Examining Student Experience of Blended Learning from the Perspective of the Community of Inquiry Framework

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Abstract

Blended learning evolved from educational technology and it connects learning in and beyond the classroom. The Community of Inquiry (CoI) is a framework for blended learning from a socio-constructivist perspective in which learning is based on educational experiences in the environment with collaboration and interaction. The purpose of this paper is to explore student experience in a blended learning course from the viewpoint of the CoI. A case study approach using qualitative methods is used in the research. By examining the experiences of the students, social presence, cognitive presence and teaching presence were found. Although these three elements are required for educational experiences in blended learning, an unexpected issue about students' learning in the community without teaching presence was identified. This paper suggests that the role of learning autonomy and its relation to the community should be considered in the CoI framework. The value of this paper is that it confirms the elements in the CoI and proposes the addition of a new element in the framework.

Keywords: blended learning framework, community of inquiry, student experience

Introduction

The use of educational technology has been increasing greatly in the higher education sector (Peterson, 2013) and one of its most popular applications is e-learning. Educational technology is 'the study of and ethical practice of facilitating learning and improving performance by

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creating, using and managing appropriate technological processes and resources' (Januszewski & Molenda, 2008, p. 1). The concept of e-learning developed in the early 1990s and its adoption has changed from computer-assisted or computer-based instruction to web-based and Internet-based learning (Campbell, 2004; Gibbons & Fairweather, 1998). However, pure e-learning has limitations, such as isolation, and blended learning has been suggested as a solution (Cai & Yao, 2010).

Blended learning, involving both face-to-face learning and e-learning modes, has been adopted increasingly in the 2000s as it solves the problems of pure e-learning (Cheung, Lam, Lau & Shim, 2010) and connects learning in and beyond the classroom (Bentley, 1998). The growth in the use of blended learning has created cultural shifts in higher education (Garner & Oke, 2013), and it is important to understand student experience in this mode.

The purpose of this paper is to examine the student experience in a blended learning course from the perspective of the Community of Inquiry (CoI) model. The CoI model, based on Dewey's social constructivist theory, was evaluated by Garrison, Anderson and Archer (2001) and proposed as a framework for blended learning (Garrison & Vaughan, 2008). It is the most popular model for reflecting students' educational experiences in blended learning (Garrison, Anderson & Archer, 2001) and many studies have been conducted to confirm its applicability (Annand, 2011; Richter, 2013; Shea & Bidjerano, 2010; Shea et al., 2013).

Literature Review

Blended learning is 'the thoughtful fusion of face-to-face and online learning experience' (Garrison & Vaughan, 2008, p. 5). The integration enhances both the face-to-face and e-learning systems (Dias & Diniz, 2014) by improving pedagogy, focusing on learner-centred strategy, allowing learners to participate actively in their studies, constructing knowledge socially and collaboratively, and increasing flexibility and cost-effectiveness (Ruberg, Moore & Taylor, 1996; Warschauer, 1997). Blended learning has made a significant impact on recent teaching and learning models since it caters for individuals' different needs (Ngan, 2011). The connection of face-to-face learning and e-learning expands the learning space

and time. With its rapid growth, higher education institutions focus on providing and improving blended learning services in a practical way.

In practice, the institutions, teachers and students enjoy the benefits of this new mix of learning modes, but the theoretical frameworks of blended learning have drawn considerable attention. As shown in Figure 1, the CoI is a blended learning framework indicating the dynamic communities with cognitive, teaching and social presence (Garth-James & Hollis, 2014). Garrison and Vaughan (2008) shaped the practice of blended learning by describing the CoI framework as a unifying process that 'integrates the essential processes of personal reflection and collaboration in order to construct meaning, confirm understanding, and achieve higher-order learning outcomes (Garrison & Vaughan, 2008, p. 29).
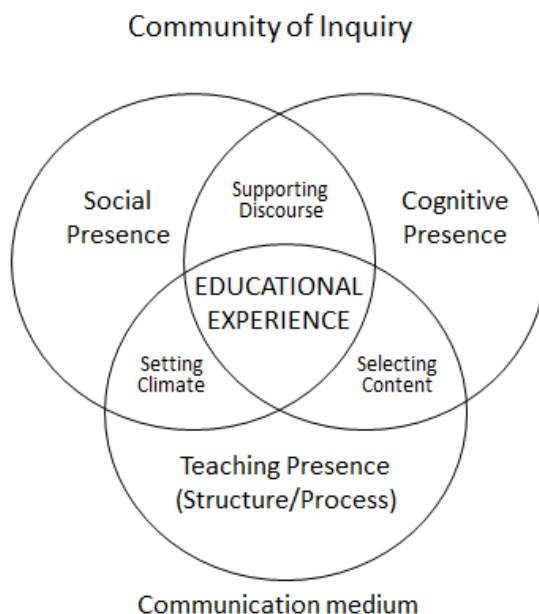
Community of Inquiry

Figure 1 Community of Inquiry (**Adopted** from Garrison, Anderson and Archer, 2001)

Garrison (2007) defined the categories of social presence as effective expression, open communication and group cohesion, with emotions,

risk-free expression and encouraging collaboration as indicators; the categories of cognitive presence as triggering events, exploration, integration and resolution, with a sense of puzzlement, information exchange, connecting ideas and applying new ideas as indicators; and the categories of teaching presence as design and organization, facilitating discourse and directing instruction, with creating curriculum and methods, sharing personal meaning and focusing discussion as indicators. He stresses the importance of teaching presence as 'interaction and discourse plays a key role in higher-order learning but not without structure (design) and leadership (facilitation and direction)' (2007, p. 67). The CoI framework has been used to reflect student experiences in blended learning, its strength being in explaining such educational experiences through inquiry learning. However, as technology has changed rapidly, this model proposed in 2001 may not be able to cope with the changes in learning with the current advanced technological support.

Methodology

This paper explores the student experience in a blended learning course and examines it from the perspective of the CoI framework. It is interpretive research (Schwandt, 1994) for understanding the students' learning experiences. Stake's case study approach, with qualitative methods of interpretive research in an anti-positivist stance, is used in this study (Connole, Smith & Wiseman, 1995; Stake, 1995; Yin, 2003). The design allows flexibility in exploring the blended learning experience in an inductive approach. Besides understanding the study from the theories, new issues are identified and explored. With the limited sample size in this qualitative work, the aim is to achieve particularization which can lead to generalization through further studies. In data collection, data triangulations are used to ensure reliability and validity. The primary data sources for this study come from in-depth interviews with students; and data was also collected from classroom observation, online participant observation, students' learning logs, focus group student interviews, individual teacher interviews, and an individual course leader interview for supplementing the primary data. These data collected were for formatting questions and providing supplementary data for the individual student interviews.

This case study research was conducted in a full-time Management Accounting (MA) course of a Higher Diploma programme in 2013. This course aimed to develop students' knowledge and understanding of the latest MA practices and theories, and how the MA can meet the internal information requirements of companies in order to perform their essential functions. The course lasted for 12 weeks, including 10 normal teaching weeks and two revision weeks. There were 42 compulsory learning hours for the course and a total of 108 hours for compulsory and optional learning. In the normal teaching weeks, the students were required to attend three compulsory hours of in-class time. For online learning, as decided by the course leader, students had to participate in one assigned online learning activity, but they could also participate in nine types of optional online activities. The teachers had the flexibility to turn any optional activities to compulsory ones in their classes according to their teaching design. The reason for selecting the course was to understand the blended learning experiences of the undergraduates. The study lasted for 25 months.

All the students were from Year 3 and had prior experience of having blended learning in the same programme. Among the four classes with 160 students, two classes were selected for the study. The primary source of data came from the individual interviews of eight students. Different methods were used to collect data for triangulation. The two teachers of the two classes were interviewed when the course started. During the semester, five class observations were conducted and two weeks of learning logs were recorded. After the semester, focus group interviews with 24 students in four groups were carried out. All the data collected were analysed for formulating questions for the individual student interviews. For the data collection from the primary data source, an interview guide with 20 questions in six categories was prepared to guide the interview process. The six categories were 'learning activities', 'factors affecting students' engagement', 'difficulties', 'integrated and non-integrated blended learning', 'collaborative learning' and 'the teacher's role'. After conducting and analysing the data collected from the individual student interviews, the two teachers and one course leader were interviewed individually. With consent from the interviewees, the interviews were tape-recorded. After transcription and translation, NVivo was used for generating the nodes. Thematic analysis (Braun & Clarke, 2006) was

adopted for data analysis and thematic maps (Braun & Wilkinson, 2003) were constructed for identifying themes for analysis.

Findings

The 12 themes identified in the study were traditional learning activities, online learning activities, learning process, engagement, learning outcomes, assessment, collaborative learning, teacher's role, personal barrier, course problems, need and preference. Based on them, a blended learning conceptual model used in the course was constructed as in Figure 2.
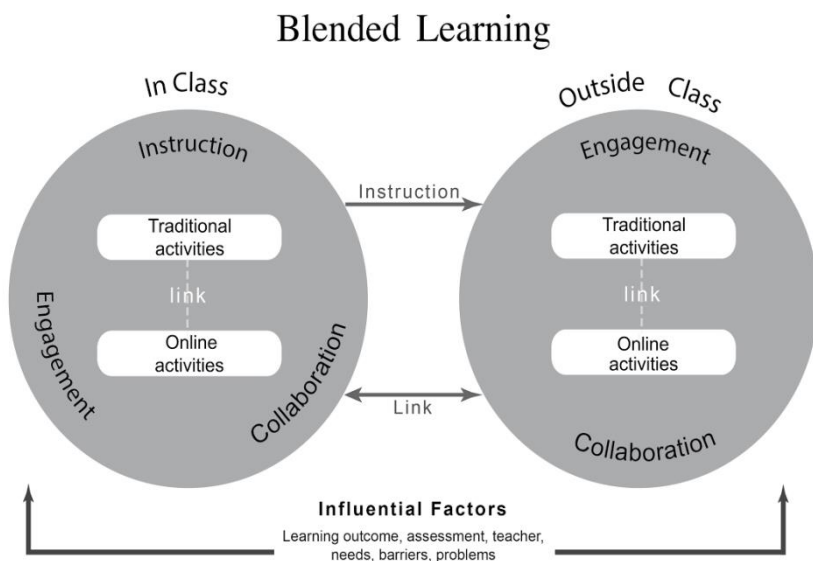

Figure 2   The conceptual model of the blended learning course

In this figure, the 'in-class' area refers to the traditional teaching and learning inside the classroom. In class, the teacher's role was to give instruction and encourage collaboration. The students engaged in learning by participating in the traditional and online activities. The 'outside class' area refers to pre-class and post-class learning. In this course, the teachers gave in-class instruction and asked the students to do both traditional and online learning activities after the class. In the learning process, the students were engaged by participating in the traditional and online activities, including online collaboration.

Learning outcomes, assessments, the teacher's role, individual barriers, course problems, student needs and preferences were other factors which influenced students' learning effectiveness. The conceptual model guides the elaboration of the remaining sections.

Integrating learning with blended activities

It was found that, in their learning, all students who studied both the traditional and online learning activities integrated the activities together, some assigned by the teachers and some initiated by them. Student A shared her experience in learning 'cash flow calculation' by integrating 'Chapter Review' and other online activities with the lecture. She found that she did not understand the concept of 'cash flow calculation' completely in class and she revised it at home by studying the 'Chapter Review', and after that she did online exercises. She shared her experiences in acquired knowledge in blended learning as follows:

> **Student A**: Blended learning could help me understand the content completely instead of just understanding part of it. I remember when I first did the cash flow calculation, some questions required me to do it for a number of years. However, I did not know the method for carry forward the amount. I already felt confused in the lecture. When I was forming the question and about to ask, the teacher had already moved to another topic. After I went home, I viewed the 'Chapter Review' to try to understand it by making use of the online learning. Then, I got what the cash flow calculation meant after viewing the 'Chapter Review'. Once I learned the relevant concept and skills, I also completed the online exercises and MC questions to check whether I really understood it correctly. I learned both the calculation method and the theoretical concept. I could acquire the skills and knowledge of cash flow calculation through the above online learning process.

Teacher A in Class A instructed her students to discuss a case online in the 'Thinking Forum' after class. She consolidated the discussion among the students, extended the group discussion in the class, and integrated the online learning activities with classroom collaboration.

Associated with the teacher's instruction, learning support and interaction, the students found that their learning became more effective. This affirms that the blended approach is more holistic in providing an overall learning environment (Bu & Bu, 2012) and connects learning in and beyond the classroom (Bentley, 1998).

Engaging in blended learning

All the students engaged in the online activities and said that these activities were useful, convenient and flexible in helping them to understand, reinforce and apply knowledge. Three students commented that online learning reinforced or strengthened their learning; and two of them elaborated that having both traditional and online learning helped them to understand the contents more thoroughly. By engaging in blended learning, the students demonstrated that they had deep learning through having interaction with others and doing the learning activities (Biggs and Watkins, 1995).

All the students also explained that they engaged in blended learning to achieve the learning outcomes. Six students associated their learning objectives with acquiring knowledge and course assessment. The types of assessment included the examination and participation in online assessment. It was found that the students were very concerned about the examination. Four of them were examination-oriented and focused their study only on examination-related contents. The findings on students' engagement in achieving the learning outcomes confirm that Hong Kong students are driven by intrinsic motivation with the mastery of goal orientation (Watkins, 2009). However, in this case, their goals were not only to achieve the learning outcome but were highly associated with marks and examinations. Nevertheless, they engaged in learning with a drive to achieve these goals.

Collaborative learning

From the research, it was also found that the students were engaged in collaborative learning. Collaborative learning played a very significant role in the MA blended learning course. Besides the prescribed traditional and online collaboration in class and outside the class, students were also actively involved in non-prescribed collaborative

learning. All of themts made use of the social media tools to collaborate with their peers. The following five students explained why they engaged in such non-prescribed online learning.

> **Student A**: We discussed the long question assignment which included some case studies. That meant we had to consider different perspectives when answering the question. I preferred to discuss the question in a fast and simple way. And this was a good method as I could find out the best approach to answer the questions efficiently.

> **Student B**: It provided me [with] more channels to communicate with others. It provided me [with] a convenient way for seeking help.

> **Student C**: It made my learning easier and saved my time … . I could learn faster and saved time by asking others for solutions instead of searching [for] answers by myself.

> **Student D**: They were really convenient.

> **Student E**: It was an effective way to ask for help if I had problems during my study.

The students engaged in online collaboration via social media tools as they found it useful, efficient and time-saving. After online searching for some resources, Student A shared those online learning materials with others for them to learn together.

> **Student A**: I found online references that were more suitable for my learning as the level of difficulty of the content suited me most ... . Some of them were obtained from the ACCA website … . We found a question which was worth doing or for discussion … . We posted it on Facebook and encouraged others to do it. We also solved the problem together.

In this case, Student A searched for learning materials during his autonomous learning. He decided which question was worth doing or for discussion, posted it on a social media tool, encouraged others to tackle it and solved the problem together. His autonomous learning

was linked to the learning community through his actions. It was found that, for most of the time, their collaboration was initiated and facilitated by themselves without the presence of a teacher.

Instruction

Although the students often directed their own learning in a non-prescribed way, teaching presence was also found to be important in prescribed blended learning. The teachers designed the curriculum and teaching methods; and they also facilitated discourse and gave direct instruction in the blended learning course. Teaching presence (Garrison, 2007) was found in this course as the teachers designed the curriculum, developed the teaching methods, facilitated discourse and gave direct instruction to students.

Both teachers said they actually wanted to use more online learning activities and Teacher A even wanted to provide an online class and consultation hours for answering students' questions synchronously. However, they both found the workload too heavy as their time was already occupied by other teaching and administrative work. Teacher B commented that he did not receive any teaching support for handling the additional work arising from online learning. Also, both teachers found that they did not know how to make use of blended learning to teach. Teacher B said he did not know how to monitor students' performance and Teacher A noted that there was no training for teaching through blended learning. Thus, it was found that teachers expected support for their online teaching (Raman & Don, 2013) development, but such support could not be provided without extra resources from the management.

Barriers and problems

The learning barriers were another factor that influenced student engagement in blended learning. Students had individual barrier, for example they felt bored or stressed or did not understand while learning. They also had language difficulty. Among the eight students in the individual interview, two found using English in communication was a barrier and two said they did not understand some contents in English. Two students found the use of English in online communication hindered communication and learning; and four

suggested that online learning should be conducted bilingually. For example, they suggested that options should be provided for the display language; and that scripts in different languages should have audio learning material or provide sub-titles or dubbing in different languages for video clips.

Students found there were some problems in the blended learning course. Six students noted that some of the learning activities were not useful for their studies, and two found that insufficient instructions were given in the online learning activities. Two students said that some online materials were not in the syllabus and were not useful for preparing for the examination. Also, three students noted that they faced technical problems in online learning. For online exercises, three felt there were not enough questions, and two said that the explanation in the instant feedback was insufficient. For teaching support, two students mentioned that there was not enough teaching time in class; and two found teaching support for online learning was insufficient. They especially encountered difficulty in approaching the teacher to ask questions before the examination.

Needs and preferences

Besides instruction and barriers, it was found that students' needs and preferences were other external factors that influenced their engagement in blended learning. Students needed and expected to have a better learning platform. Five students mentioned that they needed to have more online questions and one of them wanted more difficult questions for facilitating his learning. Also, three students wanted the feedback to be more detailed; and five expected to have more channels for getting teacher support. Two students expected teachers to answer their questions through the smart phone, and three wanted online classes and online consultation hours so that they could communicate with their teachers online.

Several students wished to retain some traditional ways of learning. For example, five students showed that they preferred writing when doing calculation exercises; six of them preferred integrated blended learning; and two preferred non-integrated blended learning. Those who preferred to have integrated blended learning noted that the learning modes were complemented and provided flexibility for their

learning. Five students preferred learning in Cantonese or in both Cantonese and English. A student explained why he preferred using Cantonese for learning, saying 'It would be clearer and easier for me to understand what the teacher says'. Many of the students preferred using mobile devices to learn online, with half of them claiming that mobile learning allowed them to learn beyond the constraints of time and location, and one believed that mobile learning could facilitate instant communication.

Discussion

To examine the students' experiences of blended learning from the perspectives of the Community of Inquiry, the indicators suggested by Garrison (2007) were used as a measure of whether the categories of the presences existed in the blended learning course.

Social presence

During online collaboration in the learning platform, the students discussed freely in the online forum. They held discussions online based on the cases and questions set by the teachers, and they raised questions for others to give responses. The discourse was not only facilitated in the learning platform but was also followed up in the face-to-face classes. The students formed groups and answered questions from other groups. The quotation below from Student F supported the idea that the discourse was facilitated in the blended learning course with the online learning activity 'Thinking Forum'.

> **Student F**: The teacher requested me to complete two questions. First, I was required to answer one question. Then, I was also required to answer question asked by a classmate. I needed to do both questions … . When we did revision in class, one group was responsible for providing the solution and my group needed to answer questions. Say there were Group A and B. Group B needed to answer the question from Group A … . It was quite interesting because I was able to learn more. Some discussion content in 'Thinking Forum' had not been learned in class before but it was even more in-depth.

In social presence, emotions, risk-free expression and encouraging collaboration are the indicators of the categories of effective expression, open communication and group cohesion. In the class, the process of following-up group discussion of the online activities was observed. The students were found to discuss freely and happily with other groups. All the indicators of social presence were found.

Cognitive presence

The students said that they learned through the cognitive process in the blended learning course. In the online platform, the students were required to do the learning activity 'Level Quiz', in which they had to answer questions in multiple-choice formats. When they did not know how to respond to the questions, they referred to the learning materials and asked the teacher or their peers questions; and when they did not understand in the face-to-face class, they again asked the teacher or their classmates questions. Through communication, they solved their problems and learned. Teacher A described how the students learned with cognitive presence, as follows:

> **Teacher A**: Interaction among students increased for courses with blended modes. They discussed among themselves whether they understood or not … . Blended learning increased the interaction among students, as they would share whether they could do the online exercises. Also they needed to do group presentations and, therefore, they needed to communicate closely together. If exercises were only in the class, they would just do them by themselves and would not do them in groups.

In cognitive presence, the students had the sense of puzzlement — for example, they had problems in understanding a concept. This acted as a 'triggering event' and they then discussed and explored the solution with information exchange. After the discussion, they integrated their learning by connecting the ideas and resolved their problems by applying new ideas. In this course, all the indicators of cognitive presence existed.

Teaching presence

The teachers played a very important role in the blended learning course. They conducted lectures and did class exercises with the students in the class, and they also instructed the students to do the online exercises. When the students did not understand, they explained to them. They also divided students into groups for group learning. The following two students illustrated the role of the teachers in the course.

> **Student E**: We had lectures in the class and the teacher taught us the concepts at the beginning ... . During the class, she would ask us to do the class exercises and then check the answers together. Then, she explained to us when we had questions. After class, she would stay behind to answer our questions … . Sometimes, she would check the online MC answers with us in the class and explain in detail the difficult questions.

> **Student G**: [The] teacher asked some questions in class and required us to perform research at home. We had to give her answers in the next class. During revision, she divided us into groups and picked some MC questions from the online system for us to do in groups as a competition.

In teaching presence, the teachers designed and organized the lesson by setting the curriculum and developing teaching methods. In addition, they facilitated the discourse by sharing their personal meaning and explaining the answers to the students. They gave direct instruction and formed the students into group for discussion. All the indicators of teaching presence were found in the course.

A new presence — the social dimension of learning autonomy

The blended course contained all the elements in the CoI framework. The social presence, cognitive presence and teaching presence were found in the course. However, from the results on the theme of collaborative learning, it was found that some learning experiences in online learning and online collaboration were not reflected in the CoI

model. Besides the prescribed traditional online collaboration in and outside the class, the students were actively involved in non-prescribed collaborative learning with their peers using social media tools, as illustrated in the 'Findings' section. The students searched for learning materials during autonomous learning, decided which questions were worth doing or being discussed, posted them on social media tools, encouraged others to do them and solved the problems together. This autonomous learning was linked to the learning community through action. The element related to learning autonomy, which went beyond CoI, was found to be important in this study and needs further exploration. The linking of autonomous learning to the social element of the CoI is the social dimension of learning autonomy (Sinclair, 2000). It is therefore suggested that a new element should be added to the CoI to reflect learning autonomy and its link to the learning community in blended learning should be the subject of further research.

Conclusion

This paper explores the student experience in a blended learning course from the perspective of the CoI. The elements of the CoI were examined and social presence, cognitive presence and teaching presence were found in the blended learning course. The categories of effective expression, open communication, group cohesion, triggering event, exploration, integration, resolution, design and organization, facilitating discourse and direct instruction were identified by examining the indicators of the elements. However, the element relating to learning autonomy was found to be missing in the framework. In the course, the students learned through autonomous online learning and collaboration with peers using social media. In this study, the social dimension of learning autonomy was found in the non-prescribed online collaborative learning using social media tools. The role of autonomy is connected to the CoI with the social media tools. A related new element should be considered for extending the CoI. Further research in this area is required.

The limitation of this research lies in the appropriateness of generalization of the case study. However, this paper is not aimed at achieving generalization. Instead, it serves as a particularization and the cases of particularization can aggregate for generalization. Also,

since the students had been exposed to blended learning in another course in the programme, the technology savvy aspect might have affected the results of this study. While the students had collaborative learning using social media tools, the engagement and effectiveness of learning facilitated by such social media tools needs to be studied in greater depth. The similarities and differences in prescribed learning and non-prescribed learning, and how prescribed and non-prescribed learning in the blended mode can be complementary to each other, are also worth further study. Nevertheless, this paper confirms the elements in the CoI and proposes that the social dimension of learning autonomy should be added to the framework.

Acknowledgements

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