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An Alternative Approach in Teaching Engineering Management Subject for Final Year Undergraduate Students

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Abstract

Video Based Education (VBE) has been vastly used in teaching and learning (T&L) especially in medical discipline. Alternatively, Video Aided Instruction (VAI) is another term used widely for learning English as a second language. Furthermore, in engineering education mainly in Civil Engineering course, the VBE approach has been used extensively too. Therefore, this paper highlights an alternative way of teaching Engineering Management subject for final year Electrical Engineering undergraduate students at Universiti Tun Hussein Onn Malaysia. The new innovative teaching method used was Video Aided Learning (VAL). This novel approach is described in this paper and the assessments throughout the learning process are also discussed. At the end of the course, the students were given to evaluate the T&L process and the implementations results show that 97 percents found the approach is very attractive, fascinating and informative to help the understanding of the subject. This approach is believed to be successful and effective as an alternative way of teaching in engineering education and will be continuously applied in future.

Keywords: Teaching and Learning; Video Based Education; Video Aided Instruction; Video Aided Learning

1. Introduction

The advance of network and computer technologies, streaming videos and information technology nowadays has improved the way of teaching and learning facilities [1,2]. One of them is video technology known as Video Based Education (VBE). In today's medical research and education, this technology has been widely used and incorporated with important medical events, such as diagnostic or therapeutic operations [3].

In addition, there are also similar techniques, so called Video Aided Instruction (VAI). It is very well known in academic courses, test-prep reviews, and other educational programs such as literacy and for learning English language in order to expand knowledge and improve lives [4]. In engineering education, however, VBE approach has not much used for teaching and learning.

Currently, there are almost text files, html pages or movies in the contents of e-learning systems that are lack of interaction between teachers and students [1]. In this paper, the authors introduced an innovative teaching aid in Engineering Management subject. The focus was to 153 final year Electrical Engineering students in semester II 2008/2009 session. The purpose is to have high interaction between lecturer and students. These help create an environment for active and student centered learning system [2].

2. VAL Process and Technique

The idea of VAL is to give an interesting way of learning to the students in order to have fully engaged with the subject. Moreover, the intention is to provide them with completely understand the topic given in this subject. The process of VAL is shown in Fig. 1. The process goes several steps and the explanation is as follows:

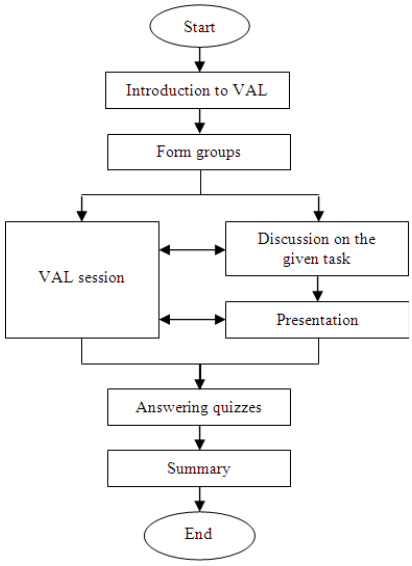

Fig. 1. The process of VAL.

The whole process takes around three hours class session. It starts with explanation from lecturer concerning on the VAL approach. Then, the students form group maximum of six with one of them as a

group leader. The VAL session takes approximately two hours and the interaction begins with discussion and presentation on the given task during the VAL session. After the VAL session, the students inquired to answer quizzes questions from the VAL session. At the end, the lecturer comes out with summary and gives feedback on the VAL process and asking them to determine the outcome of the learning process.

3. An Example of VAL

"The Apprentice - USA" was chosen as VAL approach in this study. This is due to its popular reality show involving business management as a part of sub-topic in Engineering Management subject. The show from Season 3, Episode 1 was selected. The video is played during class session and the interaction was made in three parts; namely before sales, after sales and boardroom event, throughout the video session as shown in figure 2.

Fig. 2. The parts of interaction.

From the show, there were two groups competing each other as usual but it was different from previous episodes (men vs. women). The two groups were "Book Smarts" (Magna Corp.) with college grads and "Street Smarts" (Net Worth) with only high school diploma. The Magna Corp team contained five men and four women, and the Net Worth team contained four men and five women. The project was to promote new hamburger product from Burger King. Magna chosen Triple Cheese Angus Steak Burger while Net Worth chosen Western Angus Burger.

Before the sales took place, the students were asked to discuss in groups and presented the strategies made by both team. Then, they determined which team won after the sales by giving good reasons and explanation. Lastly, before the boardroom event the students had to select who is going to be fired by Donald Trump from the losing team by also giving rational and logical reasons.

This process uses a student centered-learning concept in order to generate students' skill in effective communication, creative, analytical thinking, deep understanding, leadership and teamwork as PBL approach posses.

4. Results

The assessments throughout the learning process were based on Bloom's Taxonomy. The whole process of teaching and learning for this subject has been evaluated by using five Likert scale questionnaires. It is an instrument commonly used to interpret a phenomenon currently happening and is commonly used in educational researches [6]. The questionnaire comprises of three categories; 1) Teaching and Learning Preparation, 2) Teaching Aid, Delivery and Communication, and 3) Motivation and Guidance. Table 1 show the average score for each category and the result taken was from Category (2).

Table 1. Average score for each category.

	Category	Average Score	Percentage %
1)	Teaching & Learning Preparation	4.82	96.4
2)	Teaching Aid, Delivery and Communication	4.85	97.0
3)	Motivation & Guidance	4.90	98.0

5. Conclusion

The new approach for teaching and learning in Engineering Management subject has been introduced to 153 students from Faculty of Electrical and Electronic Engineering, UTHM. The innovative methods was said to be attractive, fascinating and informative as 97 percents scaled to the Teaching Aid category. Therefore, this novel technique will continue to deliver in future and to implement in other engineering subjects.

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