Teaching and Learning with zoom: an exploratory study
Marafa, LM and Chan, CS
Department of Geography and Resource Management

Abstract

The CUHK commenced the online teaching and learning using the zoom platform as a stopgap initiative as a result of the Covid-19 pandemic. The university had earlier invested heavily on ICT in teaching and learning and have been involved in several Learning Management Systems (LMS) over the years. Such systems include the WebCT, Moodle and Blackboard as pseudo online/interactive platforms and have successfully developed the Ureply platform to enhance teaching and learning. The LMS along with the introduction of zoom, provide opportunities for communication, content delivery and assessment.

Until now, the university has perfected the use of the LMS that exposes students and instructors to the role of ICT as an elearning platform. The challenge was on how can the university promote a community of learners in an online platform like zoom? The benefits of a LMS that promotes elearning is the ability of learners and instructors to interact by chat, video and others to establish an effective process in teaching and learning. The study primarily focuses on the use of zoom to engage students, deliver contents and materials and subsequently assess performance of students according to course(s) requirements. Three courses are used in this preliminary investigation. Given that the shift to the zoom platform was effected after classes were conducted on the traditional face-to-face format, how does it affect the student's performance? How effective were the online practices in teaching and learning? What are some examples of effective teaching and learning practices? The study presents an exploratory investigation designed to identify some advantages and disadvantages of teaching and learning with zoom essentially from the perspectives of students.

Introduction

In most universities, teaching and learning is conducted in a face – to – face format. As the Information and Communications Technology (ICT) developed and distance education provided a viable alternative, online teaching and learning has become a common feature of learning environment across all setups of education (Diaz and Entonado, 2009; Roddy *et al.,* 2017). This has been called Open and Distant Learning (ODL) and where technology is involved has become known as elearning (Qayyum and Zawacki-Richter, 2018). As teaching and learning evolved, the use of technology has brought various reactions from students and instructors (Montrieux *et al.,* 2015). There is the need to understand the reactions of the main users of the zoom technology in teaching and learning.

There are many new technologies that are cost effective, readily available and provide a greater level of access to students, making the internet-supported teaching and learning the most important innovation in education (Beaudoin, 2015). These technologies also allow for more flexible teaching and learning approaches and enhances the educational opportunities for learners. It is also necessary to further understand the educational potential of various types of technologies used for teaching and learning (Jamil, 2011).

The advent of ICT's in education – offers both opportunities and challenges for administrators, teachers and students as well. Specifically, on the CUHK campus, where the traditional teaching and learning format has been face to face, the university, the instructors and the students have been exposed to various elearning tools (Lam *et al.,* 2011) like the WebCT, Moodle, Blackboard, Ureply, etc. But in the second term of the 2019/2020 academic year, the university started to use the Zoom online platform for teaching and learning following the fear of the covid pandemic.

The study was conceptualized to explore the strategies and conduct of online teaching and learning so that we can understand how to use the technology better and enhance the learning processes as it

continues to become commonplace. Given the opportunity of involvement and the challenges that everyone faced in the academic community, this exploratory research is designed to study the challenges and opportunities offered by zoom in teaching and learning.

The overall aim of this study is to investigate how the university can promote a community of learners in an online platform like zoom. Specifically, the objectives of the study involve the exploration of the students' general attitudes to e-learning on zoom and understand how it affects student's performance. How effective were the online practices in teaching and learning and what are some examples of effective teaching and learning practices if any?

Literature Review and Background

The context of the use of ICT into teaching and learning has already appeared at different levels of education (Diaz and Entonado, 2009; Gibson, 2001). This phenomenon has changed the nature of traditional teaching and learning and has continued to facilitate the growth of elearning in various formats (Roddy *et al.,* 2017). With the increasingly rising trend of the use of ICT in educational systems, more and more e-learning platforms are becoming available at the disposal of instructors and learners. As many of such platforms become available worldwide, it is changing the way teaching and learning is conducted especially on university campuses.

Historically, elearning has facilitated a learning culture and environment that incorporated access to course materials in a repository, flexibility, communications and the provision of other student services (Popovici and Mironov, 2011). As the technology further developed, some are used to enhance further collaboration between and among teachers and learners, some are easily used for project-based learning through the use of blogs, portfolios, networking and generally providing a social space in lieu of the face-to-face environment, making learning flexible (Qayyum and Zawacki-Richter, 2018; Mannon, 2019). Other scholars have posited that the teaching and learning tools provide the possibility to engage in collaborative learning, multitasking and rapid access to information (Roddy *et al.,* 2017).

Already as has been adopted by many educational institutions in a pseudo-online teaching framework, the CUHK encourages the availability of access to basic course information online; such as the syllabus, resource lists, and instructor's basic information that is useful for teaching and learning. As this continues to be the case and as the zoom platform became available for teaching and learning, it is important to have understanding of the tools available, and the extent at which the instructor and the students are able to embrace this aspect of pseudo-distant learning that the technology provides. In all levels of education, technology has dramatically changed the look of the 21st century learners and indeed the teachers (Christensen**, 2002**). This is increasingly evidenced by the development in computers, hand – held devices, mobile and smart technologies that proliferate the campuses and homes (Keengwe and Bhargava, 2014).

The use of the ICT has further underscored the gradual shift from the traditional teacher – centred pedagogy to learner – centred pedagogy (Omer, 2015). In this context, the learner – centred approaches allow the person to identify teaching approaches that will include students' needs, unravel their abilities and acknowledge their learning styles and learning activities (Christensen, 2002). Learning Management System (LMS) are widely available and are directly associated with e-learning platforms (Chaubey and Battacharya, 2015). They are mostly specialized online platforms that support e-learning.

In most cases, LMSs are software applications that comprise a suite of tools for learning and teaching online (Cavusa and Momania 2009). Some of the widely known LMSs are the WebCT, Blackboard, Moodle, and others some of which have been adopted on the CUHK campus. In conventional educational settings, online-learning management systems can help to improve the speed and effectiveness of the educational processes, communication among learners, and also staff and students (Latchen, 2018). In this study, we investigate the use of the zoom LMS and assess student's attitude and perception towards the LMS and elearning.

The Zoom Background

Within a short period, regular face-to-face meeting and teaching were replaced with video conference-based online zoom platform. In no time, the zoom as n LMS became extremely popular for its simple to use feature resulting from low network bandwith requirement (Mohanty and Yaqub, 2020). The idea is to investigate and authenticate the notion that the zoom technology is innovative and creative and could inspire other traditional face – to – face instructors to contemplate it's use in pedagogy as well as in assessment and feedback processes (Brainard and Watson, 2020). In this case, it has to be in such a way that the methods employed (in zoom) are constructively aligned with assessment and feedback.

The overall purpose is to investigate/evaluate strategies for online (zoom) teaching and learning and identify ways in which the technology can be used successfully. Most online technologies (and especially zoom) allows instructors and students to participate in teaching and learning at a time and place that is convenient to them. In this experience and with the advancement of the ICT and the advances in Web 1, 2.0 and beyond, the move from face to face in teaching and learning has enabled instructors and learners to assume different roles as they identify their teaching and learning spaces, impacted by the technological tool that they have access to. The adaptation of the online teaching and learning challenges the expectations of both instructors and learners. In this case, although initially the curriculum was designed on the face – to – face format, the replication that ensued when the online (zoom) was adopted benefitted from the dynamic nature of the teaching and learning environment.

Methods

This study, was conducted specifically on the students of the CUHK. The survey was conducted online and responses were requested from students that took three courses that were first started on face-to-face basis and switched to online format using the zoom platform. Course one is a UGE course with 61 registered students. Course two is a normal departmental course with 55 registered students while course three is a postgraduate course of the taught master programme with 30 registered. Generally, the survey was designed to investigate the effectiveness of the zoom platform on teaching and learning. It was also designed to understand the advantages and disadvantages of the Zoom.

The questionnaires were also designed to identify what the students like and dislike in the online learning experiences and decipher how the online interactions experienced by the students compare to their traditional classroom experiences. Specifically, the study investigated essentially the perceptions, experiences and attitudes of the students who participated in the courses. In addition to the questionnaires, open ended questions were also asked to allow the students to provided free flow responses without the constraint of a choice on scale. Anonymity of the participants was maintained throughout the study. The data was collated and analysed using the SPSS software.

Because of the limited amount of data, this research considered numerous issues related to data handling and analysis. In addition to descriptive statistics, EFA was undertaken to determine the structure of the student's response. Specifically, Mann-Whitney U test was used to compare differences between groups (gender and postgraduate and undergraduate student cohorts).

EFA was also performed to explore how many factors are present and what factors are correlated and what observable variables appear to best measure the factors (Gignac, 2009). The study further identified Kaiser-Meyer-Olkin (KMO) value, Bartlett's sphericity value, factor loading with eigenvalue. For scholars, an overall value of factor loading for each item over 0.50 was significant to confirm the meaningfulness of the questionnaire (Flora and Curran, 2004).

Results

Although this is an exploratory research, it has explored partially, some research questions of the project and present here some preliminary analysis. The online questionnaire was made available to about 146

students of the three courses that they have taken. The response rate was about 25%. The respondents were 20 undergraduate and 15 postgraduate students representing 57.1% and 42.9% respectively. In an attempt to depict the student's perception, experience and attitude of learning on zoom, a number of statements were asked in which the students responded on the 1 – 6, point Likert scale. Generally, with a median of 5, it appears that the students on the whole like the functions of the zoom in the learning experience. However, they still expect to meet the instructors and classmates in a face-to-face format rather than the zoom. Fig. 1 shows a boxplot of the students learning experience on each statement.
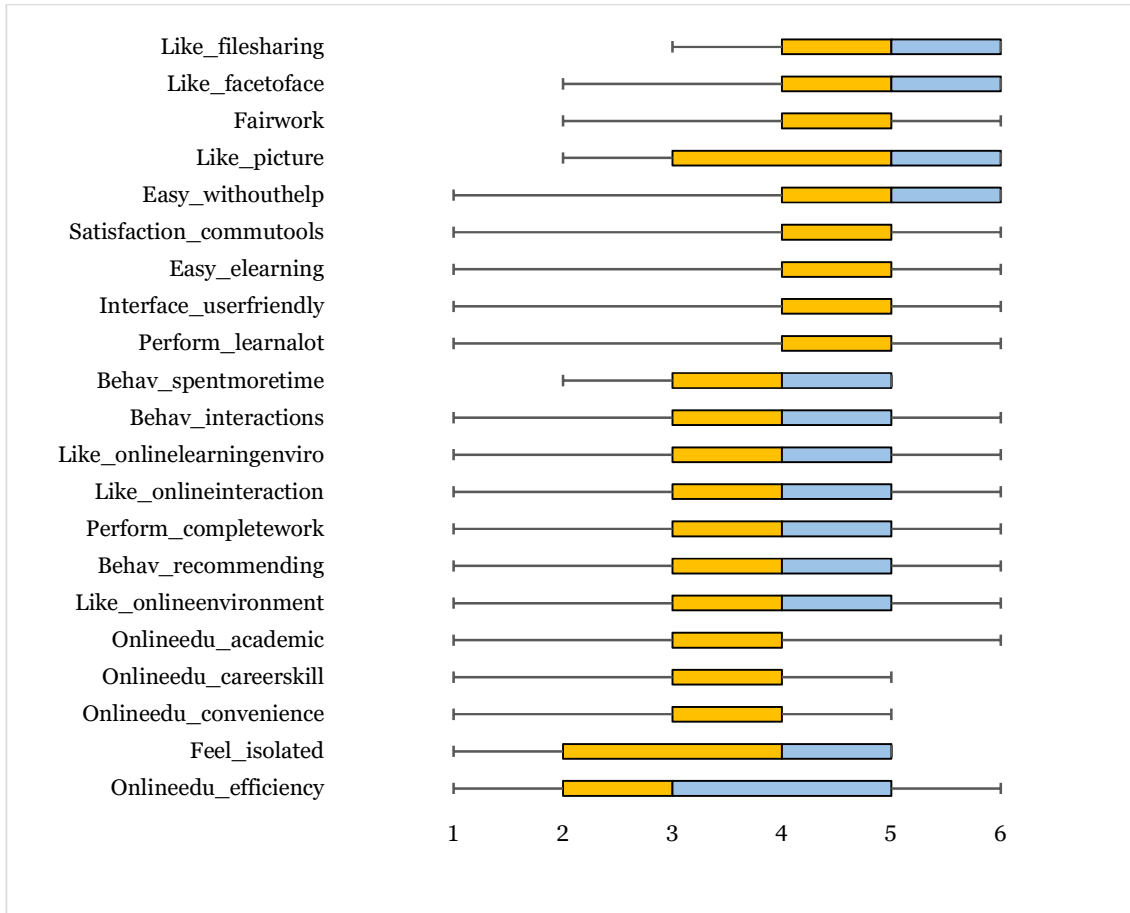
Figure 1: Boxplot of the student's learning experience

The statistical comparison of the mean was conducted by using the Mann-Whitney U test in response to the issue of zoom online learning with Gender. It was asked whether the students were satisfied with the learning experience on the whole. Some specific questions like whether the student "feel isolated and lonely" as a result of the online class were asked. The Mann-Whitney U test indicated that the agreement level on "Overall, are you satisfied with learning experience on Zoom" has no significant difference between female students (Mdn = 20) and male students (Mdn = 15), U = 81.5, p = .766. Detailed responses of some other questions are indicated in Table 1.

Table 1: Medians of statements with significant differences

Statements	Median	
	Undergraduate	Postgraduate
"*I spent more time working on this course than my other courses*"	3.5 ("Neutral")	5 (Agree)
"*I would rather meet my instructors and classmates face-to-face rather than on Zoom*"	5 (Agree)	6 (Highly agree)
"*I feel isolated and lonely as a result of the Zoom class*"	2 (Disagree)	4 (Slightly agree)
"*Online education would allow me to do more work in less time*"	4 (Slightly agree)	3(Slightly disagree)

Given that there is some acceptance of "no significant differences" in the responses, the study undertook a factor analysis to understand the variable relationships. Exploratory factor analysis (EFA) was undertaken to uncover any possible structure of the relationships between the variables studied from the questionnaire (Gignac, 2009). The analysis was performed using the Maximum Likelihood method of extraction. Bartlett's test of sphericity ($\chi 2$ (210) = 556.297, p<0.001) was significant, indicating that using factor analysis on the data set was appropriate. The Kaiser-Meyer-Olkin measure of sampling adequacy similarly indicated that the strength of the relationships among variables was moderately high (KMO = 0.658), meaning that the analysis was acceptable. Consequently, Oblimin rotation was performed since factors were expected to be correlated, resulting in a pattern matrix (Figure 2). Four factors are obtained as a result. These factors are "Preference of online education", "Convenience", "Functionality", "Learning outcomes" with eigenvalues greater than one. 67.726% of variance were explained by the four factors.

Pattern Matrix[a]

	Factor			
	1	2	3	4
Onlineedu_convenience	1.063			
Onlineedu_efficiency	.762			
Onlineedu_academic	.560			
Onlineedu_careerskill	.539			
Easy_elearning		.999		
Easy_withouthelp		.638		
Like_onlinelearningenviro			.818	
Like_onlineinteraction			.736	
Behav_recommending			.659	
Like_onlineenvironment			.612	
Like_filesharing			.591	
Feel_isolated			-.418	
Interface_userfriendly			.412	
Satisfaction_commutools				
Perform_completework				
Perform_learnalot				.805
Fairwork				.743
Behav_spentmoretime				.530
Like_facetoface	-.408			.484
Behav_interactions				.482
Like_picture				

Extraction Method: Maximum Likelihood.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 13 iterations.

Figure 2: EFA pattern matrix

Discussions and Implications

Although the zoom is new as LMS in teaching and learning, the students generally liked the functions it presents for their learning although they still expect and possibly like to meet with instructors and classmates in a face-to-face format rather than solely on zoom. While the PG students similarly prefer to meet both teachers and classmates face-to-face, they however spent more time and partly isolated, and considered the zoom platform as less efficient. In this study, the female cohort of students tended to feel more isolated as a result than their male counterparts. This is of interest as even with the various functions of chat and breakout sessions on zoom and the flexible aspect of working at home or elsewhere that the zoom provides, students develop some sense of isolation.

This study through the use of factor analysis, have identified four factors in the zoom learning experience. These factors are: "preference of online experience", "convenience", "functionality" and learning "outcomes". As a whole however, the students slightly disagree with the notion that the online education on zoom is efficient showing slight dissatisfaction in both the postgraduate and undergraduate groups. Given that this is an exploratory study with very little sample size, there is the need to further

seek for more samples so that an accurate measuring tool for zoom learning experience can be developed. Using zoom for the course was "acceptable" to students as it was convenient to manage school, work, family and social activities. As part of the curriculum required working in groups (Field studies), it created a sort of a hybrid allowing students to work together online and provide a way to also meet and work face to face on their assignment. The tasks assigned therefore, provided opportunities for social presence. This together with the requirement to present contents to the entire class created a further chance for teacher – student presence and student interactions with teachers and peers.

In this age of internet availability, with a social media presence and activities, students engage much of their time in day – to – day writing in online profiles, blog posts, content sharing, e-wom, and include all aspects of social media presence (Mannon, 2019. Some indeed, bring these skills and dedication to online classes. In order to extract the best of these skills and commitments, the instructor must design tasks that will engage students in meaningful learning activities allowing them to interact with others in their cohorts and in the class.

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