An analysis of Moodle in facilitating asynchronous activities in a fully online university course

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Abstract: E-learning platforms such as Learning Management Systems (LMS) provide teachers with tools that can be used to broaden teaching and learning experiences. These LMSs are used to create online learning environments for campus-based students and also to offer mixed mode and fully online courses in organizations like universities. This paper seeks to develop an understanding of students' experiences of learning with the LMS—Moodle as a tool that facilitated asynchronous activities in a fully online university course. The case study was carried out for a period of one semester in a university in New Zealand. With Activity Theory as its research framework, the data collection methods of this study included interviews, online observation of activities and document analysis. This paper outlines some of the findings and a discussion on students' experiences of asynchronous learning through Moodle as the LMS, and its effects on their active participation in this course.

Key words: Activity Theory, E-learning, LMS, Moodle

INTRODUCTION

E-learning platforms in university settings can broaden and often enhance teaching and learning experiences. Learning Management Systems (LMS) as e-learning platforms include several tools to design, deliver and manage blended as well as fully online university courses. Some common LMSs include Moodle, Blackboard, Angel, Oncourse and Sakai and with these e-learning platforms students can learn more flexibly in terms of time, place and pace.

Research on LMSs include different dimensions that include the use and effectiveness of these systems [1], acceptance of LMS by learners [2], LMS as a teaching tool [3] and students' perspectives on learning through LMS [4]. Sometimes, an LMS can be used to address problems which previously interfered with students' learning. For instance, Garbin, Amaral and Mendes [5] developed a virtual learning platform based on Moodle to offer a distance course in a university in Brazil. The authors designed this platform to address the problems faced by students in their previous experience with distance courses. The intent of the development of this platform was to offer students a system that is easy to use with fast access to materials and activities.

LMSs are considered a powerful technology that provides tools to support learning such as synchronous and asynchronous communication tools, assessment methods (quizzes) and also LMSs are used to develop and deliver course contents [6]. On the other hand, Beer, Clark and Jones [7] state that it is not clear to what extent LMSs affect students' active participation in learning activities in universities. With that focus, this paper seeks to develop an understanding of students' experiences of learning with Moodle, and its effects on their active participation in asynchronous learning activities in this course.

RESEARCH CONTEXT AND RESEARCH QUESTIONS

The course which was the focus of this case study was one of the papers of Graduate Diploma of Teaching (Early Childhood Education) and was taught fully online for 12 weeks in semester A of 2012 in a university in New Zealand. Moodle, the university's LMS, contained all of the class's interactions and tasks that were mostly asynchronous. The students in this course were divided into three groups. The participants of my research were three students (Irene, Hannah and Jake) from one group and their lecturer (Laura). The lecturers of other two groups (Faye and Michelle) also participated in my research, as all these three lecturers (Laura, Faye and Michelle) worked as a team. However, the main focus of my research was on Laura's group. Although the lecturers worked as a team, they had their own ways of communicating in their groups. For example, the lecturer of the class under this case study, Laura, uploaded voice files at the end of each week as feedback to her students' weekly discussion forums.

The research questions that guided the data analysis of this research were:

- What were students' experiences of learning with Moodle as a tool that facilitated asynchronous activities in a fully online university course?

- How did Moodle, as a virtual tool, affect students' active participation in this course?

RESEARCH METHODS AND DATA ANALYSIS

In this qualitative case study, data were gathered over a period of one semester mainly through interviews, observation of online activities and document analysis. The online learning activity was the focus of data gathering and Activity Theory [8] was used as the research framework. In coding data, relevant meaningful units from transcribed interview texts, observational notes and the course outline were identified and categorized according to the elements of Activity theory as a method of typology. In coding and categorizing data according to the elements of Activity Theory, Nvivo was used as a data management tool.

Based on the research questions, particular attention was given to the types of tools used in this course, as this paper draws on *Tool mediation* principle of Activity Theory- that is human activity is mediated by several tools [9]. These tools can be physical—a computer or a pen; conceptual – a mental model, a plan or a strategy; an abstract tool— a language, or even a virtual tool— functions of a website. Mediation of tools plays an important role in shaping how human beings act and interact with the world [10]. Focusing on the *tool mediation* tenet of Activity Theory, the sub-themes that emerged under the element Tools became the main aspects of this analysis. In the case of this paper, the *tool mediation* refers to the use of Moodle in facilitating two asynchronous activities—(1) A PowerPoint presentation prepared for a conference and a reflection uploaded on Moodle, (2) forum discussions. Other than these two asynchronous activities, the design of the Moodle page was also identified as one aspect of *tool mediation*. Fig. 1 represents Engeström's [8] Activity Theory framework. Based on this framework, a model of an activity system for forum discussions (Fig. 2) was developed for the analysis of data.
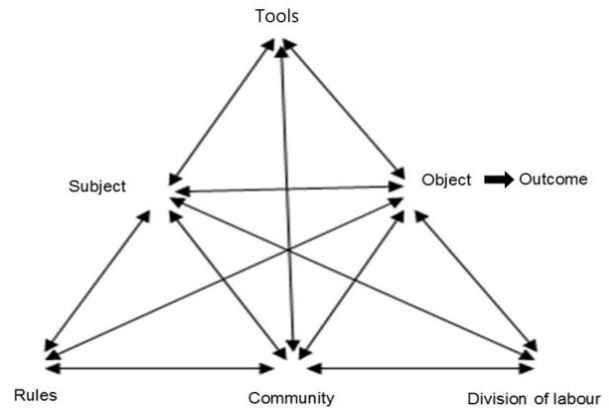

Fig 1: Activity Theory framework (adapted from Engeström [8])

Fig. 2 demonstrates the elements of the asynchronous activity—forum discussion that was carried out in this case study.
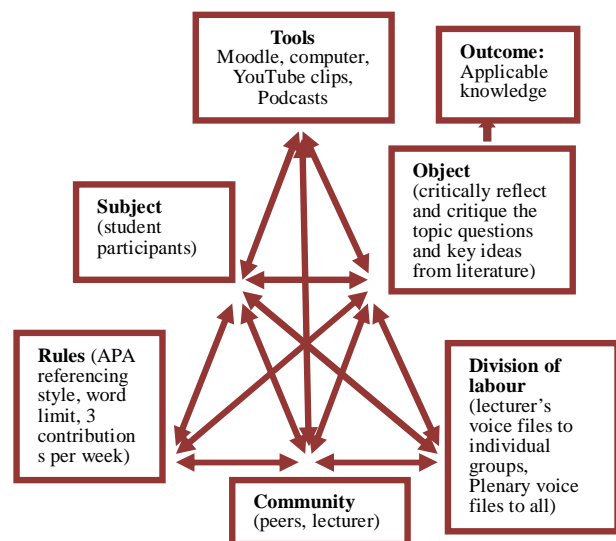

Fig 2: Asynchronous forum discussion activity system

In this activity system, the *subject* is the student participant, *tools* include Moodle, computers, YouTube clips, Podcasts and others. Participants accomplished an *object* (which is similar to an objective) through the use of *tools*. While they were participating in the forum discussion, they had to follow some *rules* and also they had their own

responsibilities and roles (*division of labour*). A central factor to consider here is the way student participants used the *tools* to achieve their objectives that are transformed into *outcomes* through the mediation of *tools*.

FINDINGS AND DISCUSSION

The sub-themes that emerged under the main theme *Tools* in this case study were related to the affordances and constraints of Moodle that facilitated both the asynchronous activities, as well as the design, layout and the presentation of course materials. Each of these is discussed below.

Affordances and constraints of Moodle in facilitating activities

The course materials that included readings and YouTube clips for each week were uploaded on Moodle. Students were to read the articles or watch the YouTube clips before they participated in the discussion forum that was initiated by one of the lecturers. As the coordinator, Michelle initiated the discussion forums most of the time in all three classes. The lecturers uploaded plenary Podcasts in order to provide information, instructions to do assignments and also feedback for forum discussions in their own groups.

The findings suggested that the ability to upload Podcasts was seen as important and useful by the lecturers. Having international students in this course, the lecturers believed that Podcasts helped them to have more time to reflect. For instance Faye pointed out that:

> *We have a lot of people who have English as a second language ... it gave them time to reflect...they always have a voice....the Podcasts and things really helped with the content because they could rewind it and go back ....* (Faye, interview 1).

Faye explained that in forum discussions, students who are speakers of English as a second language have more time to read, understand and form their answers to send to forum discussions, as well as edit their replies as they reflect. From the students' point of view, studying online has given them flexibility in terms of time, as they have other commitments. Irene as a mom felt that she "*can pick and choose the times to study/post to forums*" (Irene, interview 1). Jake had similar views and explained:

> *I'm learning with forum, lecture on audio file etc. you can just pause, go and make a coffee and then come back to it. You don't have to sit through the entire lecture. This is far more flexible. It's there and you can rewind if you want to check things. It definitely makes learning at your pace. Well....you*

> *are able to learn when you want to learn rather than being stuck in a class* (Jake, interview 1).

These views showed the flexibility that is offered by asynchronous learning activities facilitated by LMS. As another affordance, Laura pointed out that Moodle allowed her to monitor students' progress over time. Although she felt that it's time consuming and an involved process, she believed that it was useful:

> *Individually I go through each student because Moodle allows you to look at each individual student...Actually, that's quite an involved process, but it really gives you an insight into those students and their thinking....I think it's worth the effort* (Laura, interview 1).

Laura valued the fact that because the course was online she could look at students' work as well as give a lecture while she was away attending a conference in another country during the semester. Similar views were expressed by Michelle regarding the flexibility of this course. Having other commitments, Michelle worked from home most of the time and she found it convenient to talk to students via voice files.

Students also found it useful to have Podcasts as a way of receiving feedback on their forum postings. Referring to Laura's voice file that was uploaded on the Moodle page, Hannah mentioned that "*our lecturer does a podcast (feedback) and it's very useful for me and I said don't worry about the duration...... I really like to have them*" (interview 1).

On the other hand, when the participants were asked whether they felt any constraints while they were engaging in activities in this course, they explained how they were frustrated and their work was interrupted for various reasons. Irene felt that in forum discussions she was not able to express her ideas adequately:

> *My difficulty stems rather in being able to articulate my thoughts adequately. For example, in a face to face setting you could have a two-way conversation and you can continue the conversation until your point has been put across. I find the online discussions somewhat stilted and I personally am finding them a little intimidating* (Irene, interview 1).

Irene's views suggested that having a one way conversation in forum discussions did not allow her to express her views sufficiently. This indicates that students feel a need for reciprocal communication in forum discussions. She found forum discussions to be stilted, and

also mentioned that she had some issues with downloading Podcasts in this course:

> *There were a couple of downloads that I actually couldn't do. You remember last week Faye and Laura did a funny Podcast, I couldn't download that* (Irene, interview 2).

This was also acknowledged by Irene's lecturer, Laura, who had difficulties downloading the same Podcast and so was aware that students had the same problem:

> *The students had some difficulties I think getting into the Podcasts. Even I tried it at my home computer and it wasn't easy and it took me hours to download that drama thing. That can really preclude full participation* (Laura, interview 2).

As Laura mentioned, the inability to download some of the Podcasts may have affected students' participation in this course. Jake explained why some of the students could not open some of the Podcasts that had been uploaded because some of them had been recorded using iTunes and the rest of them using a different format. In his opinion, "*they should do just the audio Podcast and keep it nice and simple*" (interview 2), and Jake also thought that the planning and testing should be done before the course starts for a smooth run.

Presentation of materials

The teaching materials in this course included journal articles, YouTube clips, PowerPoint slides and Podcasts. Students' voices indicated the way they felt about the presentation of teaching materials in this course. In Hanna's point of view, "*there are no books for reading and that's really a big drawback*" (interview 2). Both Hannah and Irene pointed out that the students preferred to have the reading materials in the form of a book, as it was convenient for them to read. However, in Michelle's view, by giving the articles every week to students, they could ensure that most recent publications were used.

> *The process of putting the readings online rather than in a hard copy has worked well because as the 12 weeks have unfolded and new papers have been published that are related to play that are quite new and exciting, so we can upload and talk about them* (Michelle, interview).

Students suggested that they still preferred to have a compiled book of readings and if the lectures would like to give them new materials, they can upload extra materials on Moodle. Reading on the screen, or printing articles on a weekly basis and not being able to download some of the materials was seen as frustrating experiences for students.

In terms of the presentation of materials, Irene seemed to have a difficulty following some of Laura's Podcasts that were uploaded on Moodle. This is because as Irene mentioned, she has a hearing difficulty:

> *One other thing is Laura's Podcasts, they are often hard to hear because she sets the volume too low when she is recording. And I'm little bit deaf and it has to be dead quiet for me to concentrate. In one of them she had music playing in the background it was a great pain* (Irene, interview 2).

Structural design of the Moodle page

There were several spaces that were created for communication in this paper. These spaces included news forums, one to one spaces, Q & A spaces, a notice board and social café space. These spaces were used as and when students needed to clarify issues, get information and share their ideas. The following screenshot shows the Moodle page of this paper with communication spaces.
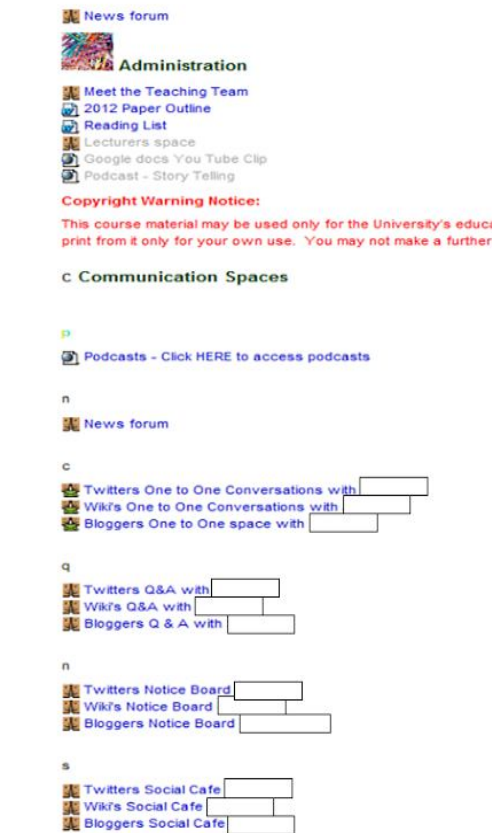
Fig 3: Communication spaces in Moodle

When the students were asked what they thought about communication spaces, Jake commented that "*it looks to be a bit excessive and it's been repeated*" and also "*things can get lost in that. I missed a couple of Podcasts*". Jake here explained that some spaces are a repetition (e.g. Podcasts and news forum) and also since the Podcasts were uploaded in a few different places it was confusing for students. He suggested that "*It's good to keep all that in one place; I think keeping all the information that is being out that week in that week*" (interview 2). Students' suggestions included organizing all the resources and information in one space allocated for that particular week. Irene said, "*I think all of the critical information should be in one place in the week that it's relevant to*" (interview 2).

The findings also suggested that the students preferred more coordination between the four papers they took during that semester. Hannah said that "*see we have all the assignments lined up on the 27^h why? There should be some coordination* (interview 2). The lack of coordination added stress to students, as they had to manage assignments and forum discussions of four papers. Jake commented:

> *We just had to manage them on top of the forum posts and the readings and the other papers. I kind of felt that when those assignments were coming up, they weren't really taking into consideration the other papers. It added stress* (interview 2).

IMPLICATIONS AND CONCLUSION

Drawing on the *tool mediation* principle of Activity Theory, this paper highlighted the affordances and constraints of the educational technology used—Moodle as a *virtual tool*, the course materials as *physical tools* and the structural design of the Moodle page as a *conceptual tool* that affected students' participation in activities in this context. The findings suggested that these affordances and constraints affected students' participation in asynchronous activities in this course. Students particularly found it useful to be able to learn from Podcasts uploaded on Moodle and clearly the asynchronous activities gave them flexibility in terms of time, place and pace. However, students' views demonstrated their desire for reciprocal communication in forum discussions, as the discussions were rather stilted in this case. The course materials that were uploaded on Moodle seemed to negatively affect students' participation because not having a set of printed articles, the students had to read on the screen or print the articles each week. In terms of the design of the course, the duplicated Moodle spaces for uploading materials and communication (Podcasts and News forum spaces) created confusion for the students. They suggested having a well-structured course that included putting all the course materials, voice files and information in one space relevant to that particular week.

Moodle as an LMS undoubtedly is a platform that can support a range of meaningful online learning opportunities for students. However, forward planning and careful course design as well as keeping in mind learners' experiences in the process of planning and designing can improve the quality of the course. Additionally, empirical research on Learning Management Systems in different contexts can inform others on strategies and structures that work for learners and also avoid potential constraints that can hinder students' active participation in learning activities in online learning environments.

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