau Kee Library (@libraryathkust, https://www.instagram.com/libraryathkust/) use their Instagram accounts to disseminate information about their library services, facilities, workshops, talks, exhibitions, and special announcements. Some studies explored the effectiveness of the social media tools used by these university libraries (Chan *et al.*, 2020; Cheng *et al.*, 2020; Fong *et al.*, 2020; Lam *et al.*, 2019). Chan *et al.* (2020) used a qualitative method to study students' perceptions of the effectiveness of Instagram as a promotional tool for The University of Hong Kong Libraries (HKUL). As a result, HKUL was chosen as a setting for this study, which extends the research of Chan *et al.* (2020) and investigates students' perceptions of the effectiveness of Instagram as a promotional and learning tool with a quantitative method.

In 2018, the HKUL's Instagram account (@hkulibrary, https://www.instagram.com/hkulibrary/) was developed as a communication bridge and promotional channel for the HKUL because of Instagram's increasing popularity among library users, including students, staff, alumni, and the general public, according to the response of HKUL's Ask a Librarian service (HKUL 2020; personal communication, 21 July). A manager, a graphic designer, and a student helper from the HKUL's Public Relations Development team are responsible for the Instagram account's content management, reporting, and publicity. Instagram posts are created based on the need to share HKUL-related information and important university announcements. In addition, communication channels consisting of emails, phone calls, and comments under specific posts are offered to students through Instagram.

This study examined students' perceptions of the effectiveness of HKUL's Instagram account as a learning and promotional tool by investigating their user habits, perceptions, and preferences. Using the 5E Instructional Model (*engage*, *explore*, *explain*, *elaborate*, and *evaluate*), which is commonly used in practical classroom teaching (Bybee *et al.*, 2006; Tuna and Kacar, 2013), we assessed the users' perceptions of HKUL's Instagram account using the following three research questions.

RQ1. What are users' habits on Instagram generally and HKUL's Instagram specifically?

RQ2. What are the user perceptions of using HKUL's Instagram under the lens of the 5E Instructional Model and user preferences on HKUL's Instagram?

RQ3. How effectively does HKUL's Instagram account improve student learning and promote library resources?

This study's results and recommendations provide researchers and library practitioners with insights into the use of Instagram in Hong Kong, differences in user habits between age groups, and improvements in the use of this social media tool to better engage library users and fulfill their learning needs and to promote the libraries' resources.

Literature review
Social media
Social media is defined as "forms of electronic communication (such as websites for social networking and microblogging) through which users create online communities to share information, ideas, personal messages, and other content (such as video)" (Merriam-Webster, n.d.). In addition, Kaplan and Haenlein (2010) also defined social media as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content (p. 61)". Thus, social media is a kind of Internet-based conversational media that provides users with an online platform for connecting, interacting, and building relationships with other users through self-expression and exchanging photos, videos, and audio files (Luttrell, 2018; Wang *et al.*, 2021; Yang *et al.*, 2022; Shrivastava, 2013).

Since the early 2000s, social media has become popular worldwide. In 2020, Facebook was the world's most-used social media platform, followed by YouTube, while Twitter and Pinterest followed close behind globally (We Are Social and Hootsuite, 2020). Two Chinese social media platforms were also ranked in the top ten social media applications worldwide because of their high popularity in China. They are WeChat (an instant messaging application similar to WhatsApp) and Sina Weibo (a microblogging website similar to Twitter) (We Are Social and Hootsuite, 2020).

Released in 2010 and acquired by Facebook in 2012, Instagram is another popular social media tool. Instagram's smartphone social media app allows its users to upload and share photos and videos with their followers. In addition, Instagram provides commenting and "like" functions, allowing users to express their thoughts beneath Instagram posts. In 2019 and 2020, Instagram was ranked the fifth and fourth most popular social media application worldwide and in Hong Kong, respectively (We Are Social and Hootsuite, 2020). Because of their prevalence, commercial organizations now use social media as strategic tools to build relationships with their customers through social media user engagement and participation (Luttrell, 2018).

Social media and academic library promotion
In the 2010s, many academic libraries began incorporating social media applications into their promotion strategies (Chan *et al.*, 2020; Sahu, 2016) because of the library users' noticeably high use of social media (Islam and Habiba, 2015; Jain, 2014; Salomon, 2013) and business organizations' success with this strategy. The libraries used social media tools for promotional purposes and information collection, dissemination, and sharing (Chan *et al.*, 2020; Islam and Habiba, 2015; Sahu, 2016). In Hong Kong, academic libraries created Instagram accounts to disseminate information, such as announcements about their services and facilities. Nowadays, many libraries use social media for promotion (De Sarkar, 2017;

Rachman *et al.*, 2018; Sahu, 2016). In addition, numerous library professionals have provided practices and guidance on the approaches to utilizing social media (Beese, 2019; Garner *et al.*, 2016; Hild, 2014; Jain, 2014; Salomon, 2013; Wallis, 2014; Young and Rossmann, 2015) for outreaching users to build communities and enhancing user loyalty (Hild, 2014; Salomon, 2013; Young and Rossmann, 2015).

Scholars also examined librarians' perspectives on the use cases, advantages, disadvantages, and difficulties of using social media to promote libraries (AlAwadhi and Al-Daihani, 2019; Islam and Habiba, 2015; Khan and Bhatti, 2012; Sahu, 2016). However, if librarians do not thoroughly understand their users' social media behavior (Luo *et al.*, 2013), user engagement with libraries cannot be guaranteed (Swanson, 2012). Jones and Harvey (2019) observed that librarians assumed that social media's popularity among students meant that libraries' social media accounts would be popular among students. They did not conduct marketing research on their users' behaviors. Other studies indicated that some academic libraries were unsuccessful in using social media tools and experienced unenthusiastic user engagement (AlAwadhi and Al-Daihani, 2019; Chan *et al.*, 2020; Cheng *et al.*, 2020; Fong *et al.*, 2020; Jones and Harvey, 2019; Lam *et al.*, 2019; Rachman *et al.*, 2018). The libraries did not take advantage of social media tools' comprehensive interactive features (Rachman *et al.*, 2018), and students were indifferent to using social media tools in library outreach activities (Chan *et al.*, 2020; Jones and Harvey, 2019). Library users are probably central to the success of libraries' social media promotions (Jones and Harvey, 2019); therefore, it is essential to understand the library users' needs, behaviors, and preferences (Brookbank, 2015; Fong *et al.*, 2020; Luo *et al.*, 2013) to perform library outreach activities successfully.

Some scholars (Brookbank, 2015; Chan *et al.*, 2020; Jones and Harvey, 2019; Webb and Laing, 2015) examined students' behaviors and preferences in the use of different social media tools, including Instagram, which was used widely by their participants, but was not their most popular or frequently used social media tool (Brookbank, 2015; Jones and Harvey, 2019; Webb and Laing, 2015). However, Instagram has become increasingly popular among younger library users. Brookbank (2015) suggested that students use social media more frequently for social communication, particularly with their friends, but also in their academic studies, such as for research and establishing connections with their professors. Webb and Laing (2015) argued that students most frequently used social media to obtain general information about events, followed by leisure, social communications, and to a lesser extent for personal or professional interests. Although Jones and Harvey (2019) suggested that very few students were willing to follow the libraries' social media accounts, Chan *et al.* (2020) found that student library users had positive attitudes toward connecting with HKUL via Instagram.

However, most students would potentially not notice the libraries' use of social media tools (Webb and Laing, 2015). Nevertheless, most students thought that libraries could use social media tools to provide updated library-related information and improve communication by making it easier to connect with libraries. Furthermore, some students thought that social media could be used to promote library events and activities. Jones and Harvey (2019) found that students preferred to receive information through college emails, online teaching portals, and posters than on social media, and Brookbank (2015) indicated that emails were possibly the most effective communication tool, followed by social media applications and library websites. In summary, the literature suggests that libraries' social media accounts might experience unenthusiastic user engagement (AlAwadhi and Al-Daihani, 2019; Chan *et al.*, 2020; Cheng *et al.*, 2020; Fong *et al.*, 2020; Jones and Harvey, 2019; Lam *et al.*, 2019; Rachman *et al.*, 2018).

Social media and academic libraries' support for learning
Although scholars have increasingly studied the effectiveness of libraries' use of social media tools for promoting library resources, few studies have examined the effectiveness of social

media as a learning tool. Brookbank (2015) noted that students could use social media in their academic studies, particularly for research and supervisors' connections. Jones and Harvey (2019) also showed that students' awareness of their libraries' social media tools could improve their communications with the libraries. Ajala (2019) proposed that if the information literacy programs on law databases supported law students' learning and academic achievement, the students' intrinsic motivations could encourage attendance in the literacy programs and thus increase the use of the acquired skills. Similarly, if students find that the information disseminated on their libraries' social media accounts enhances their information literacy, supports their learning, and promotes academic achievements, they would probably be more motivated to interact with the libraries' social media posts, resulting in enthusiastic user engagement. These demonstrated that libraries' social media could have learning value. Therefore, the 5E Instructional Model was applied in this study to determine the effectiveness of Instagram as a learning tool.

The 5E Instructional Model is an instructional learning model with five phases that describes the sequence that students pass through when learning a new concept or deepening their understanding of an old concept: *engage*, *explore*, *explain*, *elaborate*, and *evaluate* (Bybee *et al.*, 2006; Tuna and Kacar, 2013). The following description is based on Bybee *et al.* (2006), Tuna and Kacar (2013), and Wilder and Shuttleworth (2005). In the *engage* stage, instructors engage students in a topic by connecting the students' past experiences with the current learning experience and concepts. The students then use known concepts to generate new knowledge through self-research and observations during the *explore* phase. Then the students present the results obtained from their research and observations and receive further explanations from their instructors for deeper comprehension during the *explain* phase. In the *elaborate* phase, the students apply the new concept and may further explore the topic to improve their understanding and ability to apply the new knowledge. Finally, the students are encouraged to assess their learning and achievements during the *evaluate* phase.

The 5E Instructional Model has been widely applied in practical classrooms and the education literature (Bybee *et al.*, 2006; Tuna and Kacar, 2013). Previous studies of library user engagement and the effectiveness of libraries' social media tools have commonly applied content analysis (Chan *et al.*, 2020; De Sarkar, 2017; Rachman *et al.*, 2018; Webb and Laing, 2015) and surveys (Brookbank, 2015; Cheng *et al.*, 2020; Fong *et al.*, 2020; Jones and Harvey, 2019; Webb and Laing, 2015) with diversified methods. However, applying the 5E Instructional Model for questionnaire design is a novel way to study students' perceptions on HKUL's Instagram account. In particular, this study considers whether the account attracts students to the library, and is an opportunity for students to explore, explain, elaborate, and evaluate various topics while "learning" about library services, collections, and events and thus assisting in improving their academic achievements.

Literature gap
Although studies of students' perception of the effectiveness of social media tools for promoting libraries' services has notably increased, scant studies have focused on Instagram, especially in Hong Kong (Chan *et al.*, 2020). As Brookbank (2015) stressed, academic libraries' social media campaigns should match local user behaviors and social media preferences. Chan *et al.* (2020) and Huang *et al.* (2017) observed differences in user habits and preferences between Western and Eastern social media users. Therefore, studying students' user habits, perceptions, and preferences concerning the Instagram accounts of academic libraries in Eastern cultural contexts is necessary. In Hong Kong, Facebook has been widely studied (Cheng *et al.*, 2020; Lam *et al.*, 2019), and there are numerous studies of Twitter and YouTube (Fong *et al.*, 2020), but Instagram, which is gaining popularity among younger students (Chan *et al.*, 2020), has not been sufficiently studied.

Chan *et al.* (2020) used content analysis and interviews to study the effectiveness of HKUL's Instagram for library promotions and found unenthusiastic user engagement and very few followers, comments, or likes. The interviewed students suggested that HKUL's Instagram account should use the application's interactive and entertaining elements. However, few quantitative studies have investigated Instagram's effectiveness as a learning or promotional tool, especially using the 5E Instructional Model to examine Instagram's value as a learning support tool in academic libraries.

Methodology

Participant selection

In this study, HKU students were chosen as participants because the focus was on users' perceptions of the effectiveness of HKUL's Instagram account, and students are HKUL's primary users. In addition to studying the overall student's perspective, as Instagram is relatively more popular among younger students (Pew Research Center, 2021; Salomon, 2013), the sample was divided into two separate age groups (18–31 and ≥ 32 years old). Due to privacy concerns, the surveyed participants were asked to report their age in the following ranges: 18–21, 22–26, 27–31, 32–36, and >36 years old. The 18–21-year-old group was initially developed based on undergraduate students. There was an obvious difference in the user habits of the younger (18–21, 22–26, 27–31) and older (32–36 and > 36) students. According to the Pew Research Center (2021), Instagram has relatively high popularity among the <30-year-old group. Therefore, the data analysis in this study used two subsamples by age: the 18–31 and ≥ 32-year-old groups.

Research method and data collection

A quantitative approach was used in this study because it is commonly used to gain generalized results from a representative sample (Denscombe, 2010). In this study, the users' perceptions of the effectiveness of HKUL's Instagram account as a learning and promotion tool were collected using a survey, as it is a common method for collecting, analyzing, and interpreting data from a well-defined population (Schmee and Oppenlander, 2010). The survey was composed of three parts. Part A studied HKU students' general habits for popular social media tools and specifically Instagram (*RQ1*). Part B investigated HKU students' perceptions of HKUL's Instagram account and their user preferences when using HKUL's Instagram and other HKUL promotional tools (*RQ2*). The results from *RQ1* and *RQ2* provide evidence for the discussion of *RQ3*. The HKU students' perceptions and preferences were used to comprehensively evaluate the effectiveness of HKUL's Instagram account as a learning and promotion tool. Part C collected students' demographic data (see Table 1).

This questionnaire used closed questions, frequency scales, and 7-point Likert scales for measuring respondents' agreement with statements (Creswell, 2012; Hair, 2015; Schmee and Oppenlander, 2010). Descriptive statistics were used to summarize the collected data. The nonparametric Mann–Whitney U test (Mann and Whitney, 1947) was used to identify significant differences between the two age groups.

Education background	18–31 years old			≥32 years old		
	Overall	Male	Female	Overall	Male	Female
UG	28	12	16	0	0	0
PG	46	20	26	39	14	25
Total	74	32	42	39	14	25

Table 1.
Gender and education
background

The 5E Instructional Model was applied in Part B, in which a 7-point Likert scale was used for the respondents to rate their agreement with statements about HKUL's Instagram account (shown in Table 9). Statements presented in Table 9 were developed by the authors based on the 5E Instructional Model (Bybee *et al.*, 2006) and with some references from the 5E lesson plan scoring instrument by Goldston *et al.* (2013) and the questionnaires on students' attitudes toward the 5E-flipped classroom model by Hew *et al.* (2018) and LaiClassroom by Lai and Hew (2019). For instance, "The Flipped Classroom has improved my learning significantly" (Hew *et al.*, 2018, p. 116) and "LaiClassroom has improved my learning" (Lai and Hew, 2019, p. 99) were adapted and extended in the *evaluate* phase. Several items in the 5E lesson plan scoring instrument by Goldston *et al.* (2013), for instance, "The engage raises student interest/motivation to learn" (p. 546), "During the explore phase, teachers present instructions" (p. 546), "The explain includes a complete explanation of the concept(s) and/or skill(s) taught" (p. 546), "The explain phase provides a variety of approaches to explain and illustrate the concept or skill" (p. 546), "The elaborate activities provide students with the opportunity to apply the newly acquired concepts and skills into new ideas" (p. 547), were referred when designing the statements in the other four phases.

The Cronbach's or coefficient alpha (Cronbach, 1951) measures the internal consistency of the latent variables. A value of 0.93 represents a high coefficient, meaning a high internal consistency, while 0.72 represents a satisfactory internal consistency (Creswell, 2012). All values of Cronbach's alpha presented in Table 9 are all above 0.9, showing a high internal consistency of responses of statements for each phase of the 5E Instructional Model.

Data collection and user demographics
The questionnaire was administered using Google Forms. The survey link was sent to the target participants, i.e. HKU students, via university emails, Moodle (the University's official online teaching portal), and Facebook. Students from different faculties, education levels, and age groups were approached to gain a representative sample. One hundred and fourteen responses were received, with one invalid response was discarded. Microsoft Excel and online calculators were used for the analysis.

Table 1 presents the demographic data on the respondents. The sample size for the 18–31-year-old group was comparably larger than the ≥32-year-old group, which mirrored the HKU age distribution.

Results
Eight popular social media tools
Table 2 shows the respondents' user habits for eight popular social media tools, including Instagram. YouTube was the most frequently used (mean 5.01), followed by Facebook (mean 4.15), Instagram (mean 3.87), WeChat (mean 3.83), Twitter (mean 2.47), Sina Weibo (mean 2.32) (for the definition of the scale, see the notes for Table 2). The results indicated that respondents sometimes used Instagram, but it was not the most frequently used social media tool. Most respondents seldom used Pinterest (mean 1.56) and Tumblr (mean 1.24), reflecting their unpopularity in Hong Kong. Both 18–31- and ≥32-year-old groups had similar frequencies on Facebook, WeChat, Twitter, Pinterest, and Tumblr. The 18–31-year-old group used Instagram and Sina Weibo more frequently than the ≥32-year-old group ($p < 0.01$).

Table 3 presents the respondents' possession of Instagram accounts. Most respondents (77.0%) had an Instagram account. Two respondents who indicated that they did not have an Instagram account perhaps visited the webpage version of Instagram when they answered their user habits of Instagram previously. The 18–31-year-old group (86.5%) were relatively more likely to have an Instagram account than the ≥32-year-old group (59.0%).

Social media tools	Overall ($n = 113$)	18–31 years old ($n = 74$)	≥32 years old ($n = 39$)	Z-score
Facebook	4.15	3.99	4.46	−1.298
Twitter	2.47	2.58	2.26	1.359
Instagram	3.87	4.31	3.03	3.089**
WeChat	3.83	4.01	3.49	1.205
Sina Weibo	2.32	2.68	1.64	2.739**
Tumblr	1.24	1.30	1.13	0.779
Pinterest	1.56	1.46	1.74	−1.561
YouTube	5.01	4.97	5.08	−0.021

Note(s): (1) Means are calculated under the columns "Overall", "18–31 years old" and "≥32 years old"
(2) Scale – 1: never; 2: less than once per month; 3: at least once per month; 4: at least once per week; 5: once per day; 6: multiple times per day
(3) Z-score is obtained from the Mann–Whitney U Test
(4) ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

Table 2.
User habit of eight
popular social
media tools

Possession	Oveall ($n = 113$)	18–31 years old ($n = 74$)	≥32 years old ($n = 39$)
Yes	87 (77.0%)	64 (86.5%)	23 (59.0%)
No	26 (23.0%)	10 (13.5%)	16 (41.0%)

Table 3.
Possession of an
Instagram account

Purposes for using Instagram
Table 4 illustrates the respondents' reasons for using Instagram. Eighty-seven Instagram users were required to rate the frequencies of using Instagram for the six listed purposes. The most frequent use of Instagram was leisure (mean 4.61), followed by communicating with friends (mean 3.69). Respondents seldom used Instagram for university-related matters (mean 2.11), work/business (mean 1.99), academic study (mean 1.91), or religion (mean 1.37).

Both age groups reported similar frequencies using Instagram for leisure, work/business, and religion, while the 18–31-year-old group significantly used Instagram to communicate with their friends and obtain information related to the university and academic studies more often than the ≥32-year-old group ($p < 0.01$).

Purposes	Overall ($n = 87$)	18–31 years old ($n = 64$)	≥32 years old ($n = 23$)	Z-score
Leisure	4.61	4.77	4.17	1.535
Work/business	1.99	2.05	1.83	0.736
Academic study	1.91	2.11	1.35	2.214**
University related	2.11	2.36	1.43	2.690**
Religion	1.37	1.30	1.57	−0.091
Communicating with friends	3.68	3.98	2.83	2.738**

Note(s): (1) Means are calculated under the columns "Overall", "18–31 years old" and "≥32 years old"
(2) Scale – 1: never; 2: less than once per month; 3: at least once per month; 4: at least once per week; 5: once per day; 6: multiple times per day
(3) Z-score is obtained from the Mann–Whitney U Test
(4) ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$
(5) Some respondents were not required to respond to this question

Table 4.
Frequency of purposes
of using Instagram

Use of HKUL's Instagram

Table 5 presents the respondents' use of HKUL's Instagram account. Unsurprisingly, only a few respondents (13.8%) had visited HKUL's Instagram account, and a similar proportion of both age groups were followers.

Table 6 shows the frequencies of respondents' visits to HKUL's Instagram based on five activities. Only the 12 participants who used HKUL's Instagram were required to respond. The 12 respondents' most frequent activities were: "only a glance to check for any new posts" (mean 3.42), followed by "viewing photos and/or videos for information of HKUL" (mean 2.58), and "sharing 'likes' on the photos and/or videos" (mean 2.17). The respondents seldom or even never use HKUL's Instagram for "commenting on the photos and/or videos" (mean 1.75) or "sharing photos and/or videos with others" (mean 1.42). The Mann–Whitney U test was not conducted to compare the different uses because of the small sample.

Table 7 reveals the number of followers of HKUL's Instagram among the 12 participants who used HKUL's Instagram. Most of them (75%) were HKUL's Instagram followers.

Those 9 followers of HKUL's Instagram account were asked to rate their frequency of "checking the posts of HKUL's Instagram under notifications" (see Table 8 for the results). The respondents rarely perform the activity of "checking the posts of HKUL's Instagram under notifications" (mean 2.33).

User perceptions of HKUL's Instagram account

All respondents were required to rate their agreement with statements about how HKUL's Instagram could help them improve their understanding of HKUL's services, collections, and

Usage	Overall ($n = 87$)	18–31 years old ($n = 64$)	≥32 years old ($n = 23$)
Yes	12 (13.8%)	9 (14.1%)	3 (13.0%)
No	75 (86.2%)	55 (85.9%)	20 (87.0%)
Note(s): Some respondents were not required to respond to this question			

Table 5.
Usage of HKUL's Instagram

Activities	Overall ($n = 12$)	18–31 years old ($n = 9$)	≥32 years old ($n = 3$)
Only a glance for checking any new posts	3.42	3.33	3.67
Viewing photos and/or videos for information of HKUL	2.58	2.67	2.33
Commenting the photos and/or videos	1.75	1.78	1.67
Pressing "likes" on the photos and/or videos	2.17	2.11	2.33
Sharing the photos and/or videos to others	1.42	1.56	1.00
Note(s): (1) Means are calculated under the columns "Overall", "18–31 years old" and "≥32 years old" (2) Scale – 1: never; 2: less than once per month; 3: at least once per month; 4: at least once per week; 5: once per day; 6: multiple times per day (3) Some respondents were not required to respond to this question			

Table 6.
Frequency of using HKUL's Instagram

Follower	Overall ($n = 12$)	18–31 years old ($n = 9$)	≥32 years old ($n = 3$)
Yes	9 (75.0%)	6 (66.7%)	3 (100.0%)
No	3 (25.0%)	3 (33.3%)	0 (0.0%)
Note(s): Some respondents were not required to respond to this question			

Table 7.
Following of HKUL's Instagram

events, and support their learning and academic achievements (see Table 9 for the results). The results for each item were close to the mid-point of the scale, which corresponded to "neither agree nor disagree." This result indicated that the respondents were indifferent to HKUL's Instagram account's performance as a learning tool or helping with academic achievements. There were no significant differences between age groups.

Finally, all respondents were required to rate their overall level of agreement with the statement, "I am willing to use Instagram to connect with HKUL" (mean 3.95). Both age groups expressed similar neutral or indifferent attitudes to connecting with HKUL via Instagram.

Preferences for HKUL's promotional tools

Table 10 reveals the extent of the respondents' preferences for six existing HKUL promotional tools. The most preferred promotional tool was the library's website (mean 5.58), followed by university emails (mean 5.56), posters (mean 4.50), Facebook (mean 4.33), Instagram (mean 4.27), and FOCUS (HKUL Newsletter) (mean 3.99). Compared with the other promotional tools, Instagram was not much popular among the respondents. There was no significant difference between age groups in the users' preferences for HKUL's promotional tools.

Discussion

User habits for Instagram generally and HKUL's Instagram specifically (RQ1)

Comparing the respondents' use of Instagram with other social media tools showed that students more frequently used Facebook and YouTube, and Instagram may not be a popular and frequently used social media tool among students. These findings were in line with the literature (Brookbank, 2015; Chan *et al.*, 2020; Jones and Harvey, 2019; Webb and Laing, 2015). This study also showed that the 18–31-year-old group used Instagram significantly more frequently than the ≥32-year-old group. This result was closely aligned with the findings from Pew Research Center (2021). Chan *et al.* (2020) and Huang *et al.* (2017) noted that students might be inclined to use different social media tools based on their socio-cultural environment. For example, mainland Chinese students may use WeChat (Chan *et al.*, 2020) and Sina Weibo (Huang *et al.*, 2017) relatively frequently, while Western students might frequently use Twitter (Chan *et al.*, 2020; Huang *et al.*, 2017). Surprisingly, our results revealed that popular foreign social media tools, including Twitter and Pinterest, and popular Chinese social media tools, including Sina Weibo, were not used frequently by our participants, which contrasts with findings in the literature.

Although over three-quarters of the respondents had an Instagram account identified as Instagram users, they mainly used Instagram for leisure and social communication with friends. Instagram was rarely used for academic studies or university-related matters.

Activity	Overall (*n* = 9)	18–31 years old (*n* = 6)	≥32 years old (*n* = 3)
Checking posts of HKUL's Instagram under notification	2.33	2.33	2.33

Note(s): (1) Means are calculated under the columns "Overall", "18–31 years old" and "≥32 years old"
(2) Scale – 1: never; 2: less than once per month; 3: at least once per month; 4: at least once per week; 5: once per day; 6: multiple times per day
(3) Some respondents were not required to respond to this question

Table 8.
Frequency of checking posts of HKUL's Instagram under notification

Statements	Overall (n = 113)	18–31 years old (n = 74)	≥32 years old (n = 39)	Z-score
Engage phase (Cronbach's Alpha = 0.937)				
1. HKUL's Instagram creates interest and stimulates my curiosity about library services, collections, and events of HKUL.	4.17	4.16	4.18	−0.190
2. HKUL's Instagram arouses my attention to view information about library services, collections, and events of HKUL.	4.35	4.42	4.23	0.390
3. HKUL's Instagram provides me with an interesting platform to view information on library services, collections, and events of HKUL, for example, viewing HKUL's information through videos, photos, and infographics.	4.36	4.45	4.21	0.740
4. HKUL's Instagram encourages me to improve my understanding of library services, collections, and events of HKUL.	4.12	4.20	3.97	0.710
Overall	4.25	4.31	4.15	0.501
Explore phase (Cronbach's Alpha = 0.956)				
1. HKUL's Instagram is a platform assisting me to discover what I should know about library services, collections and events of HKUL.	4.38	4.49	4.18	0.855
2, HKUL's Instagram is useful to connect a new understanding of library services, collections, and events of HKUL to my previous understanding of HKUL.	4.31	4.35	4.23	0.239
3. HKUL's Instagram is a platform to explore my questions on library services, collections, and events of HKUL.	4.21	4.31	4.03	0.809
4. HKU"s Instagram helps me to know more on library services, collections, and events of HKUL in general.	4.46	4.57	4.26	1.027
5. HKUL's Instagram is a good platform to improve my understanding of library services, collections, and events of HKUL.	4.42	4.58	4.13	1.558
Overall	4.36	4.46	4.16	1.386
Explain phase (Cronbach's Alpha = 0.942)				
1. HKUL's Instagram provides explanations of library services, collections, and events of HKUL.	4.38	4.47	4.21	1.226
2. HKUL's Instagram connects me to library staff who can answer my questions on library services, collections, and events of HKUL.	4.05	4.11	3.95	0.483
3. HKUL's Instagram facilitates understanding of library services, collections, and events of HKUL by using comment functions.	4.29	4.36	4.15	0.761
Overall	4.24	4.32	4.10	1.135
Elaborate phase (Cronbach's Alpha = 0.957)				
1. HKUL's Instagram presents new information on library services, collections, and events of HKUL to me in an effective manner.	4.39	4.51	4.15	1.181

Table 9.
Agreement on HKUL's
Instagram based on the
5E Instructional Model

Statements	Overall (n = 113)	18–31 years old (n = 74)	≥32 years old (n = 39)	Z-score
2. HKUL's Instagram reconstructs and extends explanations and understanding of library services, collections, and events of HKUL by using different ways, such as videos, photos, infographicsetc.	4.37	4.49	4.15	1.039
3. HKUL's Instagram provides a pleasant environment for me to interact with library staff.	4.27	4.34	4.15	0.462
Overall	4.35	4.45	4.15	0.900
Evaluate phase (Cronbach's Alpha = 0.967)				
1. HKUL's Instagram assists in intensifying my understanding of library services, collections, and events of HKUL.	4.22	4.34	4.00	1.262
2. HKUL's Instagram offers an opportunity to review my previous and new understanding of library services, collections, and events of HKUL.	4.26	4.35	4.08	0.909
3. HKUL's Instagram helps me use library services, collections and attend events effectively.	4.27	4.31	4.21	0.347
4. HKUL's Instagram attracts me use library services and collections and attend events.	4.36	4.41	4.28	0.405
5. HKUL's Instagram about library services, collections, and events help improve my learning.	4.22	4.24	4.18	0.347
6. HKUL's Instagram about library services, collections, and events help improve my research.	4.07	4.11	4.00	0.384
7. HKUL's Instagram about library services, collections, and events help improve my overall academic results.	4.09	4.07	4.13	0.103
Overall	4.21	4.26	4.12	0.480
Overall: I am willing to use Instagram to connect with HKUL.	3.95	4.01	3.82	0.468

Note(s): (1) Means are calculated under the columns "Total", "18–31 years old" and "≥32 years old"
(2) Scale – 1: strongly disagree; 2: disagree; 3: slightly disagree; 4: neither agree nor disagree; 5: slightly agree; 6: agree; 7: strongly agree
(3) Z-score is obtained from the Mann–Whitney U Test
(4) ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

Table 9.

These findings partially aligned with Brookbank (2015) and Webb and Laing (2015). Brookbank (2015) proposed that students frequently used social media to communicate with family, friends, and classmates. Some students used social media tools to assist their academic studies because different social media tools had different features and functions for different purposes. This study revealed that the 18–31-year-old group had a significantly higher frequency of Instagram use for social communications with friends, academic study, and university-related matters than the ≥32-year-old group.

Only a few respondents used HKUL's Instagram, particularly for glancing at HKUL's Instagram to look for new posts, indicating a low user engagement with HKUL's Instagram account. Most respondents who visited HKUL's Instagram were followers, but they rarely used the new-post notification function for account followers. These findings were in line with two previous Instagram studies (Chan *et al.*, 2020; Rachman *et al.*, 2018). Few followers gave likes and comments on HKUL's Instagram posts, again showing low user engagement (Chan *et al.*, 2020). After analyzing several libraries' Instagram accounts, Rachman *et al.* (2018) also observed that few comments were left on their Instagram posts.

Promotional tools	Overall ($n = 113$)	18–31 years old ($n = 74$)	≥32 years old ($n = 39$)	Z-score
University emails	5.56	5.62	5.44	0.963
Facebook	4.33	4.18	4.62	−1.362
Library website	5.58	5.62	5.51	0.281
Instagram	4.27	4.42	4.00	1.301
Posters	4.50	4.66	4.18	1.658
FOCUS (HKUL Newsletter)	3.99	3.99	4.00	0.069

Note(s): (1) Means are calculated under the columns "Overall", "18–31 years old" and "≥32 years old"
(2) Scale – 1: strongly not preferred; 2: not preferred; 3: slightly not preferred; 4: neither preferred nor not preferred; 5: slightly preferred; 6: preferred; 7: strongly preferred
(3) Z-score is obtained from the Mann–Whitney U Test
(4) ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

Table 10.
Preference on the existing promotional tools of HKUL

This low engagement level reflects the users' lack of interest in the HKUL's Instagram posts (Chan *et al.*, 2020) and incomprehensive use of Instagram's interactive features (Rachman *et al.*, 2018). Surprisingly, this study found that among visitors to HKUL's Instagram, the ≥32-year-old group were more likely to be HKUL's Instagram account followers than the 18–31-year-old group.

User perceptions and preferences for using HKUL's Instagram (RQ2)
The application of the 5E Instructional Model offered a better understanding of how HKU students understand and learn about the information and promotions provided by HKUL through its Instagram posts and its perceived effectiveness as a learning support tool from student perspectives. The consistently neutral responses to the survey statements indicated that HKUL's Instagram account was potentially ineffective in attracting HKU students to the library's resources, or acting as an exploration, explanation, elaboration, or evaluation tool to understand and learn about libraries' information. These findings were in line with the literature (Chan *et al.*, 2020; Rachman *et al.*, 2018). Chan *et al.* (2020) stated that students might not be interested in HKUL's Instagram account because of the library's monotonous use of Instagram as a bulletin board without comprehensively taking advantage of its interactive and social features. Moreover, HKUL did not provide a direct messaging service on Instagram that could process students' inquiries and feedback. This lack of mechanisms to contact HKUL might result in the respondents' relatively neutral or indifferent responses to the *explore*, *explain*, and *elaborate* phases. This result was closely aligned with Jones and Harvey's (2019) findings; however, this also contradicted the students' suggestions for the potential benefits of HKUL's use of Instagram (Chan *et al.*, 2020).

In addition, respondents were neutral about using HKUL's Instagram to support their learning and academic achievements, as expressed in the last three statements for the *evaluate* phase shown in Table 9. The respondents did not believe that accessing library information on Instagram could help them improve their academic achievements. The respondents did not think HKUL's Instagram could enhance their information literacy and support their learning. Using the rationale Ajala (2019) outlined, if the students were not motivated by improving their information literacy and the associated possible success in information seeking and use towards their learning, their academic achievement might be perceived as no improvement. This lack of motivation probably results in the unenthusiastic user engagement described in *RQ1*. The respondents did not perceive HKUL's Instagram account as a good learning tool or as a support for their academic studies.

The respondents were inclined to be neutral about whether they were willing to connect with HKUL through Instagram. This finding contradicted the previous study by Chan *et al.* (2020), which noted positive attitudes toward HKUL's Instagram and very few negative views on users' connections with HKUL's Instagram account. However, these results are consistent with Jones and Harvey (2019). Notably, HKUL's Instagram was ranked as the second least preferred promotional tool used by HKUL; library websites, university emails, posters, and even Facebook were more preferred. Therefore, HKUL should not use Instagram as the primary promotion tool. These findings were in line with the literature (Brookbank, 2015; Jones and Harvey, 2019). Although Chan *et al.* (2020) suggested the importance of Instagram as a promotion tool for HKUL from the students' perspective, respondents expressed preferences for other social media applications that they used more frequently. One of the underlying causes for the lack of student interest in HKUL's Instagram account could be the limitations in librarians' skills and time available to manage social media tools (Chan *et al.*, 2020; Khan and Bhatti, 2012; Rachman *et al.*, 2018).

Effectiveness of HKUL's Instagram as a learning or promotion tool (RQ3)
Based on the user habits, perceptions, and preferences of HKU students, HKUL's Instagram account does not, perhaps, effectively support students' learning or promote library resources, even among the 18–31-year-old group who use Instagram more frequently. The students did not use Instagram as frequently, usually for leisure and social communications rather than academic studies and university-related matters. More importantly, HKUL's Instagram showed low user engagement in terms of followers, comments, and likes, which was in line with the literature (Brookbank, 2015; Chan *et al.*, 2020; Jones and Harvey, 2019). Instagram was probably perceived as an ineffective tool for understanding HKUL's information and academic learning and achievement. HKUL's Instagram account did not encourage students to engage, explore, explain, or elaborate on the library services, nor was it helpful in accomplishing better academic learning and achievements owing to the failure to improve information literacy. Regarding user preferences, Instagram was not overwhelmingly preferred as a promotion tool for HKUL. In summary, students did not consider HKUL's Instagram account an effective learning support tool or promotional channel.

Recommendations
HKUL should extend their management support for social media accounts, including Instagram, which is essential for library promotions on social media (AlAwadhi and Al-Daihani, 2019) by providing appropriate staff training on social media skills and adequate time to socialize with students on Instagram. They should also improve their Instagram content and avoid presenting monotonous bulletin boards by cross-posting to all social media tools (Chan *et al.*, 2020; Cheng *et al.*, 2020) and taking advantage of Instagram's interactive social communication features. For example, it could use Instagram's direct messaging function to answer students' inquiries and receive feedback instead of sending emails and making phone calls.

Instead of uploading Instagram posts based on the need to share news, HKUL should increase the frequency of its posts by creating engaging and attractive posts with eye-catching hashtags related to library services, collections, and events (Beese, 2019), such as library therapy dogs (Chan *et al.*, 2020; Cheng *et al.*, 2020) to entertain the HKU students. They might further encourage students to use the hashtags to post some photos about their time or their "discoveries" with the libraries or the library services in a photo contest (Chan *et al.*, 2020), to like the photos, to comment on the photos for textual sharing and discussions, and to share the photos to other social media platforms with the use of sharing function, fully employing

the interactive functions of Instagram for promotion. To encourage students to engage with HKUL's Instagram account, HKUL could respond to students' posts about the libraries and repost, with permission, high-quality student photos or videos (Hild, 2014; Fong et al., 2020).

During the COVID-19 pandemic, students have increasingly relied on online and social media tools (Leung et al., 2022), especially due to campus and library lockdown (Yu et al., 2022). The students' learning and academic achievements can be supported by creating posts with learning materials or aids to information literacy that take advantage of Instagram's interactive social communication features. Students can be encouraged to access useful information, enhance their information literacy skills by discussing topics with librarians and other learners, apply the knowledge learned from Instagram posts, and successfully use information literacy skills in their learning.

Besides, HKUL might apply similar interactive mechanisms employed in a photo contest to a book sharing activity on Instagram and encourage students, or even staff, to recommend useful or interesting books for academic studies. Students could apply their information literacy skills to evaluate and discuss the usefulness and other criteria of the books under the comment section. Librarians or HKU staff could also participate in the discussion and might give some guidance or comments on the books to strengthen student-staff relationships (Fong et al., 2020; Leung et al., 2022).

These approaches to using Instagram are viable for increasing user engagement and fulfilling HKUL's aim to support teaching and learning at HKU, which was found to be effective using Facebook and other social media (Dong et al., 2021). Further, this approach aligns with Wu and Yang's (2021) finding that the younger generation tends to accept gamification marketing, resulting in higher engagement than event marketing and information sharing strategies for collections promotion. Further, HKUL can recruit student interns and young volunteers to manage or even lead their social network communities not just for human resources concerns but also to bridge the generation gap with the students (Gazit, 2021; Fong et al., 2020).

Finally, owing to the restriction of Instagram in mainland China, a substitute application for student outreach can be WeChat, which is the third most frequently used social media application in China and is increasingly popular in Chinese academic libraries (Yin et al., 2021). The use of WeChat is recommended to facilitate library access for numerous mainland Chinese students using HKUL.

Conclusion

Through using a quantitative survey and the 5E Instructional Model, HKU students' user habits, perceptions, and preferences were used to examine the effectiveness of HKUL's Instagram account as a learning and promotion tool. Results indicated that HKUL's Instagram was not sufficiently effective for learning and promotion due to students' low popularity rate and usage frequency, comparatively neutral user responses perceiving it as a learning tool of HKUL and learning support for students, and comparably low preference rate as a promotional tool. HKUL should improve its implementation of Instagram by increasing management support, providing better content with both learning and promotion materials, and taking advantage of the application's interactive features to increase user engagement and become both learning support and promotional tool.

In addition, since studies of student perspectives on libraries' Instagram accounts have not yet been widely explored, especially in Asia or Hong Kong, this research provides some insights concerning the current Instagram users' engagement and preferences and perceptions of the effectiveness as a learning support tool from the lens of Asian or Hong Kong students for both researchers and libraries encountering similar situations.

Recommendations suggested for HKUL could also provide some practical insights for improving the usage of its Instagram accounts.

Limitations and further studies

A major limitation of this study is the small sample, which cannot represent the whole population. Further quantitative and qualitative studies are planned to explore the performance of other academic libraries' Instagram accounts and to gain more representative results on the effectiveness of Instagram as a learning support and promotion tool since scant studies have focused on Instagram of academic libraries in Hong Kong and Asia. These findings could be used in comparative studies with other university libraries in different counties to identify the similarities and differences in using Instagram by academic libraries and their academic and practical implications for researchers, librarians, and university administrators. In addition, with the inspiration from this study, we are planning to design an information literacy instruction program with the aid of social media and evaluate its effectiveness on students' learning outcomes. Due to students' changing behaviors of using social networks before, during, and perhaps after COVID-19 (Chan *et al.*, 2022; Huang *et al.*, 2021, 2022; Ye and Ho, 2022), user research on using social media for library services and promotion should be continued, as well as self-service libraries (Zhang *et al.*, 2022).

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