



## Ubiquitous Learning for Distance Education Students: The Experience of Conducting Real-Time Online Library Instruction Programs through Mobile Technology

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### Abstract:

Library services for Hong Kong-based students enrolled in distance learning programs on information studies, offered by the Charles Sturt University (CSU), Australia in collaboration with the School of Professional and Continuing Education of the University of Hong Kong (HKUSPACE), were supported by the University of Hong Kong Libraries utilizing a face-to-face format for many years. With the advancement of internet technology, new e-learning software, mobile technology and ever-growing online resources, CSU and HKUSPACE course administrators considered that online library instruction programs could be supported and delivered by the librarians of CSU at Australia remotely to Hong Kong students. Several real-time, online instruction programs were initiated since late 2013. The successful launching of the programs provides evidence to support the provision of online library instruction through not only personal computers, but also mobile devices. Based on a qualitative analysis, it was concluded that delivering library instruction programs by internet and mobile technology to distance learning students in higher education is achievable. More library services can be planned by making use of this successful experience.

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# **Ubiquitous Learning for Distance Education Students: The Experience of Conducting Real-Time Online Library Instruction Programs through Mobile Technology<sup>1</sup>**

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## **ABSTRACT**

Library services for Hong Kong-based students enrolled in distance learning programs on information studies, offered by the Charles Sturt University (CSU), Australia in collaboration with the School of Professional and Continuing Education of the University of Hong Kong (HKUSPACE), were supported by the University of Hong Kong Libraries utilizing a face-to-face format for many years. With the advancement of internet technology, new e-learning software, mobile technology and ever-growing online resources, CSU and HKUSPACE course administrators considered that online library instruction programs could be supported and delivered by the librarians of CSU at Australia remotely to Hong Kong students. Several real-time, online instruction programs were initiated since late 2013. The successful launching of the programs provides evidence to support the provision of online library instruction through not only personal computers, but also mobile devices. Based on a qualitative analysis, it was concluded that delivering library instruction programs by internet and mobile technology to distance learning students in higher education is achievable. More library services can be planned by making use of this successful experience.

**Keywords:** Ubiquitous Learning; Distance Education; University of Hong Kong; Charles Sturt University

## **INTRODUCTION**

Library services for Hong Kong-based students enrolled in distance learning programs on information studies, offered by the Charles Sturt University (CSU), Australia in

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collaboration with the School of Professional and Continuing Education of the University of Hong Kong (HKUSPACE), were supported by the University of Hong Kong Libraries utilizing a face-to-face format for many years. With the advancement of internet technology, new e-learning software, mobile technology and ever-growing online resources, CSU and HKUSPACE course administrators considered that online library instruction programs could be supported and delivered by the librarians of CSU at Australia remotely to Hong Kong students. Several real-time, online library instruction programs were initiated since late 2013. A practical approach was adopted in designing these sessions in order to investigate the feasibility of providing library user education programs for distance learning students in Hong Kong. Students were asked to access the pre-set hyperlink or to download the Adobe Connect Apps in order to connect to the sessions with their smartphones. Each session was observed by the authors through participation in real-time and examination of the recorded session.

### **Ubiquitous Learning: An Overview**

In traditional learning environments such as the “sage on the stage” inside the classroom, the learning process is often confined by spatial and temporal constraints. With the surge in development of educational technology during the last decades, learning models have been rapidly evolving from electronic learning (e-learning) to mobile learning (m-learning) as well as to ubiquitous learning (u-learning) (Liu & Hwang, 2010; Virtanen, Kääriäinen, Liikanen & Haavisto, 2017; Yang, Okamoto & Tseng, 2008). There is no doubt that the proliferation of ubiquitous learning has completely changed the landscape of learning activities in higher education. In Kinshuk’s definition, “[a] ubiquitous learning system supports learners through embedded and invisible computers in everyday life. Such environments allow students to learn at any time and any place, encouraging them to more experiential learning such as learning by doing, interacting and sharing, and facilitates on-demand learning, hands-on or minds-on learning and authentic learning.” (Kinshuk, 2008). Through ubiquitous technology, students can engage themselves in learning activities whenever and wherever they like (Hwang, Tsai & Yang, 2008; Sakamura & Koshizuka, 2005). There are a number of unique advantages of adopting ubiquitous learning:

- **Permanency:** Learners never lose their work unless it is purposefully deleted. In addition, all the learning processes are recorded continuously everyday.
- **Accessibility:** Learners have access to their documents, data, or videos from anywhere. That information is provided based upon the student’s request. Therefore, the learning involved is self-directed.
- **Immediacy:** Wherever learners are, they can get any information immediately. Thus, learners can solve problems quickly. Otherwise, the learner can record the questions and look for the answer later.
- **Interactivity:** Learners can interact with experts, teachers, or peers in the form of synchronous or asynchronous communication. Hence, the experts are more reachable and the knowledge becomes more available.
- **Situating of instructional activities:** The learning could be embedded in our daily life. The problems encountered as well as the knowledge required are all presented in their natural and authentic forms. This helps

learners notice the features of problem situations that make particular actions relevant.

- **Adaptability:** Learners can get the right information at the right place in the right way (Bomsdorf, 2005).

It has been widely accepted in the literature that ubiquitous learning environments can enhance students' engagement in the learning process through personalization and customization to their needs (Jones & Jo, 2004; Jung, 2014).

### **BYOD for Distance Learning**

As Norris & Soloway rightly put it in their 2011 article, “[w]e live in an Age of Mobilism, in which users want to be connected all of the time, everywhere, on devices that are affordable and globally adopted.” (Norris & Soloway, 2011). Even though Norris and Soloway wrote their article focusing on K-12 education, their observation about the needs of individual to be digitally connected anytime anywhere is also applicable to higher education. With the trend of personal technology ownership among students, universities worldwide have been adopting the BYOD (Bring Your Own Device) program for teaching and learning activities. The BYOD program encourages faculty, staff, and especially students to use their own personal devices such as smartphones, laptops, tablets, e-readers, etc. to facilitate the access to licensed information and applications, and to engage in academic discussion. These mobile devices are desirable educational tools for new teaching pedagogy as they facilitate experiential and active learning activities. Bristow et al. points out that there are three main reasons for implementing the BYOD program: “1) mobile devices are ubiquitous amongst college/university students; 2) BYOD provides an effective teaching pedagogy which will enhance student learning; and 3) if implemented correctly and with strategic planning, such programs can allow institutions of higher education to reduce costs related to computer labs and technical support.” (Bristow, Titus, Harris & Gulati, 2017). Thus, the BYOD program is beneficial to the key players in higher education, namely students, faculty, staff and the institution overall.

It is more important than ever that Information and Communication Technologies (ICT) play a vital role in distance education. Firat states it very clearly: “[t]here is a tendency to use cutting-edge and new communication technologies in distance education.” (Firat, 2017). With the emerging mobile technologies over the past two decades, there is a demand for designing and integrating mobile technologies into distance education. How to make best use of the flexibility, portability and connectivity of mobile technologies is the major concern in designing new teaching pedagogies for distance education. In practical terms, mobile learning can be advantageous in the following ways:

- Can be used for independent and collaborative learning experiences
- Helps learners to overcome the digital divide
- Helps to make learning informal
- Helps learners to be more focused for longer periods
- The provision of course content to off-campus students
- The provision of feedback to off-campus students
- The provision of student support services to off-campus students
- Student-to-student interactivity

- Student-to-tutor and institutional interactivity (Yousuf, 2007)

In this paper, the authors use the library and information science programs offered jointly by Charles Stuart University and HKUSPACE to illustrate how to conduct real-time online library instruction programs through mobile technology.

### **Information Studies Offered by Charles Stuart University and Collaborated with HKUSPACE**

HKUSPACE has been collaborating with CSU in offering library and information science courses since the 1990s. CSU is one of the Australia's leading providers of online and distance education at the Bachelor and Post-Graduate level, as well as the Single Subject Study program (Charles Sturt University, 2019b).

Currently CSU offers two library and information science degree programs jointly with HKUSPACE to Hong Kong students, namely the Bachelor of Information Studies (BIS) and Master of Information Studies (MIS). Students will be awarded a BIS degree when they complete 192 credits. BIS graduates can pursue an MIS degree if they take an additional 48 credits. However, MIS students can also choose to graduate with the award of the Graduate Diploma of Information Studies upon completion of the MIS core modules, which is a total of 64 credits. The total enrollment of both BIS and MIS programs every year is around 80 students. As an experienced distance learning university, CSU has been applying all kinds of e-learning technology to their teaching pedagogy to facilitate student learning. In the past, all learning materials in print and other formats were delivered to Hong Kong students by mail; but now, all these learning materials and resources are consolidated together on their e-learning platform, Interact 2.0, for easy access anytime and anywhere. In the following sections, the authors provide more detail about the real-time online library instruction programs supported and delivered by the librarians of CSU remotely in Australia to students in Hong Kong since 2013.

### **Real-Time Online Library Instruction Programs**

In the past few years as the e-learning technology used for setting up online classes matured in the commercial market, CSU and HKUSPACE determined it was a suitable time to offer online library instruction by connecting students and instructors through the use of online meeting technology (Charles Sturt University, 2019a).

CSU librarians made use of e-learning technology to conduct online library instruction programs since December 2013 (see Figure 1). The pilot programs were conducted on December 5, 2013 at 6:00pm HKT (9:00pm OZ) and subsequently on March 17, 2014 at 6:30pm HKT (9:30 pm OZ) and October 27, 2014 at 6:00 pm HKT (9:00pm OZ). The online library instruction sessions were hosted in New South Wales of Australia and delivered to Hong Kong students who could use mobile devices to connect to the instruction programs in real-time. The hardware requirements for students to participate in the online library instruction programs were:

- A tablet computer or a smartphone
- Wireless network / mobile data network (either 3G or 4G)
- A headphone and a microphone (optional)

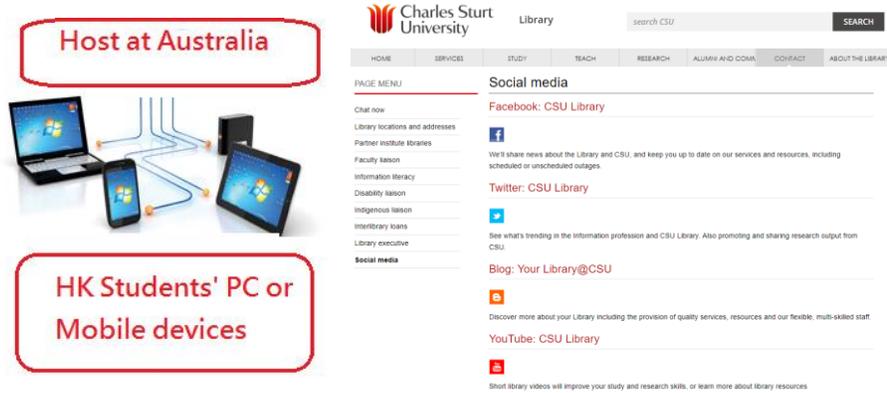


Figure 1. Real-Time Online Library Instruction Programs by CSU  
 CSU adopted Adobe Connect as the connection software. For mobile devices using the Android IOS, the Adobe Connect Mobile App Version Connect 9 c2012 had to be downloaded on the smartphone. Logistically, CSU had to first set up the online meeting room and then notify the Hong Kong students of the link for accessing it (<http://connect.csu.edu.au/r5wokaxeoz/>). After clicking this link, the students could then join the online instruction session. (See Figure 2)

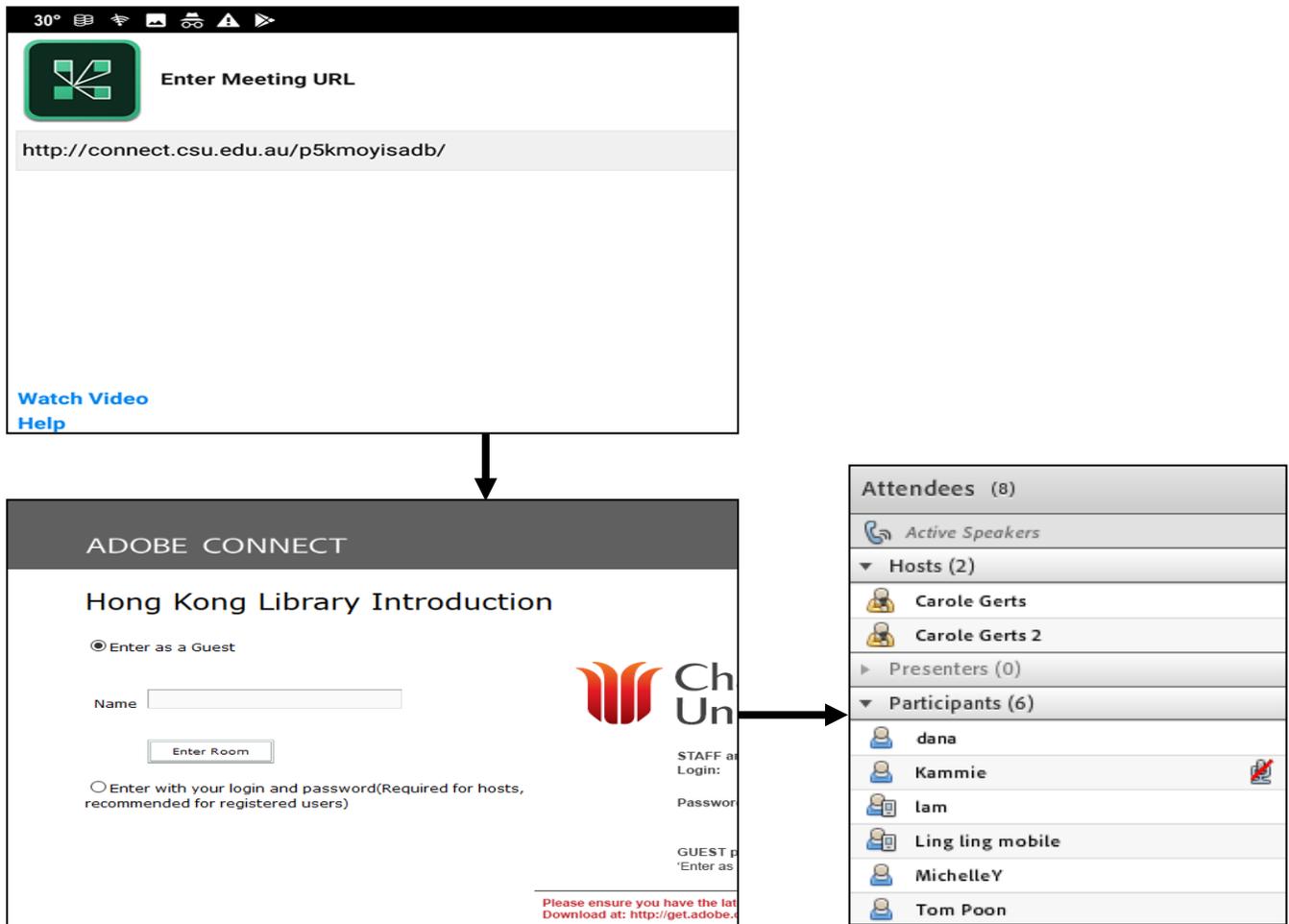


Figure 2. Joining the Online Meeting Room

Similar to the face-to-face library instruction offered by CSU librarians, the students attending this online instruction program could also:

- experience different types of online information services offered by CSU Library, e.g., Live Chats, Web Forms (See Figure 3);
- engage in exploring the characteristics and functions of Primo Search, Google Scholar and selected subscribed databases;
- be aware of the availability of scanned e-books, subscribed and/or purchased e-books; and
- find out how to identify information resources using the Subject Study Guides prepared by the subject librarians of CSU.



Figure 3. Online Library Services Offered by CSU Library

The interaction between the librarian and the participants in the online instruction session is almost the same as the on-site class (see Figure 4):

- students can interact with the librarian in real-time;
- individual students can be recognized on screen;
- students can listen to and read the librarian's notes on the screen;
- students can raise questions verbally during the instruction session; and
- students can communicate with other participants together with the librarian.

There are other advantages for conducting this online instruction session. First, students can choose to text their questions or comments which can be shown immediately on screen during the session. Secondly, the online class can be recorded and archived so that the students can access it again anytime and anywhere they want.

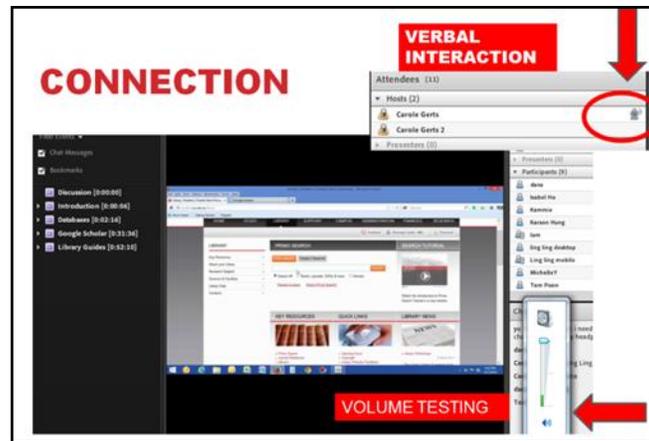


Figure 4. Verbal Interaction During Real-Time Online Library Instruction Session

### Major Challenges and Findings

Before the pilot programs, both CSU and HKUSPACE identified the following possible concerns over the adoption and adaptation to new e-learning technology by students:

1. Students taking BIS and MIS courses come from different backgrounds and age groups. As pointed out by Sharples, the students' IT literacy could be quite different when learning through mobile technology (Sharples, 2018). Apparently straightforward tasks such as connecting to the online instruction session could be quite difficult to some students because:
  - a. they might not know how to download the Adobe Connect App on their mobile phone;
  - b. they might not know how to set the audio-in and audio-out to make the verbal communication feature work;
  - c. they might not want to use the GUEST login and prefer to set the userid and password instead; and
  - d. the link that they receive might be re-formatted and the access could not be as simple as just clicking the link to the online meeting room.
2. Students use different brands and products of smartphones and tablet computers, which might also be a problem when participating in the online instruction (Osang, Ngole & Tsuma, 2013):
  - a. Mobile devices with different screen sizes might not have the same screen display during the instruction session. The screen size of the standard smartphone is comparatively small for instruction information.
  - b. The keyboard is usually too small and there might be typos in their text message.
3. There are concerns on the speed, cost and security of data transmission of mobile networks. While we appreciate the mobility of retrieving data from WiFi, the data transmission speed of mobile networks might vary according to the data plan and location of the individual user. It is therefore difficult to ensure the effective data transfer rate of each student. If free WiFi is not available, there might be a communication cost when using a third party network. Also, there is no guarantee on the network security if a public network is used.

4. Students might not necessarily choose a good learning environment for the online library instruction section. They might choose a convenient location but not necessary a suitable place for learning purposes.

After the pilot programs, it was found that both the BIS and MIS students had no problem in adopting this new instruction format using mobile devices. And the following major findings are:

- All participants found the setting and connection to the online instruction programs to be user-friendly.
- All participants did not have any problem in using different kinds of mobile products and devices.
- The data transmission of the entire network including wifi and mobile network was smooth.
- There are sufficient Wifi spots freely available in Hong Kong.
- Students did not have any problems with using smartphones with small screen displays.
- Students did not have any typos when texting their messages.
- Although there was no guarantee on the quality of the learning environment, it was at least students' preferred choice as to the location in which to access the session.
- Time zone differences between Hong Kong and Australia would limit the time schedule of the session.

Apart from the above findings, we also collected qualitative responses from the participating students by questionnaires through email to make sure that their comments could be reflected in the pilot study:

- They enjoyed this online learning mode and agreed that mobile technology could facilitate learning at their preferred location.
- They preferred to participate interactively by texting their message in the text box more than by verbal online chat using voice accessories.
- They found the recorded library instruction session useful for later review.
- They appreciated this interactive and global learning opportunity with the CSU librarians and students from different backgrounds.
- They agreed that this online library instruction session could substitute the traditional face-to-face library instruction programs.

## **CONCLUDING REMARKS**

The successful launching of the above real-time online library instruction program provides evidence to support the provision of online library user education programs not only through personal computers, but also mobile devices as well. Based on the qualitative results of the pilot study, it can also be concluded that delivering library instruction programs by internet and mobile technology to distance learning students in higher education anytime and anywhere is achievable. As indicated in our experience, the critical factor for the successful pilot programs is that both BIS and MIS students could adapt to ubiquitous learning through mobile technology very easily. Looking ahead, more

real-time online library services can be offered to distance learning students of higher education in Hong Kong.

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