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Blended Learning in Higher Education: An Exploration of Teaching Approaches

Allan H.K. YUEN
Centre for Information Technology in Education, The University of Hong Kong, Hong Kong
hkyuen@hkucc.hku.hk

Abstract: The blended mode of learning has become increasingly popular in higher education. The purpose of this study is to explore the pedagogical use of ICT in a blended learning context. Focusing on teachers' and students' experiences in higher education, we examine the following questions: What are the teaching approaches on pedagogical use of ICT across faculties? What are the students' experiences in engaging with different teaching approaches? The findings of four case studies suggest four teaching approaches, namely, online discussion, online resources for teaching and learning, enhancing course management and delivery, and supporting specific pedagogy. It is believed that these approaches are pedagogical practices in transition and provide empirical evidence to shed light on issues in the research of blended learning in higher education.

Keywords: pedagogy, blended learning, teaching approaches, higher education

1. Introduction

Twenty-first century universities are continuing to go through rapid socio-economic and technological changes. These changes have brought a clear call for universities to carefully examine their educational practices from a new perspective and face challenges that lie ahead in knowledge-based societies [1]. These challenges include a large population of learners from varied backgrounds, needs, motivations, abilities, learning preferences, time availability and course content requirements; a greater number and variety of higher education places without corresponding increase in funding [2]; a demand for more "client" responsive and flexible courses; and the drive to use information and communication technology (ICT) in teaching and administration [3]. In facing such challenges, academic leaders in higher education need to rethink organizational structures, operational strategies, and policies appropriate for the ongoing digital age [4].

Despite an evident growth and potential for ICT in higher education [5] [6] [7], studies such as Fox and Herrmann [8] highlight the limitations of teacher and student uptake of ICT for educational purposes. Furthermore, academic e-learning has usually been focused on quantity over quality, and on superficial technological adoption rather than conceptual pedagogical change process [9]. As a result, many university students and teachers make only limited formal academic use of ICT in teaching and learning [10]. Thus, an apparent self-evidence of educational innovation using ICT hardly prompts people in higher education to reflect on the very idea of innovation and consequence [11]. The predicted "paradigm shift" in teaching and learning using ICT has not yet occurred [12] [13], and the impact of ICT on the quality of learning and teaching needs further evidence.

Integration of ICT in teaching and learning should emphasize interaction, flexibility and innovation [14] [10], and it is to be realized by linking purpose, people and pedagogy [15]. ICT implementation in higher education is not a simple technological adoption, and it involves the consideration of a number of issues, such as infrastructure, pedagogical practices, obstacles, student learning, organizational culture, organizational structures, operational strategies, and appropriate policies[4] [16].

Although e-learning is occasionally defined as "the online delivery of information for purposes of education, training, or knowledge management" [17], learning is shifting from teacher-centered to learner-centered and the desire to move from the traditional transmission model to the constructivist and interactionist frameworks [18]. Despite the fact that numerous studies reported ICT is being used by higher education institutions and innovative technology can facilitate educational reform, the diffusion of technological innovation for teaching and learning has not been widespread, nor has ICT become deeply integrated into the curriculum [19]. In fact, ICT-supported innovation in pedagogy, curriculum, and assessment is rare in higher education [12] [13]. As Collis and Wende [20] concluded in the report of an international comparative survey on the current and future use of ICT in higher education, a "business as usual" approach is taken without anticipating any real dramatic changes in mission.

The online learning platform provides an interactive environment for communication among students and teachers, and equips teachers to provide scaffoldings for students to engage in collaborative and cooperative activities even beyond classrooms. It is believed that collaborative learning leads to better student involvement, better performance, and higher productivity [21], which is the case of e-learning systems where students perceive greater opportunities for communication than those in a traditional classroom [22]. There is an emerging trend in higher education to combine online and face-to-face modes of learning, often referred to as blended learning [23]. Garrison and Vaughan [24] define blended learning as the thoughtful fusion of face-to-face and online learning experiences. "The basic principle is that face-to-face oral communication and online written communication are optimally integrated such that the strengths of each are blended into a unique learning experience congruent with the context and intended educational purpose" [26; p. 5]. What makes blended learning particularly effective is its ability to facilitate a community of inquiry. At the heart of a community of inquiry consists of three key elements: cognitive presence, social presence and teaching presence [23].

There is a need to relate the normative interpretations of the potential effects of ICT on teaching and learning in higher education with the empirical realities that higher education institutions are facing [15] because "the successful technology integration is a sociological issue" and "appropriate use of technology in teaching requires the thoughtful integration of content, pedagogy, and technology" [25; pp. 1-2]. To address the complexity of ICT integration in higher education, this paper aims to explore the pedagogical use of ICT in a blended learning context. The exploration is focused on the experiences of teachers and students, and guided by two research questions: What are the teaching approaches on pedagogical use of ICT across faculties? What are the students' experiences in engaging with different teaching approaches?

2. Methods

Case study is formally defined as an exploration of a bounded system over time through in-depth data collection from multiple sources of information rich in context [30]. Different researchers have different purposes for studying cases, and there are three types of case study, namely intrinsic case study, instrumental case study, and collective case study [29].

This study takes an intrinsic approach. Its major objective is to learn from the rich experiences of the teachers and students in pedagogical use of ICT in a blended learning context, description and interpretation is the main concern.
An inductive coding and grounded approach [30] were adopted in the data analysis to construct categories guided by the research questions. NVivo was employed to analyze the collected data, which provided a computer-based workspace that enables researcher to work through the qualitative data efficiently and powerfully.
We selected four cases of pedagogical use of ICT from a university in Hong Kong, which provided a score of experiences reflecting a range of pedagogical practices using ICT in higher education. The background of the four selected cases is summarized in Table 1. Obviously, these experiences are bottom-up and never theoretically-driven in nature. The criteria for case selection include: (1) courses or pedagogical practices in which ICT played a substantial role; (2) evidence of high level of student participation in blended learning modes; and (3) different learning outcomes exhibited.

Table 1: Background of four cases

Case	Faculty	Course/Program/Level
Case A	Education	Undergraduate course for teacher education
Case B	Arts	"Logic and Critical Thinking" for undergraduate and postgraduate students
Case C	Architecture	"Construction III" for undergraduate students
Case D	Dentistry	Undergraduate course for Dentistry students

For each case, the following data were obtained: documents containing information about the institution and faculty background and history; documents about ICT implementation strategies and policies, resources and infrastructure; curriculum materials; lesson observations; and semi-structured interviews of students and teachers. It is fruitful to compare and contrast different ways teachers and students make use of ICT in different curriculum contexts across academic disciplines.

3. Results

As summarized by Kember [27], the term "teaching approaches" has obvious parallels with the widely used term "student learning approaches". Teaching approaches have been characterized as having motive and strategy components, and they have been analyzed in terms of strategies with associated intentions. In the analysis of the cases, four categories of teaching approaches in blended learning modes were emerged.

3.1 Online Discussion

Online discussion is a common teaching approach in using ICT in a blended learning context. It is illustrated in Case A. Case A concerned a core course in an undergraduate teacher education program. This course lasted for 21 weeks with a three-week teaching practicum included. The teacher of this course encouraged students to have online asynchronous discussion outside regular classroom meetings. As an experienced and dedicated online facilitator herself, she found this group of students was not engaged with online discussion in spite of her constant encouragement both online and offline. This set the investigation into the factors behind students' disengagement. Motivating and inhibiting factors that affect students' participation in voluntary online discussion in a blended learning context are reflected in the following students' interviews.

Some students took the online discussion as a "resource", as one student commented: "I think mainly because there is a kind of resource out there other than the face to face meetings in the lectures." In particular, such online discussion provided opportunities for them to ask questions and form a community, as a student said: "I use the online discussion forum because I want to ask some questions. Like I have some questions in my mind after the lecture and I can't see the lecturer every day, if there is an online discussion, there is a community and the lecturer encouraged us to use it. Then I'll just post it." In such online communication, students' as well as teacher's participation is extremely important. When a student was asked why she only read the messages without response, she answered: "Because I don't think other people are reading. Frankly, most of the professors do not respond to us very often, apart from some of them."

Students were not very sure about their performance of online discussion being assessed, as a student said: "We are obligated to do that. […] I really don't like that because at the very beginning, the lecturer told us that this is part of the assessment, so you need to post your findings or insights on the discussion forum." In addition to assessment, the interplay between online and face-to-face discussion in blended learning needs thoughtful scaffolding, as a student raised: "Another problem towards the course is that when we meet on Wednesday during the lecture, we are required to show our discussion that we have already posted on the discussion forum. And actually in the lecture we are talking about the same thing as we did on the discussion forum. So that is why I really don't like them. But in [another course] I think it's a bit different because the discussion on the online community is different from what we have addressed in the [face-to-face] sessions."

3.2 Online Resources for Teaching and Learning

The second teaching approach is to provide online resources for teaching and learning. The course in Case B was offered to both under and post-graduate students in any year of their study and counts as credit towards completing their formal studies. The aim of the course website was to provide free online learning resources on critical thinking, to assist teachers and students alike, both in Hong Kong and other countries. A range of learning resources, including lectures, powerpoint presentation, critical thinking web, wiki, and blog, was provided to support online tutorial, online quizzes, and class exercises. The teacher gave six two-hour lectures including discussion time. As the objective of this course is to learn, evaluate and apply the critical thinking skills in daily life, the teacher provided rich learning materials and vivid examples in his critical thinking web and wiki for students to refer to. Self-directed learning is also significant in this course as students have to construct their own body of knowledge by choosing and studying the modules freely in the critical thinking web. They are free to take the quizzes and more challenging questions.

The teaching approach of "providing online resources" seems to associate with traditional instructional methods such as exercises and examinations, as reflected in the students' interviews: "Mostly traditional methods, we study and have exam after the teacher teaches us. […] The notes from the website, for the exercise you can click for the answer. It tells you whether the answer you have chosen is correct or not. […] He got a homepage, you login and there are 20 multiple choice questions. After you complete you press submit. This is the way. We are not using paper sheets for exams." However, this approach seems helpful and well-received by students, as a student said: "I think the [course] website is helpful. Those theories have been mentioned in the class, but there are more detailed information about their underlying origin on the internet. Also, there are some lovely animations and exercises." One student took it further and connected the resources with learning, and he commented: "Wiki is used to make announcement and keep notes, it allows all students to access notes. The critical thinking web is for students to do exercise and allow them to

further understand the concept. It is also a place for discussing and exploring questions. Whereas in classroom, it provides a space for student discussion and it is the first step towards learning."

3.3 Enhancing Course Management and Delivery

The third teaching approach is focused on enhancing course management and delivery. Case C described a core course for undergraduate students in the Faculty of Architecture. The teacher just started to use WebCT for the sake of the streamlined administrative work and the technical support offered by the centralized unit at the university. The teaching was conducted on WebCT. The course was quite organized. One folder was created for each week. Teaching materials such as notes, links, handouts and assignment were posted in corresponding folder. Students needed to complete the individual assignment for each week and there was an online test at the end of the semester. Students submitted assignments through WebCT and the individual assignment with teachers' grading and feedback was also posted. The main learning objective of the course was for students to grasp the main concepts and principles in the subject area. Students were expected to participate in the weekly learning activities and demonstrate understanding of various concepts.

Students felt there were major differences between face-to-face and online class. As a platform focusing on course management and delivery, students regarded WebCT as mainly a place for downloading materials and submitting assignments, but not a place for teaching and learning, as a student said: "I prefer face-to-face lecture which will help me to concentrate on learning. Online learning is often distracted by other things like going to watch TV." Some students felt uncomfortable with online learning and expressed: "Some notes are difficult to understand without lecturer's explanation. Maybe I'm not used to learn through WebCT and ask questions through Internet." It seems clear that students were in favor of a good blended mode of learning, as a student commented: "Face-to-face lecture is necessary since concepts can be explained more clearly. Using both face-to-face and online is a good combination."

3.4 Supporting Specific Pedagogy

The fourth teaching approach is to use ICT to support a specific pedagogy. Case D concerned integrating ICT with problem-based learning (PBL) in the Faculty of Dentistry, which is student-centred and clinically focused. One teacher expressed: "In the program it's a whole, because we have previously used WebCT in a particular simulation laboratory course. We decide to use the functions of WebCT to support learning in the PBL program. For a number of reasons we want students to have better communication with teachers, one another, and also have access to certain learning resource online. Therefore we set it up. […] We are trying to develop more learning resources, such as video, demonstrations of clinical procedures, a library of resources for the students." Another teacher echoed: "One of the key things is that WebCT is to support student self-centered learning time, because they are not having much time for face-to-face discussion with teaching staff. They are working collaboratively or individually so they are doing a lot of their own research, and that's where the WebCT supports as a platform to bridge them."

Students regarded the major role of WebCT is to provide information, as a student said: "It provides information, and a channel to access notes and data. For me, it assists me in learning." And students can also connect the WebCT with PBL: "When we first entered university, the university had introduced us the function and the use of WebCT. We keep using it throughout our dental course. In our PBL system, a new problem is posted every

week. Apart from the hardcopy provided by the teacher, we can read the notes on WebCT. So you don't have to worry if you lose the notes, because they are accessible online."
Nonetheless, it is important not to overlook the issues of the information selection for PBL in terms of types, quality and usefulness, as reflected in a student's interview: "I think the ICT that the entire university is using is quite ordinary, the information and feedback you obtained do not really help in teaching. For example if you upload notes, it is the same as we look for a book. Powerpoint, etc. is the main and only ICT being used. If you want to be better, I suggest putting some tutorial videos as it is more practical. We can find the information online by ourselves, if the information provided by teachers is unorganized, we would probably use our own way to search for it rather than relying on the system. I think information from videos and Powerpoint is more useful. As we are using PBL, you don't need to give us too much information. For me, PBL is a system that we ourselves decide how much we want to study. After we choose how much we want to study, the teachers can then upload the materials that we need."
There is a small management problem in such a fully integrated PBL curriculum, as a teacher said: "When the student post a question, we have a type of filtering system so the students post a question relating to the problem, then there have to be an interpretive level where that question is then classified to the relevant area. The staff members' responses then return and they are posted and made available for the whole year. In terms of interactivity, I first find that it is a little bit quirky. In a fully integrated curriculum, you really cannot do it in any other way."

4. Discussion

In their position paper, Garrison and Kanuka [23] conclude that blended learning is consistent with the values of traditional higher education institutions and has the proven potential to enhance both the effectiveness and efficiency of meaningful learning experiences. This study provides an empirical exploration of the pedagogical use of ICT in a blended learning context. Focusing on of the teachers' and students' experiences, the findings of four case studies suggest four teaching approaches, namely, online discussion, online resources for teaching and learning, enhancing course management and delivery, and supporting specific pedagogy. These approaches demonstrate a range of strategies and associated intentions in using ICT in a blended learning context. Students' experiences were positive in general. These approaches were well-received by students and stimulated meaningful learning in some sense.
Students' overall attitude towards learning online without face-to-face lectures was rather negative. Learning online was similar to learning by themselves which put considerable strain over their self-discipline and time management skills. The traditional lecture was considered more effective and efficient by many students to understand and grasp concepts and principles. Meanwhile, the web-based platform was acknowledged as flexible and convenient resource when downloading course notes and submitting assignments. It was concluded that ICT might be better as the supplement to face-to-face class rather than a replacement, as Larkin [26] argue that "Generation Y students in general, do not aspire to replace lectures with downloadable, online versions. Many of the students […] valued the opportunity for interactive learning provided by face-to-face teaching." [26; p. 238]

In the cases described above, students still had interaction among themselves on daily basis even though they could not meet their teachers. The social presence within the community was still abundant. It is possible to speculate that an online asynchronous discussion among students would be neither necessary nor desirable though the online community was

acknowledged. This is the reason why the teachers mostly considered the learner-content interaction in designing the online component. To ensure the cognitive presence in the online activities, teachers designed a set of structured and assessment-centered tasks. Students needed to read the material and finish weekly assignments or exercises. Assessment was employed as a crucial measure to motivate and engage students. The teacher-student interaction mainly depended on asynchronous tools like email and online feedback to students' work. Such a self-directed mode of learning left students working independently. What was missing was the teacher presence in the online community which students valued very much.

The results indicated that students' disengagement in online discussions was due to a number of factors that can be roughly categorized into course design, students' characteristics as well as community dynamics. It is suggested that the design of online activities plays a critical role in arousing students' interests, engagement and motivation especially at the launching stage of blended learning. Thus, thoughtful design of rewarding system, appropriate online information and tasks to be infused with face-to-face meetings is important. In addition, the teacher's facilitation and support were essential to ensure the focused, meaningful and quality blended learning.

The integration of ICT in higher education is a process both complex and necessarily innovative, involving multi-facet variations on curriculum content, pedagogy, ways of ICT use, teacher practices, student practices, student learning outcomes, and organizational conditions [4] [16] [25]. In conclusion, the four teaching approaches presented in this paper are not meant to be proven cases for blended learning that are able to enhance both the effectiveness and efficiency of meaningful learning experiences. However, these cases are pedagogical practices in transition, and provide empirical evidence to shed light on issues in the research of blended learning in higher education.

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