Collaborative Learning Using Social Media Tools in a Blended Learning Course

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Abstract. The concept of collaboration is rooted in social constructivist theories. With social theories as the theoretical base, collaborative learning is extended to online collaborative learning with the support of new technologies. In blended learning, students learn in collaborative situations using online tools to support inquiry and discovery learning. The Community of Inquiry (CoI) framework is a popular framework for blended learning from a socio-constructivist perspective where teaching, cognitive and social presence are required in collaborative constructivist learning. With the continued advances in technology, online collaborative learning via social media initiates new learning experiences. The purpose of this paper is to explore the student experience in collaborative learning using social media tools in a blended learning course. In this study, in-depth semi-structured interviews were conducted in a blended learning course. The results show the students engaged in learning through use of WhatsApp, Skype and Facebook to transfer, share and construct knowledge among peers in asynchronous and synchronous modes. Relationships of the collaboration with learning outcomes, engagement and other influential factors were also found. The collaboration was found to be initiated independently by the students and was a non-prescribed activity as it was not designed in the course nor instructed by the teachers. This study asserts that the element of autonomy could be considered in the Community of Inquiry in reflecting the learning experience without a teaching presence in blended learning.

Keywords: Online collaborative learning · Social constructivist theories · Community of inquiry (CoI)

1 Introduction

In the blended learning environment, it is important to coordinate face-to-face mode and online mode of communication to better support collaboration [1]. Collaboration is not a new concept in blended learning as it is rooted in social constructivist theories that students can perform at higher intellectual levels in collaborative situations [2]. Al-Ani [3] stresses social constructivist theories underpin much of the theoretical work on blended learning and these theories focus on how the tools are used in on-line environments to support inquiry and discovery learning. In higher

S.K.S. Cheung et al. (Eds.): ICHL 2015, LNCS 9167, pp. 187–198, 2015.
DOI: 10.1007/978-3-319-20621-9_15

education, cooperative and collaborative learning have a role at both undergraduate and postgraduate levels [4]. The basis of both cooperative learning and collaborative learning in constructivism is that knowledge is constructed and transformed by students [5]. Collaborative learning and cooperative learning have similarities but still have differences in that in collaborative learning, students are believed to have social skills already, can organise and negotiate efforts themselves, and are guided but not directed by instructors [6]. Collaborative learning is a way in which individuals work closely together towards a common goal, adopting expertise and experiences and emphasizing co-creation and contributions from each member of the group [7]. Collaboration enhances and promotes learning which is an important factor in academic achievement, personal development and student satisfaction [8]. Situations, interactions, processes and impacts are four fundamental criteria influencing collaboration [9]. Collaborative learning occurs when small groups of students help each other to learn [10]. Under these circumstances, the collaboration is carried out coordinately and synchronously by mutual efforts in problem solving, value creation and skill set leverage among all participants [11, 12].

1.1 Theoretical Concept

Constructivism suggests that learners 'create knowledge as they attempt to understand their experiences' [13]. In constructivism, real-life learning is complex and learners actively attempt to pursue learning. As an extension from constructivist theories, social learning theories advocate the construction of knowledge via social interaction whereby students can learn through interacting and communicating with peers, teachers and other experts [14]. We learn from culture, which is a primary determining factor for knowledge construction, using learning communities, collaborative learning, group work and discussion-based learning. Vygotsky's theory asserts the themes on social interaction, 'more knowledgeable others' and the 'zone of proximal development' [15]. Zone of proximal development refers to the 'distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more knowledgeable others' [2, p.86]. Although the zone of proximal development concept is developed through observing children, it provides an underlying framework of social learning in adult education [16]. Contributing from the constructivists, social theories gave fundamentals for the development of later collaborative and cooperative practices in modern society [17]. Social theories can be used to provide a theoretical base from which to understand cooperative learning [18].

A number of frameworks and models are related to blended learning. The community of inquiry framework is a popular framework for blended learning from a socio-constructivist perspective [19]. The model identifies that teaching, cognitive and social presence are required in a collaborative constructivist learning environment and suggests that cognitive presence can be created and supported in a computer-conference environment with appropriate teaching and social presence [20].

1.2 Online Collaborative Learning

In the context of online collaborative learning, constructivism is also considered as a theoretical foundation for technology and social studies integration in which learning occurs in the network environment and the mediation of technology facilitate learner-to-learner interaction [21] and online learning provides an environment for social constructivist learning [22]. Stacey [16] studies on using computer-mediated communication (CMC) as a means of small group and large group communication in a distance learning programme and finds that Vygotsky's theory can apply to online communication. She describes the way that CMC provides an environment for social construction of knowledge through collaborative learning and explicitly states that'the notion of construction of knowledge in a group context, which is derived from the work of Vygotsky and neo-Vygotskian researchers, could provide a framework for understanding how the study's participants learned' [14].

Online collaborative learning is facilitated by new technologies. Klemm [23] considers Moodle as an online platform based on a socio-constructivist learning approach and offers a number of interactions and tools for collaboration and exploration learning. In a research on classroom innovation, a collaborative knowledge forum was built for students' implementation of social learning [24]. The research showed that schools encouraged collaboration between students, group projects and peer tutoring. Through learning and sharing with each other, students could build knowledge by learning from others. In a study regarding the use of mobile tools for students' learning, social learning spaces are set up in both in-class formal learning and out-of-class informal settings [25]. Teachers use media forums to assess students' work and also set tasks that specifically measure students' interactions and co-operative skills [26]. Mobile-assisted classroom-based tools are used to facilitate the students' online social learning in-class and out-of-class. The results show that social learning activities supported by the mobile devices can facilitate students' learning and these devices can be the students' personal 'learning hubs' to enhance formal and informal learning spaces.

Online learning via social media has drawn attention from researchers recently and the new concept of e-learning 2.0 is defined as the adoption of social media in learning or education [27]. A study on collaborative learning using social media in higher education shows that more introvert students perceive social media as more helpful for increasing their collaborative learning performance and self-confidence [28]. Learning through social media places the control of learning into the learners' hands [29]. Another study on the use of WhatsApp mobile social learning with structural teacher-guidance shows a positive impact in the achievements and attitudes of the students when compared to the face to face learning students [30]. However, Li, Helou and Gillet [31] argue that higher education institutions are still primarily relying on traditional learning management systems (LMS) that do not fully capitalize on the potential of social media for enabling participation in global learning networks, collaboration and social networking.

2 Methodology

As part of the study of a research on understanding students' experiences in a blended learning course with a research sub-question 'how does collaboration facilitate students' study in blended learning', the purpose of this paper is to explore the student experience in collaborative learning using social media tools in a blended learning course. It aims at finding out the reasons, the ways and the experiences of students which involve their relations with each other. Since interpretivism has the goal of 'understanding the complex world of lived experience from the point of view of those who live it' [32, p.118], it suits this research purpose of understanding student experience. This interpretive research, in understanding the social realities (learning experience) for those experiencing them (student), conforms to subjectivism and is appropriate to a qualitative research approach. In this study, individual interviews were designed to obtain in-depth data from the students. Before the research, consent was received from the school and the course leader. In the first week of the course, research consent was obtained from the students in the classes.

The study was conducted with the 2013 cohort of the Management Accounting course of a full-time Higher Diploma programme. In the cohort, there were four classes of students and the total number of students was 160. The unit of analysis was two classes within the four classes. Based on a prior study on online participation in this research, the students were categorized into four types of online-learners. Self-directed Learners are students who can direct their own learning by spending time to learn in the online platform and participating in many online learning activities. Guided Learners are students who follow the teacher's guidance in participating in assigned activities and they are willing to spend time to learn in these particular activities. Window-shopping Learners are students who try to look at different kinds of learning activities but do not spend much time in any of the activities. Passive Learners are students who do not spend much time in the online platform and just mainly participate in activities assigned by teachers. The individual interviews were conducted in early 2014. Two students in each of the four learner categories were randomly selected and invited to participate in the individual interviews. Among the eight students, half of them were from each of the two classes.

The interview was designed in a semi-structured way. In the interview, two questions were related to online communication using social media. Students were asked to describe by an example how they learnt via the social media in the course and how the tools enhanced their learning experience. To allow the students express their views with appropriate wordings and expression, the interviews were conducted with the students' mother tongue, Chinese. The interviews were tape-recorded and the transcripts were then prepared. The transcripts were translated into English for study and recurring ideas or themes were identified and illustrative quotations selected. Qualitative analysis software, Nvivo 10, for labeling and sorting segments of text into categories was used for data analysis. For assuring reliability and validity of the interviews, the recordings and translation were reviewed by a local expert. Thematic Analysis of Braun and Clarke [33] was used in data analysis of the research.

3 Findings

Students were found to be actively involved in non-prescribed online collaboration in this course. Social media applications were used for their communication. Among the 8 interviewed students, all of them had used social media applications to learn. The numbers of these students using the tools WhatsApp, Facebook and Skype were 7, 5 and 3 respectively. The main reason that they used several tools to communicate was that the tools had different special functions to facilitate their communication and learning. Through communicating via these tools, they learnt from collaborative learning. The following provides the findings about why and how they used the tools, their engagement in collaborative learning, and the relationship of such collaborative learning with other influential factors.

3.1 Online Collaborative Learning in WhatsApp

Most of the students used WhatsApp to communicate for blended learning in the course. Among the 7 students who had used WhatsApp to communicate, 5 mentioned that they communicated in groups. In their communication, they mainly asked questions when they had problems in learning for the peers to answer and they discussed learning contents related to examination. A student explicitly said that she used WhatsApp to ask questions to her classmates whenever she 'did not understand any learning contents'. WhatsApp, as the most commonly used tool for non-prescribed asynchronous online collaborative learning in this course, was used ad hoc in asking and answering questions when students had problems in study, for instance, doing calculation exercises.

Besides sending the contents in text, students made use of the audio and photo feature to send the questions and answers in formats that facilitated the convenience of communication. Three students described in detail how they learnt through collaboration using text, audio and photo messages. After they sent out their questions using text or photo, others replied to them via text, audio or photo messages. One of them found using text or photo to show her questions was better than describing them to the peers by talking on the phone. Another student found text messages were more convenient to use than voice messages. The student further explained that the advantages of WhatsApp were that it allowed her to make voice recordings, type text and upload photos, at a relatively fast and convenient speed; she could add many people for chatting in a group; and it was free of charge. Another student preferred using WhatsApp audio to communicate to using the phone because of the merits of its asynchronous feature.

The group size of the non-prescribed online collaboration using WhatsApp varied from 2 to over 10. In this study, one group had 4-5 students and another group had more than 10 students with the WhatsApp's asynchronous feature.

3.2 Online Collaborative Learning in Skype

With the group audio feature provided in Skype, the 5 students who used Skype in communication in the MA course had audio group discussion with peers via Skype.

The reason for using Skype was that it enables real-time audio group communication as the students explained. While having real-time communication, students could have discussions on learning activities that were more complex, for example, questions with a case and open-ended questions.

Unlike the communication in WhatsApp which was asynchronous, the students either scheduled a time or had ad hoc communication in Skype when they had questions. One student used Skype in his personal computer instead of his mobile phone for communication. He mainly had one-to-one communications and occasionally had a discussion in groups. He typed text, uploaded photos and printed the screens with graphics and passed them into Skype for discussion. He explained how he used Skype to discuss difficulties he was having in doing exercise questions.

For group size in Skype, one group had 4-5 students but not all of them joined the discussion every time and only 2-3 of them discussed together more. On the other hand, another Skype group has 5-6 students and they were the same peers as in their WhatsApp group. The Skype group size ranges from 2 to 6 in this study.

3.3 Online Collaborative Learning in Facebook

The collaboration among students in Facebook was knowledge sharing and discussion. Among the 3 students who had used Facebook, they mainly used it as file sharing. One of them mentioned that the students posted the questions which were worth doing or for discussing into Facebook. They wanted to encourage others to do the questions and they solved the problem together.

The sharing of files for discussion was asynchronous. The sharing of files not only facilitated the sharing of knowledge but also encouraged learning in a collaborative way by allowing them to do the shared questions and solve the shared problem together.

3.4 Online Collaborative Learning for Achieving Learning Outcomes

Students studied in blended learning for achieving learning outcomes, obtaining good results and acquiring knowledge. It is found that students' engagement in non-prescribed online communication was related to their intended learning outcomes in relation to preparing for the examination, which contributes most of marks in overall assessment in this course, and solving problems during studies.

All the 8 students said they used the social media when they had problems in study and asked questions of peers. Social media were used when the students were doing exercises, doing revision and studying for examination as 4 students explicitly stated in the interview. Besides, social media were more frequently used before examination and a student explained the reason was that they could ask for help immediately if they found any problem. Three students stated the frequencies of usage, which varied from every 1-2 days to every 2-3 weeks during the whole study period.

Although the frequencies of using social media in collaboration in the course are varied, the reasons for using the tools are the same. It is found that students are

actively involved in non-prescribed online communication for achieving learning outcomes in relation to preparing for the examination and solving problems during studies. While this sub-section shows the findings on why and when they had the collaboration, engagement is the most important part in their non-prescribed online collaboration.

3.5 Engagement in Online Collaborative Learning

All 8 students interviewed were engaged in communication via social media with their peers as they got help conveniently with timely support from others in this additional communication channel. The students found learning via online collaboration was helpful, effective and time-saving. Students engaged in online collaboration via social media as they could learn from peers who had more knowledge. Two students said they sought help from others with better results or knew more on how to do the questions.

Such non-prescribed collaborative learning realized Vygotsky's theory [14] of zone of proximal development in learning through social interaction from the more knowledgeable others. It also confirmed Dooly's [5] basis of collaborative learning that through communication, knowledge is constructed and transformed by students as the students found they learnt from collaboration.

The students learning from online collaboration using social media relates to both traditional and online learning activities. Students used WhatsApp to seek for help when they had problems during study. The flexibility and convenience of the tools enabled students' engagement in learning. It was found that a student even made use of WhatsApp to ask peer questions in the class.

Three students found the problem of isolation in online learning was remedied by the collaboration in social media. One student found that by studying together via the social media, they were encouraged to learn and could get help from others effectively.

The following student's view best summarized the reason for students' engagement in collaborative learning via social media was facilitating communication and idea exchange, learning and giving feedback with others, comparing the study progress, solving problems together, and studying without the feeling of loneliness. He said,

> *'They mainly helped us to facilitate communications and exchange ideas. We learnt and gave feedback to each other. By comparing our study progress, I could understand if I was lagging behind. We could discuss and exchange ideas when doing assignment. When problems came up, they could be dealt immediately. I did not need to study alone.'*

It was found that students' experiences were enhanced by engaging in non-prescribed online learning using social media, with their perceived advantages of helpfulness, convenience, an alternative option, being effective and time-saving. Students' engagement was learning from a 'more knowledgeable other' in the zone of proximal development (Vygotsky, 1962). They also exchanged ideas and compared progress during learning via the tools. The online collaboration happened both inside and outside the class and it helped lessen the isolation feeling of the students.

3.6 Other Factors Influencing Non-prescribed Online Collaborative Learning

Other factors influencing non-prescribed online collaborative learning were found to be barriers and the need of a teaching presence. Among the 8 interviewed students, 7 were using mobile devices for online collaboration with social media. However, one student 'did not have data plan' and therefore he only 'use[d] Skype to communicate with his personal computer'. The difference of this student to others was that he could not participate in the communication as conveniently as the other students. As a result, limitation of the device was a barrier for him to extend online collaboration when he was not accessing his computer.

A student explained the reason for having online collaboration was that it was not easy to gather face-to-face to have discussion. However, she found the screen of her mobile phone was too small. She used online collaboration because she found it was the only choice to her to have discussion. She further expressed her wish on having online collaboration in the learning platform of the school with the whole class set into a group.

The same student also preferred to have the teacher's response in online collaboration. In the interviews, the students mentioned teachers in expressing their views. One of the students actually said that his teacher was in his WhatsApp group but the teacher rarely replied and communication between them was not related to learning. However, it was found the teacher in another class did answer students' questions related to learning in WhatsApp. If the question was difficult, she would stay after the next class to explain the answer to the student. However, she only collaborated with some students in the class as it was a non-prescribed learning activity. It was found that some students needed the teacher's support during non-prescribed online collaboration.

However, the support from the teacher was not always required in online collaboration. One student felt 'pressure if he had to ask the teacher question'. He felt happier to learn from his good friend using Skype then asking the teacher a question, in which he found he could already learn from peers via collaboration in Skype. Online collaboration was not an isolated learning activity. A student said that she would consult the teacher, though not in the way of online communication, if the peers could not answer her questions. In such case, teaching support was closely related to online collaboration as an extension of learning in the course.

It was found that educational experience in non-prescribed collaborative learning occurred in most of the situations without a teaching presence and learning occurred in such activities initiated by individuals independently with autonomy. The collaboration was not designed, instructed or involved teachers. The teaching presence occurred occasionally in learning via social media and was needed sometimes by the students. However, in this study, the individuals experienced learning and engaged in learning most of the time without the teaching presence in non-prescribed online learning.

4 Discussion

In this study, non-prescribed online collaborative learning using social media tools was active among students. The reason that they used several tools to communicate was that the tools had different special functions to facilitate their communication and learning. Through these tools, they engaged in collaborative learning.

In their daily learning and especially before examination, the students made use of the asynchronous text, audio and photo features of WhatsApp to ask and answer questions for learning from the peers who knew more than they did. The results agree with Stacey [16] that Vygotsky's theory can apply to online communication as students learnt from more knowledgeable others through online collaboration in the blended learning course.

The students used both asynchronous and synchronous mode to learn from each other in Skype. The students had audio meetings in small groups in Skype to have discussions. The discussion contents related to some questions which presented problems or needed their deep thinking. Furthermore, they shared their found knowledge with others by file sharing and discussion in Facebook. The results affirm online learning provides an environment for social constructivist learning [22].

Online collaborative learning using social media is associated with learning outcomes and engagement. The frequencies of such collaboration were higher before examination, which contributed most of the marks to an overall assessment of the course. The questions they asked and discussed in their daily studies were related to the examination, such as calculation questions. They learnt in the zone of proximal development by learning through social interaction [14]. The students engaged in learning as they found online collaboration via social media helpful, effective, convenient, an additional communication channel and time saving. Through the communication, knowledge was constructed and transformed by the students [5].

Other influential factors in the non-prescribed online collaborative learning include barriers and teachers. The size and availability of network connection affected students' learning experience via social media. Although some students found they wanted participation of teachers, it was found in this study that the teacher's role had less influence, or even no influence in the students' learning from collaboration via social media. The students initiated and controlled their learning via discussion, knowledge transfer and knowledge sharing via the social media without instruction or teaching support.

The results confirm, as another example, that learning through social media places the control of learning into the learners' hands [29]. In online collaborative learning, learners achieve the desired learning outcomes through the learning experience with their intrinsic drive and without the process of design, facilitation and direction from teaching. Such elements interact with 'social presence' and 'cognitive presence' in the non-prescribed collaborative learning. The Community of Inquiry [20] should also consider the independence or autonomy element as the discourse is extended.

5 Conclusion

This paper explores the student experience in collaborative learning using social media tools in a blended learning course. In this study, in-depth semi-structured interviews were conducted and the results show how students engaged in learning through use of WhatsApp, Skype and Facebook to transfer, share and construct knowledge among peers in asynchronous and synchronous modes. Learning outcomes, engagement and other influential factors like barriers and teaching presence are related to students' experience in non-prescribed online collaborative learning with social media.

'Teaching presence' is an element in having educational experience in the Community of Inquiry [20]. However, it was found in this study that the educational experience in non-prescribed collaborative learning occurred in some situations without the teaching presence which occurred only occasionally in learning via social media. The collaboration was initiated independently by the students and was a non-prescribed activity as it was not designed in the course nor instructed by the teachers. With the importance of individuals in non-prescribed online collaboration in blended learning, the element of independence could be considered in the Community of Inquiry (CoI) in reflecting on the learning experience without a teaching presence in blended learning.

The limitation of this study is that only the individual interview method was used as this paper reports the interim results of a 4 year case study research. Method triangulation and data triangulation will be used for the entire research to enhance the validity and reliability. Further studies on other issues on blended learning should be conducted to have the holistic understanding of the students' experience in blended learning for considering the reflection of independence or autonomy in the Community of Inquiry as proposed in this paper.

Acknowledgment. This paper reports the interim results of a doctoral research. This is to acknowledge the University of Nottingham, United Kingdom and the supervisors, Dr. Gordon Joyes and Prof. Charles Crook, of the Doctor of Education (Lifelong Education) programme to guide the research on blended learning. Their dedication in supporting and guiding the research is much appreciated.

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