Using technology supported learning to develop active learning in higher education: A case study

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Abstract: John Dewey believed that the education should educate individuals "not as passive recipients of educational content, but as active makers of meaning, capable of exercising independent judgement and of democratic collaboration" (Gregory, 2001, p. 399). With this philosophical viewpoint, the author strongly believes that teachers should engage students in becoming actively involved and responsible for their own learning. One way in which to get students involved in their own learning is by using technology supported learning. This method is important in relation to the diverse student population now enrolling in universities. This case study was carried out to assess the implementation of technology supported learning within a first year module. Three online tasks were made available for students within this course. A questionnaire was used to solicit information on the online task. The findings suggested that there are many benefits that can be derived from the effective utilization of technology within higher education.

Key words: online learning; technology in education; active learning

1. Introduction

Having knowledge of technology in higher education is now seen as an essential pre-requisite for many academic jobs. This knowledge goes beyond the "common knowledge" of knowing how to make a PowerPoint presentation or use a specific programme. This paper will assess relevant issues that need to be considered in the implementation of online learning activities, describe the implementation of a set of online tasks and evaluate the effectiveness of the task by using a questionnaire. The final section of this assignment will explore what could be implemented to improve these online tasks.

2. Background

Being Healthy and Staying Safe (EY1002) is a first year module and forms a part of the core requirements for a named degree in early years. This module has ninety-three individuals registered. Students attend weekly sessions, however attendance is not compulsory. The sessions are held in a lecturer hall for one hour, and then students go into smaller groups for seminar activities. The issue of participation of students in large groups has been of great concern to the course team. During the re-validation of the module, it was decided that students needed to be more engaged with the course material. In addition, based on comments made on the previous evaluation forms for this course, various online tasks were introduced with the aim of increasing students' participation. All online tasks were linked to Bloom's taxonomy to guide the appropriateness and difficulties of

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task.

3. Literature review

The landscape of educational technology is constantly changing. This point is reiterated by Crick (2007, p. 137) who suggests that there is an urgent need for our education system to foster flexible, creative, self-aware and dynamic learners who have the capacity to apply and adapt what is learnt. Prior to the nineteen nineties, the over-head projector was seen as the most important form of technology. However, the emergence of the internet in the nineteen nineties has led to dramatic changes in the way lessons are delivered, how students learn and how feedback is given to students. The changes have led to the development of online learning environments aimed at engaging students to maximize their full learning potential. According to Means and Olson (1997, p. X), research in the utilization of technology supported learning was beneficial to teachers by:

> Adding to the students' perception that their work is authentic and important... Increasing the complexity with which students can deal successfully…Dramatically enhancing student motivation and self-esteem…Making obvious the need for longer blocks of time…Creating a multiplicity of roles…Instigating greater collaboration…Giving teachers additional impetus to take on a coaching and advisory role.

Within these beneficial use of technology outlined by Means and Olson (1997), it is the dominance of various theories, for example Bloom theory. Bloom's work is still very dominant within these discourses of online learning.

In advocating for the utilization of technology within higher education, Bates (2005, p. 2) suggests that it needs a balance "between face-to-face and technology-based teaching and learning for the different kinds of students". Both "face-to-face" and technology-based teaching and learning require high levels of interaction. Liaw and Haung (2000) suggest that interaction is essential and should be intentionally designed in all learning experiences to allow the learner to construct knowledge. In addition, Salmon (2002, p. 11) outlines a five-stage framework and online activities, these include "access and motivation", "online socialization", "information exchange", "knowledge construction" and "development". This five-stage framework makes a direct connection to Liaw and Haung (2000) on learning experiences.

The issue of creating this level of interaction can be challenging at times. Rossett (2000, p. 129) suggests, "Social interaction is a key element in online learning. Given that the nature of online learning is 'anytime…anywhere', the potential for isolation and frustration exists". In order to avoid these levels of isolation, Rosette (2002) recommends that course design should take social interaction in consideration. Rosette (2002, p. 129) advocates that "through collaboration and communication, the opportunity for learning more about peers and connecting with them in non-task specific conversation is more likely to occur". Laiw and Huang (2000) affirm that this level of social interaction can also encourage content interaction.

According to Rosette (2000, p. 129), "interaction doesn't just happen. It must be designed intentionally… Oftentimes instruction fails, because it was not designed well, not because the technology was inherently 'bad'. Therefore it is essential that web-based designed lessons are designed effectively". Rosette (2000, p. 130) states that a framework for online task should include "interaction with content", "collaboration", "and conversation", "intrapersonal interaction" and "performance support". Within this framework the designer should consider learning theories, learning styles, pedagogical approaches and the cognitive approaches that are involved in the process of learning and teaching. Based on the brevity of this paper, I will deal with only the cognitive approach.

According to Bastiaens and Martens (2000), web designs are similar to cognitive mapping, this similarity can assist individuals to develop schemas that will assist them in their understanding of content.

4. Aim and justification for project

The main aims of this project were to help students to become actively involved in their own learning, to develop students into active learners and to evaluate the effectiveness of using technology supported material within this course module. This is a first year module and it is essential to scaffold students to become independent and active learners. This will equip them with some of the needed skills to complete university successfully. With these aims and rationale, a set of online tasks were designed. These tasks were linked with the module content, learning outcomes and the summative assignment.

5. Planning, deliver and evaluation

Based on the literature reviewed, the aims of the project and the justification of the project, four online tasks were planned. The online tasks were directly linked to the module outcomes to encourage students' participation. The planning took into consideration the theorists, for example Piaget (1962) and Vygostsky (1978). These theorists were included in the design to ensure that the learning environment was interactive. In addition to these theorists, the design gave immense consideration to the learning styles (Gardner, 1993), Blooms Taxonomy of cognitive learning (1964), Klob's (1991) view on learning construction, Rosette's (2000) concept of online interaction, Bigg's (2003) guidance on enhancing active learning and others as outlined in the literature review.

Prior to the online tasks, students were given an oral summary of the tasks. Time was also allowed for students to ask questions to clarify issues of concern related to the task. Students were given a specific time to complete the tasks. Following each task, feed back was posted on the forums. The lectures were also a part of the discussion with these tasks. These tasks included: video presentations, reading of articles, discussions, posting of comments, responding to questions and web quests. All online tasks were tested to ensure that they were functional and essential in relation to the general module outcomes.

The assessment of the online task was done using a students' questionnaire. Walker (1985, p. 91) highlighted that questionnaires, "is like interviewing-by-numbers". The aims of the questionnaires were to assess students' involvement in the online tasks, evaluate the effectiveness of the task and how the learning tasks influenced their learning styles, and allow students to make recommendation relating to the improvement of these online tasks. The questionnaires were administered in one of the taught sessions. Thirty students completed these questionnaires after one of the taught sessions.

6. Discussion of findings

The data collected from the thirty questionnaires revealed that twenty-nine students had completed two or more of the online tasks. One individual stated that he had not completed any of the online tasks. The issue of this individual not completing this task should not be seen as an extreme case as some individuals are strategic learners therefore they will only respond to tasks connected with a grade.

Twenty-nine of the thirty students stated they believed that the online tasks were effectively linked to module outcomes. This also links directly to Biggs's (2003, p. 1) theory of "constructive alignment", which suggests that

tasks should be planned effectively and linked to focused objectives. It is therefore essential that the lecturer considers the issue of constructive alignment to avoid the task from becoming meaningless or a waste of time for the students. In addition, the task should be challenging; twenty-nine students suggested that the tasks were challenging or very challenging. One respondent stated that the task was not challenging. This was also the same individual who stated that they had not completed any of the online tasks and the online tasks were not linked to the module outcomes.

Twenty-five respondents stated that online tasks allowed them to view their contribution to the online forum as essential for their own learning. These students' views suggest that they have developed or are developing into active learners. In addition, fifteen students stated that the online tasks motivated them and increased their self-esteem while twenty stated that the task allowed them to spend more time on their work. These findings are substantial as they show that students are engaging with the module. According to Olson (1997), online learning can lead to enhanced perception of the students' work, increased motivation and extended time spent by students on task. Therefore, if students are engaged actively in online learning activities, they can develop independent learning. This will be essential for their success in university. As students become independent learners and active learners, the lecturer can take on the role as a "coach" or "advisor" (Olson, 1999). This role could give the lecturer additional time for feedback, individual tutorials when needed and the reconstruction of the role within higher education.

The issue of interaction within module is fundamental to me based on my experience of having completed two degrees with the Open University. Therefore, it is of great concern to me that only ten of the thirty students who responded, believed that the online tasks allowed them to interact with other students from the module. Rossett (2000, p. 129) stated that "social interaction is a key element in online learning. Given that the nature of online learning is 'anytime…anywhere', the potential for isolation and frustration exists". Rosette (2000, p. 129) also highlights that "interaction doesn't just happen. It must be designed intentionally…". Therefore the design of these tasks will need to be critically evaluated to increase social interaction within the task.

The findings from the research indicated that twenty five students stated that there was no balance between the "face-to-face" sessions and the technology used in the module. This is based on the design of the module, which is classified as a taught module. It should also be noted that the creation of these tasks was time consuming. This is an issue not often highlighted within higher education. Therefore, creating this balance could prove problematic based on the time allocated for the planning, delivery and evaluation of the module.

While seventeen respondents agreed that the online tasks were attractive, thirteen students disagreed with this statement. These responses suggest that some improvements could be implemented. Therefore, full consideration needs to be given towards the issue.

Twenty-five of the thirty students indicated that by participating in the online tasks they became more actively involved in their own learning. This, in my view is a step towards active learning linked to the ideology of John Dewey, which suggested that the goal of education should be to educate individuals "not as passive recipients of education content, but as active makers of meaning, capable of exercising independent judgement and of democratic collaboration" (Gregory, 2001, p. 399). By actively engaging in their learning, students will also develop deep reflection on relevant issues within the module.

Based on the technological changes, it is essential to assess and evaluate the mode of learning that the students would like to participate. Based on the evidence collected, majority of the students believe that online tasks should be a part of all modules. This could be an indication that students want to engage in more online

learning activities.

The students who were involved in this research were also asked to make recommendations on how these tasks could be improved. The data collected were placed into themes. There were three dominant themes emerged; the need to improve the attractiveness of the online task, the need for more social interaction within the tasks and the need for immediate feedback after each task. These recommendations in the author's view, could be used to improve the online task. These recommendations will be linked to the design of the next online task for this course. It is essential to do this in the planning stage. According to Rosette (2000, p. 139) it is essential to consider issue of design to avoid future failure. Therefore, the author will consider Salmon (2002, p. 11) five-stage framework in conjunction with other theories in order to improve this task.

7. Conclusion

Technology based learning can be an effective means of increasing students' participation within a course, developing students into active learners, enhancing students' independence, enhancing students' self esteem and increasing social interaction amongst students. However, it is important that as practitioners, we use technology based learning designs to meet the needs of the diverse student population. For these technology based learning designs to be effective, the developer needs to consider the learning styles, layout of the design, theory of social interaction and other issues relating to curriculum design.

By engaging in this research, the author has gained tremendous knowledge on the need to have effective technology based learning within my modules. The recommendations outlined will be used to enhance future online task.

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