



The impact of using tutorial videos upon engineering students' learning

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THE IMPACT OF USING TUTORIAL VIDEOS UPON ENGINEERING STUDENTS' LEARNING

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ABSTRACT

An investigation was developed to apply alternative means of helping with student learning through the use of learning technology advancements. The aims of this investigation were to implement a technology in the teaching process, facilitate students to participate in a module outside the classroom, and determine the perceived effectiveness of the application of the technology to assist with the learning process. The implementation of the suggested TEL project involved filming tutorial sessions, uploading them to the on-line repository known as Blackboard Learn™ (BB). The collected data revealed that approximately 85% of students felt that the application of the suggested TEL in the tutorial sessions helped them to learn the course materials, helped make them feel more engaged, and supported independent learning of their topic. Moreover the output of this investigation also showed that the process of adding digital content to a course requires careful planning to create materials that can add value while engaging student interest.

KEYWORDS: TEL, learning styles, approaches to learning, video tutorial

1. INTRODUCTION

As educators, we are looking for the best means to help students in their learning. The hypothesis under investigation is that by taking advantage of developments in technology combined with appropriate learning theory, students should be exposed to the topic through different delivery methods in order for them to 'digest' the subject matter. This approach is generally referred to as Technology Enhanced Learning (TEL) and is increasingly becoming an expectation from higher education students. Therefore, the summary videos (besides classroom lecture, MS PowerPoint-slides note, handouts and tutorials) are another practical and technically possible means of achieving this. (John Schacter, 1999) produced a report displaying research on the relationship between the use of technology and students' educational achievement as a focal point. The review of the research appeared to suggest cautious optimism for a positive relationship. Using an experimental design, Kulick (1994) found that students across levels appear to enjoy the use of technology in their classes, also showed the significant percentile increases in performance on achievement tests

when instruction was computer based. Technology can help, not just by encouraging people to work together, but by helping profit from collaboration, to learn about things that would be difficult to learn alone. Advanced pedagogy is required if today’s learners are to gain the abilities necessary to succeed in tomorrow’s increasingly interconnected and technological world, (Nathaniel D. Poling, 2013). The initial implementation of the suggested TEL project was involving filming the lecture and tutorial sessions, upload them to the BB. So students can access these files as an extra teaching tool and also to create a Blackboard discussion board to allow for threaded discussions to take place in my Blackboard course. However early discussion with my students about the suggested TEL, some students were unhappy for them to be shown on these recorder videos and some of them prefer to contact me directly via email for further support related to the considered module. As a result I have modified the strategy of the suggested TEL to include only tutorial sessions where only my hand writing and my voice will be shown and heard in the recorded videos. The aims of this project was to implement a technology in my teaching process, in order to create an environment that encourages students to participate in a module outside the classroom, and to improve students’ engagement or time spent on learning to achieve a better learning performance. First year module MEC110 was consider as a ground for the TEL project, 34 students were registered for this module (only 27 students took part in the evaluation of the TEL project).

2. PROJECT IMPLEMENTATION AND EVALUATION

Implementation plane for the suggested TEL can be seen in Figure 1, constant weekly video tutorial sessions were uploaded to BB to cover the related weekly topics of the considered module. The video tutorials include solving problems use hand writing and voice instruction.

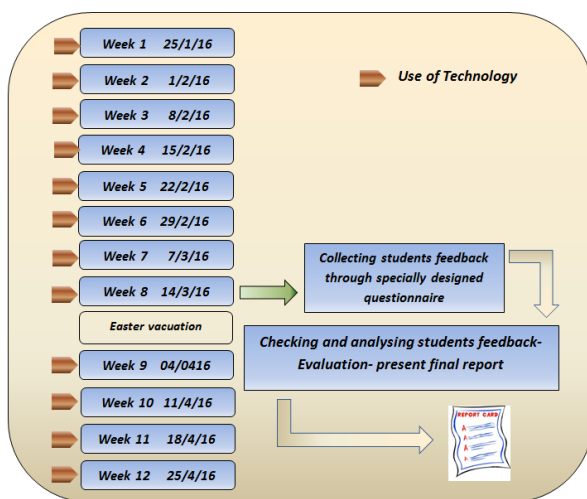


Figure 1. TEL Approach & Plan Implementation Schedule Semester 2/ 2015-2016

The purpose of evaluation for the suggested TEL was to check whether the objectives are met and also to increase the enhancement of the suggested TEL. This was done through a specially designed questionnaire which is also contributed to assess the effectiveness of the suggested TEL activity on the learning processes.

3. EVALUATION RESULTS AND DISCUSSION

3.1 SUPPORTING INDEPENDENT LEARNING AND FURTHER UNDERSTANDING

A number of questions were carefully designed and used to assess the Independent Learning and Further Understanding. Figures 2 to 5 summarizes data response for a series of questions on how students perceived the process of applying TEL in their learning. Percentage outcomes were calculated on those reporting good or excellent for this series of questions. At the end of week 8, The collected data revealed that around 85% (average responses) of students felt that using the suggested TEL in the tutorial sessions helped them learn the course materials, more engagement, confident of how to deal with topic, and support the independent learning.

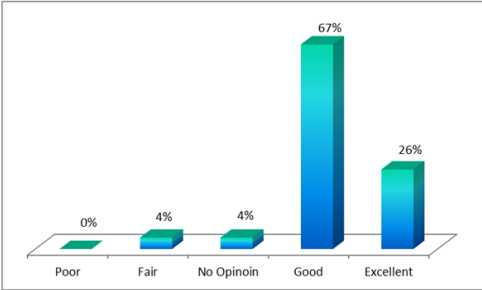


Figure 2. The recorded tutorial clips helped me to develop my learning, make the content of MEC110 more clear and understandable

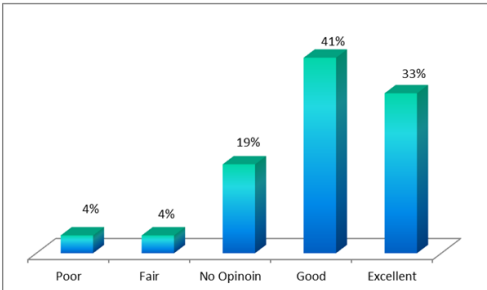


Figure 3. It will be a good for my learning to record the lecture session and upload it to the BB

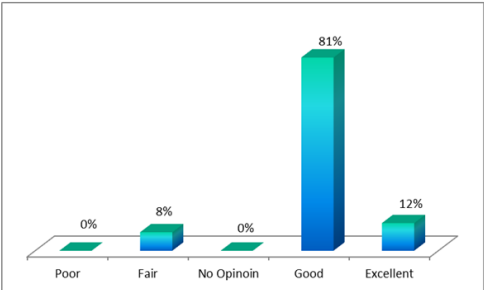


Figure 4. The recorded tutorial enhanced my engagement and learning with module concepts

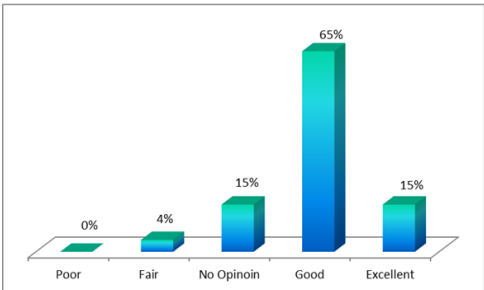


Figure 5. I felt I was able to take more responsibility toward my own learning

Figure 2 displays the feedback of the students with regards to the impact of the tutorial videos on their learning, more than 90% responded positively and reported that the implanted TEL activity helped them to develop their learning, and make the content of considered module more clear and understandable. Figure 3 shows that around 75% of the students reported that applying the suggested TEL activity to lecture session will have a positive impact on their learning. Figure 4 clarifies that more than 90% of the students confirmed the suggested TEL activity enhanced their engagement and learning with module concepts. Moreover, Figure 5 illustrate that 80% of the student reported that the suggested TEL activity make the students felt they were able to take more responsibility toward their own learning

3.2 ENHANCEMENT OF THE SUGGESTED TEL ACTIVITY

Percentage outcomes were calculated on those reporting good or excellent for this series of questions. Around 90% of the students agreed that the quality of the recording is important to attract the student to watch these videos. 65% of the students were satisfied with the current format of the recorded videos; only 19% suggested modifying it.

Over 80% of the students recommended that providing text alongside the video will be useful in supplying a structure to the tutorial recording content. Table 1 summarize the finding related to this section.

Table1: Enhancement of the suggested TEL activity Data

No	Question	Poor	Fair	No Opinion	Good	Excellent	%
1	It is important is that the quality of the recording should be as good as possible	0%	4%	7%	33%	56%	89%
2	The format of the recorded tutorials were in perfect way	0%	8%	27%	38%	27%	65%
3	The format of the recorded tutorials need some modifications to suit the outlines of the related lecture	19%	11%	52%	19%	0%	19%
4	I faced problems accessing the recorded tutorial clips	59%	22%	19%	0%	0%	0%
5	Providing text alongside the video is useful for supplying a structure to the lecture content.	0%	7%	7%	33%	52%	85%

4. CONCLUSIONS

The main findings and conclusions of this study are listed below:

- Around 85% of students felt that using the suggested TEL in the tutorial sessions helped them learn the course materials, feel more engaged, confident with how to deal with topic, and independent learning.
- The process of adding digital content to a course requires careful planning to find or create materials that add value while engaging student interest. The materials and structure of the recorded tutorials need to be prepared in such a way to consider the knowledge that the students get in the class so the contents of the tutorial video will be built on the knowledge gained from the tutorial class.
- Quality of the recorded tutorial videos is important to attract students to watch these videos and also providing text alongside the video will be useful in supplying a structure to the tutorial recording content.
- Unfortunately, this study cannot answer the question as to whether these results can be translated across disciplines, or years of study. This could be a useful area of potential future research, because at the moment it is impossible to determine whether the same results might be found for other disciplines.
- Finally Tutorial videos support the Students' Centred Learning and the diversity of the students background through the choice of how and when to learn the knowledge. Providing tutorial videos as an extra teaching tool, the students will have the choice to select a suitable teaching tool to support their learning.

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