

Memorizing Technique Using Song for Iron Carbon Phase Diagram

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Abstract

Delivering the theory and new knowledge is very important part in the process of lecturing in class. This process is important because in Material Science course, an understanding is needed to ensure that the information the lecturer wants to transfer to students has been successfully delivered. Students had a hard time to memorize new knowledge and theory and if this process does not work well, the students' understanding of the course will be disturbed and will cause students to feel tired of the lessons being taught. This study was aimed to develop a Teaching Aids to lecturers with interactive video versions through memorizing technique using song. Using this interactive video there will be clear teaching and information in the form of clearer graphics and using melody for better memorized the lecture. Additionally, through this interactive video also included the iron carbon phase diagram at 2% of carbon that been taught to the students. Analysis of the level of this interactive video was made using questionnaire based on Likert scale 1 to 4. The respondent for this study were 110 mechanical students at Politeknik Muadzam Shah that involve with this course. Respondent had been given questionnaire to evaluate the interactive video and answer the pretest (lecture without teaching aid) and posttest (lecture after using teaching aid) during this study. The findings of the mean score analysis of this questionnaire found that the level of this innovation was in the graphic aspect of 3.49, the textual aspect of 3.56 and the Presentation aspect of 3.47. Pretest (lecture without teaching aid) and posttest (lecture after using teaching aid) been given to the respondents and result show that average percentage marks for pretest is 48% while posttest shown improvement in average percentage marks with 98%.

Keywords: Memorize Technique, Teaching Aids, Iron Carbon Phase Diagram

1. Introduction

In the process of teaching and learning multimedia is one of the alternatives methods to deliver the knowledge. In order to memorize new knowledge and theory students had a hard time to remember. Using song will enhance student ability to memorize the lecture that been taught and developing better memorization and faster recall skill. Lecturers should use the multimedia to help gain the students' interest during the lesson period. Video with song is one of the most popular multimedia in the world today based on the ever-expanding technological developments. Video is a media

that combines various other media such as audio, graphics and so on. Video capabilities in the process of delivering information are particularly effective because videos are dynamic and capable of stimulating various senses over long periods of time such as hearing and sight.

Therefore, the development of interactive video in teaching and learning can be interesting, stimulating understanding and motivating students to explore what courses they are learning. Interactive video is also able to give a new dimension to the teaching and learning process. Through interactive video, students will be more interested in learning and even the information presented to the students in this interactive video will provide a stimulus for students to attract them to explore further information. Additionally, this interactive video can also be a reference material for students in revision sessions and knowledge enhancement.

2. Background of the Problem

The situation before innovation was implemented are students are less familiar with the topics taught by lecturers and lecturers to take long to ensure that students understand and memorized the subjects learned. In addition, lecturer failure to deliver the contents of the lesson clearly makes the students feel bored and less enthusiastic as they can affect the quality of teaching and learning.

3. Literature Review

Students had a hard time to memorize new knowledge and theory to remember, especially with all the interferences that can come in their way. Developing better memorization and faster recall skill such as using song will enhance student ability to memorize the lecture that been taught. Joseph (2012) stated that using music can optimize some of natural skills and enhancing memory to remember the things been taught. Student can use rhymes, chants, catchy tune and songs to learn or remember something important to them.

Cheri (2014) identified that when a person listen to a familiar song, they were frequently capable to recall a moment from their past that is connected to that tune. Cheri (2014) also mentions that music has been found to stimulate parts of the brain, and a study by Carol et. al. (1991) have demonstrated that music enhances the memory of Alzheimer's, which showed that scores on memory tests of Alzheimer's patients improved after they listened to music.

In this study, the song had been show in the interactive video. Interactivity in educational videos is a relatively new trend with the level and types of interactivity to be in constant evolution. The use of video and films as 'visual aids' in education dates back to the 1950s when the American Association

of Physics Teachers sponsored a set of films to bring together current film technology, the expertise of the film producer and the knowledge and experience of outstanding Physics teachers (Matthew & David, 2011).

The increased use of video as a teaching medium is encroaching onto traditional face to face teaching in class room. This affects lecturers, students, Universities and Colleges and there is a need to bridge the gap in digital competencies (Jacobs, 2013). An important learning outcome in most Material Science courses is for students to learn to memory all the theory and term taught by lecture. The use of digital video gives teachers and students sophisticated 'tools' to remember the theory and term in intricate detail. Bransford *et. al* (2000) discuss video use in the classroom and the importance of interactivity in helping students to learn by being able to re-visit and review the material. They emphasize the potential of technology to help learning, but only if it is used properly.

Many lecturers lack adequate knowledge, support, guidance and training to integrate this technology into their teaching, either at a practical, technical level, or at a didactic, teaching level (Stover & Veres, 2013).

4. Methodologies

The development of this interactive video, some elements in the syllabus have been applied which refer to Course Learning Outcome (CLO) 1 where it applies to explain the fundamental of material science including identification of various types of materials, mechanical behavior, metal production processes, and various principles of material testing. This video helps in the process of teaching and learning to work well as the following views (Figure 1 to 4).

A questionnaire was use for evaluating student interest in this interactive video as technique for data collection and distribute to 110 mechanical students at Politeknik Muadzam Shah that involve with this course. Students also answer the pretest (lecture without teaching aid) and posttest (lecture after using teaching aid) during this study.

5. Result and Discussion

Questionnaire been answered by students in order to evaluate this interactive video use in teaching and learning for course DJJ 3213 Material Science sub chapter iron carbon phase diagram. This questionnaire is divided into three aspects, namely graphic, text and presentation. The graphical aspect contains 5 questions. The textual aspect consists of 5 questions while the presentation aspect contains 5 questions. Hence the whole question is 15 questions. All questions are assessed using the Likert scale because it can measure the respondent opinions with a greater degree

of nuance than a simple “yes/no” question. Score approval level based on Likert scale as shown in the Table 1.

Sample respondents to evaluate the level of the course were 110 people. The data obtained were analyzed using Statistical Packages for Social Sciences (SPSS) version 16. The results of the analysis were presented in the form of mean score.

5.1 Analysis on the level of Graphic Aspect

From the analysis on graphic aspect show in Table 2, the Likert score from 3 to 4 Likert score got 3.49. This is a rating of the criteria on the level of graphic aspect on the use of interactive video in the teaching and learning course of the DJJ 3213 Material Science subchapter iron carbon phase diagram.

5.2 Analysis on the level of Text Aspects

The findings of the study analysis for the textual aspects show in Table 3, the item clearly has a mean score of 3.75, an item of 3.85, a time saving item of 3.68, a non-boring item of 3.75 and an easy-to-understand item showing a mean score of 3.83.

5.3 Analysis on the level of Presentation Aspect

Table 4 shows the mean score on Presentation aspect was 3.83. This shows that all respondents agreed to use interactive video in teaching and learning for this course.

5.4 Pretest and Posttest Result

Pretest (lecture without teaching aid) and posttest (lecture after using teaching aid) been given to the respondents and result in Figure 5 show that average percentage marks for pretest is 48% while posttest shown improvement in average percentage marks with 98%.

5.5 Innovation Benefits

The benefits from this innovation are divided into three categories that are time, students and lecture. The benefits are been discuss and shown positive result from all categories.

5.5.1 Time

This interactive video can help students understand the process of the lessons learned more easily. By just watching this video, the teaching

process will be faster and the teaching syllabus can also be completed perfectly.

5.5.2 Student

From this study shown the learning with visual methods can attract students. In addition, this video can speed up the process of understanding the related topics because the graphs and descriptions shown will translate the course content better than traditional methods. On the other hand, this interactive video is appropriate to be a reference material in the DJJ 3213 Material Science.

5.5.3 Lecture

The development of this video will be an efficient teaching tool to lecturers in the process of teaching and learning. Furthermore, the video shown can be translated into more accurate form of direct lecture delivery method.

6. Conclusion

DJJ 3213 Material Science is a difficult course to gain students' understanding as there is much theory and term to memorize. Therefore, this learning needs to be done with a more intuitive and interesting look to ease the students to understand the concepts they want to convey to the lecturers. Additionally, lecturers also need to play a role to look for efficient teaching aids to assist the teaching and learning process in this course.

Overall, the development of this interactive video has improved the level of students' understanding in depth with respect to the DJJ 3213 Material Science courses subchapter iron carbon phase diagram. Besides, this video also attracts students to learn about the course and can also help speed up the teaching and learning process. Thus, the use of interactive video in the implementation of this course among students is very effective and systematic.

The level of this interactive video was analyzed using questionnaire based Likert scale 1 to 4. Through the findings of this analysis, the mean score of this questionnaire proved that this innovation was very effective in the teaching and learning of this course. Analysis has shown the level of this innovation in the graphic aspect of 3.49, the textual aspect of 3.56 and the presentation aspect of 3.47. In conclusion, students have received both this interactive video development in the teaching and learning of this course. The result interprets that this teaching aid can use for interactive lecture during classes to gain the student interest for this course. The result from pretest (lecture without teaching aid) and posttest (lecture after using teaching aid) been given to the respondents and result show that average percentage marks for pretest is 48% while posttest shown improvement in

average percentage marks with 98%. This shows that this teaching aid can improve the capability of student to remember new theory. In addition, lecturer can deliver the contents of the lesson more interactive and the students feel energize and joyful during teaching and learning.

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Appendix

Table 1: Likert Scale

Likert scale	1	2	3	4
Description	Disagree	Less agree	Agreed	Strongly agree

Table 2: Mean Score on Graphs Aspects

I found the videos that were displayed were:	Mean
1. Interesting	3.53
2. Clear	3.39
3. Not boring	3.53
4. Help understanding	3.50
5. Help strengthen the understanding	3.50
Total	3.49

Table 3: Mean Score on Text Aspects

I found words, numbers and symbols (text content). The displayed are:	Mean
1. Clearly	3.44
2. Organized	3.56
3. Save time	3.67
4. Not boring	3.64
5. Easy to understand	3.47
Total	3.56

Table 4: Mean Score on Presentation Aspects

I found teaching and learning using the interactive video:	Mean
1. Interesting as I focus on the class	3.44
2. Fun and make me feel good during the teaching process	3.58
3. Facilitate as there are demonstrations on the parts and methods of equipment use	3.42
4. Less technical problems (smoothly)	3.39
5. Have a neat and orderly delivery	3.50
Total	3.47



Figure 1: Opening Scene of the Interactive Video

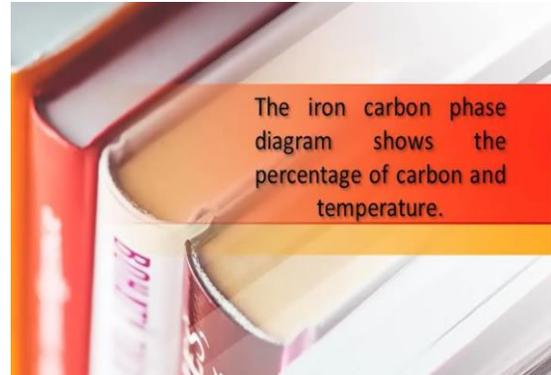


Figure 2: Graphic Displays Related to the Topics Learned are Included



Figure 3: Song Related to the Topics Learned are Included

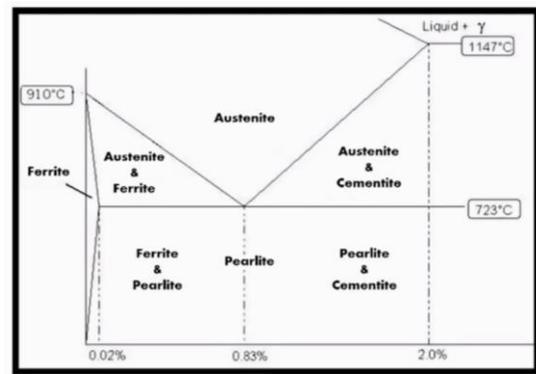


Figure 4: Iron Carbon Phase Diagram

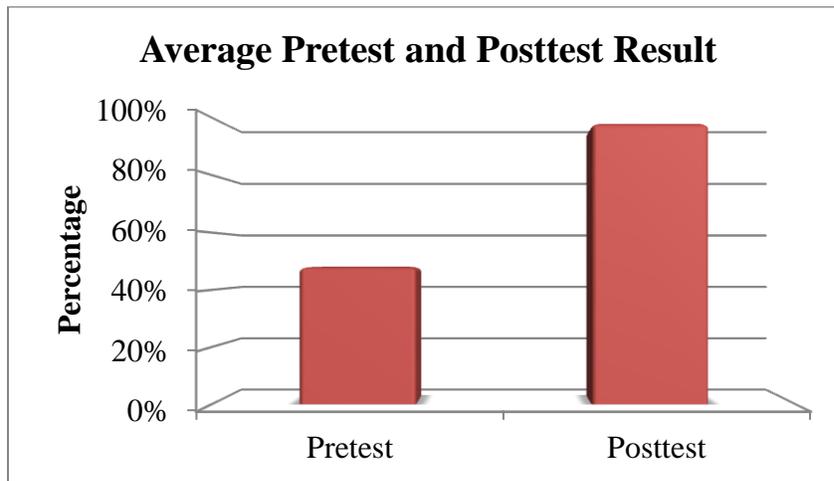


Figure 5: Average Percentage Marks of Pretest and Posttest Result