

Students' experiences of learning in a virtual classroom

Dilani S. P. Gedera

Waikato Institute of Technology, New Zealand

ABSTRACT

Online learning environments can offer learners opportunities for flexibility, interaction and collaboration distinctly different from face-to-face learning environments. However, the integration of educational technologies also presents challenges and concerns in relation to students' learning. This article attempts to develop a better understanding of students' experiences of learning with the specific online learning technology of Adobe Connect virtual classroom. The study was conducted in a university in New Zealand using a case study method. With Activity Theory as its research framework, the research methods of this study include individual interviews, online observation and analysis of other relevant documents. This article includes some of the findings of the research and a discussion on how the synchronous technology—Adobe Connect virtual classroom, used in an online learning environment affected students' active participation in e-learning activities. The article also offers some suggestions that can be of use to instructors who teach online courses.

Keywords: *E-learning; virtual classroom; synchronous; Activity Theory; learner engagement, ICT, tool mediation, synchronous, affordances.*

INTRODUCTION

E-learning can be defined as the use of educational technologies to design, deliver, and manage both formal and informal learning and knowledge sharing at any time, any pace and any place. In educational contexts, some e-learning courses are offered fully online without any face-to-face interactions while in some contexts, courses are offered with a blended mode that is the use of both face-to-face and online interactions that are facilitated by educational technologies. Online learning environments can offer learners opportunities for flexibility, interaction and collaboration (Gedera, Williams & Wright, 2013). Also, with the significant growth of e-learning, teachers and students explore new ways of constructing knowledge and enhancing teaching and learning experiences outside the four walls of the classroom. According to New Horizons (2012), "4,600,00 college students in the United States are currently taking at least one of their classes online and by 2014 this number will increase to 18,650,000" (para. 10).

In spite of the significant growth and interest in e-learning (Bell & Federman, 2013; Nagel, 2010; Rivera & Rice, 2002), positive outcomes are not ensured in all contexts (Alexander, 2001). In view of this, some researchers have shown uncertainties about technology transforming teaching and learning (Lee, 2006; Romeo, 2006; University of Washington, 2013) and the pedagogic values of online learning (OECD, 2005). In addition, the integration of educational technologies presents challenges and concerns in relation to students' learning.

In relation to challenges and uncertainties about technology, the e-learning Advisory Group (2004) accentuate that technology does not offer a complete solution for a transformative education; rather the practitioners should concentrate on the potentials and uses educational technologies offer individuals to enhance their performance and also the limitations of these technologies that hinder their performance. These potentials and limitations are known as affordances and constraints of technologies in education and they should be thoroughly considered for a

successful implementation of e-learning. Focusing on affordances and constraints, this article attempts to develop a better understanding of students' experiences of learning with the specific online learning technology of Adobe Connect virtual classroom.

RESEARCH CONTEXT AND RESEARCH QUESTIONS

This course on which this article is based was one of the case studies observed under a larger research project that was carried out in a university in New Zealand. The case study focused on a fully online course that was offered in the first semester of the 2012 academic year. Six students and their lecturer participated in this study.

The research question that guided the data analysis of this research was:

What are students' views on their experiences of learning with the synchronous Adobe Connect virtual classroom in a fully online university course?

ACTIVITY THEORY AS A THEORETICAL FRAMEWORK FOR ANALYSIS

Activity Theory is derived from socio-cultural and socio-historical theories and draws heavily on Vygotsky's concept of mediation. Vygotsky's (1978) triangular model includes *tool*, *subject* and *object* and shows the relationships between these elements. However, this model tended to focus more on individuals. Therefore, sociocultural theorists used Vygotsky's basic mediated triangle as a framework to develop Activity Theory which is accountable for both individual aspects as well as the social nature of activity. Engeström considered activity systems as object-oriented, mediated and collective in nature. Through activity systems analysis researchers are able to observe the interactions that take place among individuals and the environment and how each affects the other (Yamagata-Lynch 2010). An activity is comprised of elements which together form activity systems, and these systems are meaningful units through which to understand human activity (Kuutti, 1996, p. 25). An activity comprises a variety of mediators such as tools, rules and community and division of labour. These elements in an activity system act as mediators and the relationships between these elements are constantly mediated. For instance, a tool (computer) mediates between the subject (participant) and object (writing an essay), and rules (communication etiquette) mediate between subject (participant) and community (peers).

This article attempts to develop an understanding of students' experiences of learning with synchronous educational technology in a fully online university course. In capturing participants' experiences and views on how the use of this educational technology affected their learning, the tool mediation principle (shown in top triangle) of Activity Theory will be used in the analysis of this article. The following figure is the basic structure of Activity Theory framework that shows the interrelated elements of an activity system.

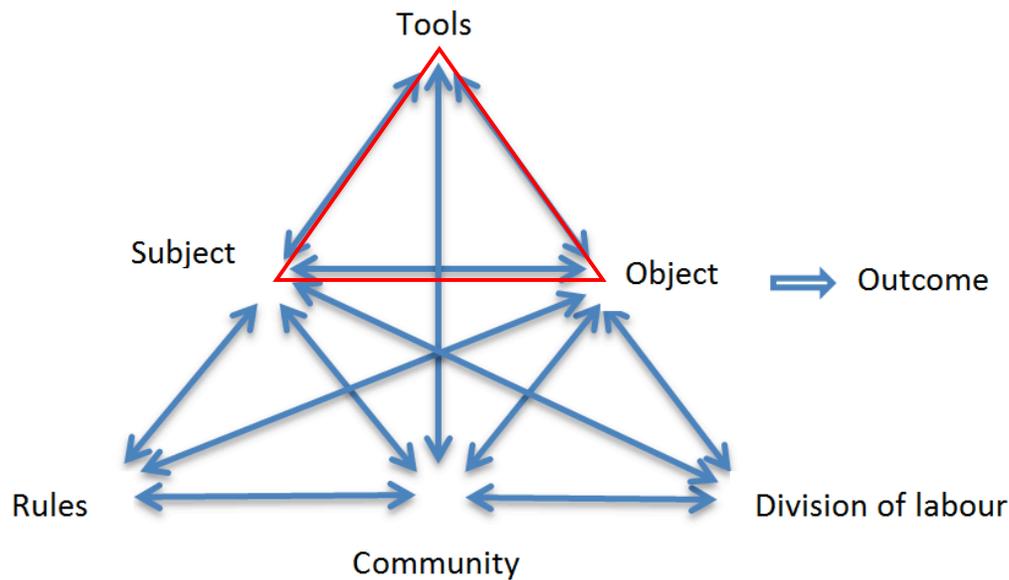


Figure 1: Basic structure of Activity Theory (adapted from Engeström 1987)

RESEARCH METHODS AND DATA ANALYSIS

This study used a qualitative case study approach and data were gathered over a period of one semester mainly through interviews, observation of online activities (Adobe virtual classroom) and analysis of other documents (course outline, marking criteria and activity descriptions). The online learning activity was the focus of data gathering in this research. The interviews took place at the beginning and at the end of the semester when the participants were asked semi-structured questions that were related to their experiences of learning with the virtual classroom.

In coding the data, relevant meaningful units from transcribed interview texts and observational notes were identified and categorized according to the elements of Activity theory as a method of typology. In this process, Nvivo was used as a data management tool. Based on the research question, with particular attention to the types of *tools* used in this course, this article draws on the *Tool mediation* principle of Activity Theory— that is the notion that human activity is mediated by several tools (Kaptelinin 1996). These *tools* can be: physical—a computer or a book, conceptual— a mental model, a plan or a strategy, psychological— a language, virtual— functions of a website.

Mediation of tools plays an important role in shaping how human beings act and interact with the world (Kaptelinin, Nardi & Macaulay 1999). Focusing on the *tool mediation* tenet of Activity Theory, the sub-themes that emerged under the element *Tools* were mainly considered for the analysis. In the case of this article, the *tool mediation* refers to the use of Adobe Connect virtual classroom in achieving the students' (subject) objective (object) in this case.

Adobe virtual classroom is an online platform where participants can communicate, interact and share presentations and learning resources in real time. These synchronous virtual classrooms can be accessed from multiple locations using a PC or a mobile device. The features of Adobe virtual classroom include video/audio, text chats, file sharing and polling features. Figure 2 shows the synchronous virtual classroom activity system that is overlaid in the Activity Theory framework.

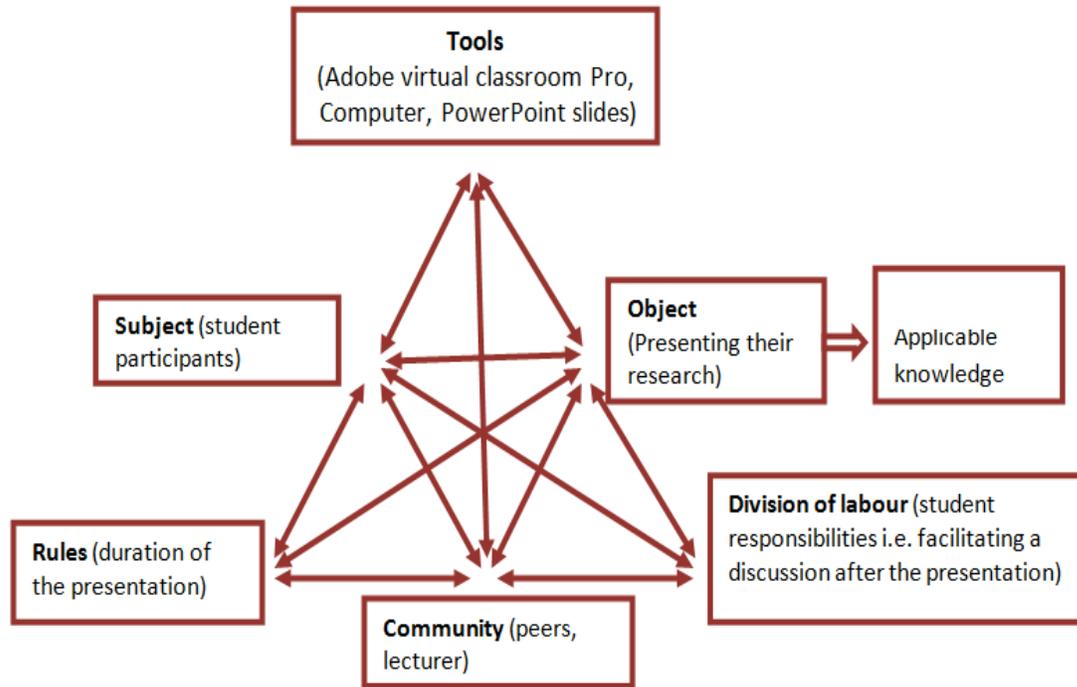


Figure 2: Virtual classroom activity system

In this activity system, the *subject* represents the student(s) who are the focus of the study. The *object* is the purpose of an activity. In this case, the students' purpose was to present their research to the other members of the class. The *tools* that were used in this activity in order to achieve students' object include physical tools (computers), mental tools (learning strategies), models and virtual tools (functions that were available in Adobe virtual Classroom). The *rules* for this activity were the duration of the presentation (10 minutes), relevant literature and references (following APA format) and a written script or notes (1500 words). The *community* of this activity includes the lecturer of this course and the members of the class. *Division of labour* defined the students' responsibilities. As part of their responsibilities, one peer had to review the allocated student's presentation and the notes before the actual activity and also the peer was to propose three questions to be discussed after the presentation. Figure 3 shows the layout of a typical virtual classroom

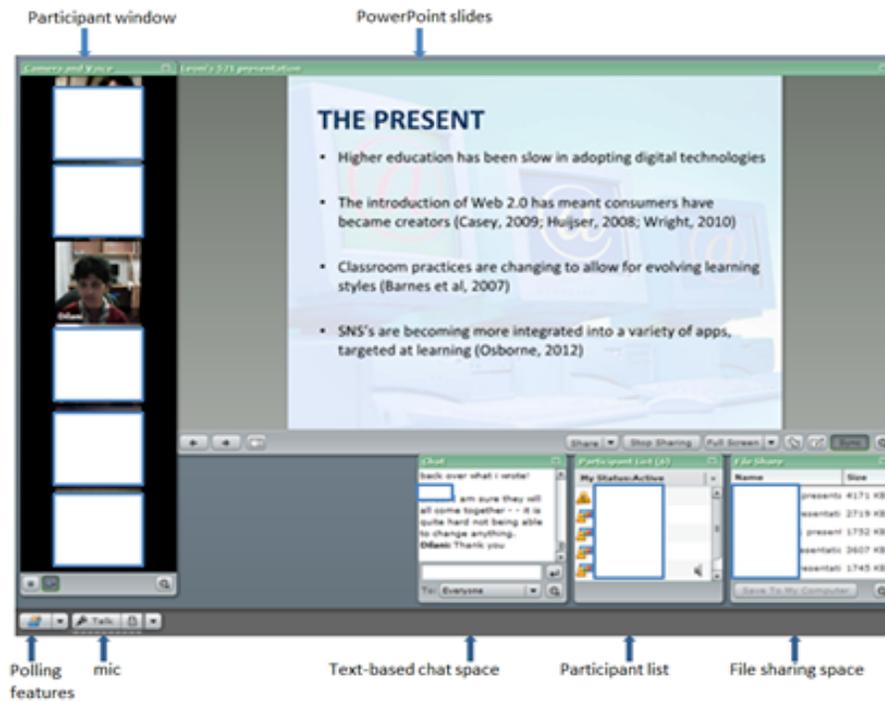


Figure 3: Virtual classroom

FINDINGS

The findings suggested that the students' experiences of learning with the virtual classroom were associated with the affordances and limitations of this educational technology. This synchronous activity was carried out as an individual assignment and represented 30% of the student assessments. In this activity the students were to present their research using PowerPoint or equivalent to the other members of the class. The dates of presentations and the schedule were pre-determined and posted on the Moodle site beforehand.

As pointed out by the participants, the affordances of the Adobe virtual class allowed them to see and hear each other in real time when they were presenting their research to their peers. These video and audio features facilitated two way communications among the students and thereby created a sense of belonging to a learning community. As a student commented, *"I like seeing people when I'm talking to them ... I like that backwards and forwards that can happen"* (Alex, student interview 2).

Another feature of virtual classroom that supported students' active participation was the ability to have an oral discussion in real time right after each presentation. As part of students' responsibilities, each student was nominated by the lecturer to ask three questions from another student in the form of a discussion. Having a discussion after each presentation allowed the students to clarify issues related to the topic immediately, as well as provide some peer feedback. When Alex was asked what he thought about the reviewing of notes and facilitating a discussion after each presentation, he stated that *"I think it caused us slightly deeper interaction with what the others have done. I thought that was quite useful"* (Alex, student interview 2). As a group, they

were also supporting each other by giving words of encouragement after their presentations. The words exchanged included “*very interesting*”, “*Well-done*” and “*excellent presentation*”.

With Adobe virtual class the students could also able to have a text-based chat during this activity. This was particularly useful when they had questions to ask from a particular person in private or in public as well as to have a chat before the facilitator (lecturer) joined the group. An example of a text-based chat is shown below.

Alex: Hi I hope you're not too nervous :)
Debbie: Hi hope technology is on our side tonight
Fiona: no I am not
Alex: That's good.
Debbie: I'm nervous
Alex: The lecturer will come on at some stage and enable all that business and then you click the camera button that will appear at the bottom of the "Camera and Voice" thingy at the top left :-)

(7th May virtual classroom observation)

The above conversation took place while students were waiting for their lecturer to join the virtual classroom. The students were trying to understand how to set up their cameras and see each other and also exchanging ideas about how they feel right before their presentations.

On the other hand, students' perspectives indicated that there were limitations with the virtual classroom. One of the main reasons why students were attracted to this course was for its flexibility, as it was fully online and it enabled them to have flexibility in terms of time, place and pace. However, on that particular day and at that particular time if the internet connection was not stable, or any technical difficulties occurred students would not able to participate in the activity. This was also echoed in students' views:

It gave that flexibility to choose the night that suited you the best whereas if we had more synchronous opportunities, probably it won't suit unless you have the dates right at the beginning of the course. Then things can go wrong like thunder and lightning, storm and you struggle with your equipment and you miss out because you can't get on it that time (Christine, student interview 2).

As pointed out by the lecturer, another limitation of virtual classroom is that when number of students is high, it gets harder to allocate time slots. Also, having limited capacity for only one speaker to talk at a time, discussions take a longer time and also the participants may have to repeat their utterances many times if two people talk at the same time. The findings also indicated that there were some technical issues that affected students' engagement with the virtual classroom activity and this caused frustration.

The virtual classroom was a little frustrating. I had a fast enough speed and internet, but somehow the audio...one time sounded twice and there was an echo. Someone was giving the presentation and I missed the whole bunch of it. I had technical problems on that (Eddy, student interview 2)

Students' perceptions also demonstrated that they found this activity challenging and thus, they were not relaxed when they were presenting their research thinking that they may not be able to get onto the virtual classroom. This was evident in the case of a student who participated from a Middle Eastern country. Due to slow speed internet connection that was caused by an unstable political situation in the country, the student could not hear what the others were saying and also she could not do her presentation or facilitate and join discussions. Although the lecturer gave her

a one-to-one session to present her research via Skype the next day, it was a disappointing and frustrating experience for her. The lecturer said:

I had her notes and I had her PowerPoint slides and I also had a Skype conversation with it. The issue was there, the bombs are going outside the window and probably it had something to do with it, but from her point of view, it was frustrating because she had prepared and she did a good job (Richard, lecturer interview 2)

In addition, one concern raised by the students was that as an assessed task that weighed 30%, they preferred to have more practice before the actual virtual classroom activity. Some of the students found it to be stressful going into the virtual classroom and using it having no experience apart from the quick introductions they did at the beginning of the session. Although the lecturer facilitated a practice session for this synchronous activity, some of the students had trouble setting their cameras and also some of them could not hear properly, so this practice session did not seem to be as beneficial as it could be for the students. As one student suggested, it would have been easier if they collaborated in this activity with a peer.

DISCUSSION AND IMPLICATIONS

In the virtual classroom activity system, with the affordances of the Adobe virtual tool the participants could see each other in real time, and the participants saw this as a benefit, as they could get to know each other better. The findings also suggested that having audio and video features, the virtual classroom facilitated reciprocal communication among participants where they could clarify issues and provide instant feedback as they were engaging in the activity. In synchronous learning, instant feedback and the interactions with peers and the facilitator seem to increase motivation and student learning (Schullo, Hilbelink, Venable & Barron 2007). In addition, as highlighted by Alex, having an opportunity to review each other's work and have a discussion after each presentation caused "*slightly deeper interaction*" among students (student interview 2). Students acknowledged the value of being able to have a lot of physical cues, thus there were more human interactions in the virtual classroom compared with asynchronous interactions. Some of the findings of my research were consistent with Falloon's study (2011) on students' experiences of synchronous virtual classroom in which he explored the areas where educators should pay attention to gain maximum advantage from its use. In both studies the students indicated that they preferred to have virtual classroom experience earlier on to get to know people better rather than towards the end of the course.

On the other hand, the constraints of the virtual classroom tool seemed to affect students' participation in this context. Like other synchronous tools, the virtual classroom requires people to come online in real time despite different time zones. As Richard, the lecturer pointed out, arranging the schedules to participate at specific times can be troublesome (Schullo, Hilbelink, Venable & Barron 2007). If students are attracted to online courses it is mainly due to their flexibility, and if students have to participate at a given time, they may not find it flexible enough. Moreover, as the students and the lecturer pointed out, when the student number is higher, the harder it is to schedule sessions, as these sessions took place from 7.30 – 9 pm at night during week days. Having limited capacity for only one speaker to talk at a time, discussions took a longer time and also students had to wait until their turn came to talk. The unexpected technical difficulties also caused some students to feel frustrated in the virtual classroom activity. In Eddy's case he lost the opportunity to listen to a peer's presentation due to technical difficulties, because of an echo. The person who was affected most due to technical difficulties was Gail. Although the technical difficulties were due to an unstable political situation in the country, for Gail it was a frustrating experience and it affected her full participation.

Participating in synchronous virtual classroom activities can also be challenging for some students if they lack knowledge of the virtual classroom's functions. Most students were not relaxed but challenged while participating in this virtual classroom activity, perhaps because of its unfamiliarity. Most participants claimed they needed more practice before undertaking the presentation assessment. The single practice session that was available for them was clearly insufficient and students even felt stressed knowing the risk of going into the virtual classroom to gain 30 marks having little experience of using it. This clearly affected students' active participation. Having little experience of using the virtual classroom, students lacked knowledge to use it to its full potential. Data from my research supported the perspective introduced by Falloon (2011) that students in virtual classrooms need *multiple knowledges* (italics in original) to get the best from virtual classrooms. Students generally struggled to transfer communication practices and their skills from face-to-face environments to virtual settings. The multiple knowledges Falloon introduces constitute *technical*—how to set up devices like camera, log in and find the way in virtual classroom, *procedural*—the conventions and etiquette they were to follow when interacting with peers and *operational*—how to make best use of the tools that are available for communication in virtual classroom (2011, p.443). The students' lack of knowledge and familiarity of the tool influenced the way students participated in the activity denoting how tools shape humans' action and vice versa.

However in spite of the constraints of virtual classroom, most of the students still preferred to have more virtual classroom activities because of the presence of physical cues and more 'human' interactions. It may be useful to have synchronous tools early on to both facilitate a sense of community and prepare students for later tasks assessed via such technologies. However, time zones may be an issue in this regard and if the learners are from different time zones, planning synchronous activities at a time that is suitable to all the participants can be a challenge. All in all, regarding their experiences of learning with this educational technology, students indicated their overall satisfaction. Considering the limited research conducted on synchronous tools compared with asynchronous learning tools, Adobe Connect virtual classroom requires further research that focuses on every day practices and uses of this virtual tool to determine its best use.

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