

# Application of Lecturer's Audio-Video Recording in Economics Course: A Substitute or Supplement to Students' Attendance

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## Abstract

In this highly globalized world, advanced technology had enabled the application of multimedia element in the teaching and learning process, especially so in tertiary education. This study aims to determine whether the application of lecturer's audio-video recording served as a substitute or supplement to students' attendance in an economics course in a private higher learning institution in the state of Perak, Malaysia. This quasi experimental study involved 126 samples, constituting 63 experimental group samples and 63 control group samples. Throughout the 14 teaching weeks of the economics course, the attendance of students from the experimental group and control group were recorded. In the first seven weeks, all the students, regardless in the experimental group or control group, undergo the conventional learning method. During the next seven weeks, the lecturer's audio-video recordings are distributed to those in the experimental group whereas students in the control group continue with the conventional learning method. The findings proved that lecturer's audio-video recording was effective and able to motivate students to attend classes. Overall, the lecturer's audio-video recording was effective in the economics course as a supplement to student's attendance.

**Keywords:** Multimedia element, teaching and learning, audio-video recording, experimental, substitute, supplement

## 1. Introduction

In this highly globalized world of advanced technology, knowledge is imparted through information technology, especially in the educational field. With the establishment of the

Multimedia Super Corridor (MSC) project in Malaysia on 1 August 1996, the prevailing teaching resources no longer fully depended on human resource (teacher-centered learning). In fact, it has broadened to multimedia element applications such as audio, video, graphics, hypermedia and hypertext which enable students to explore and gives them a perception that education is attractive (Jonid & Kong, 2010), apart from enhancing the quality of education (Copriady, 2015; Giannakos, 2014; Vajargah & Saadattlab, 2014). The 11<sup>th</sup> Malaysia Plan has put in place initiatives to strengthen virtual learning through various learning platforms such as learning web, digital text books and EduWebTV which foster student-centered learning through exploration. Students are able to obtain information from various learning platforms that are attractive through audio visual and multimedia integration (Copriady, 2015).

Currently most lecturers adopted convenient alternatives in transforming their knowledge to students, that is, via the conventional teaching method. Their teaching tools include lecture slides in power point during lectures and 'chalk and talk' approach in tutorial classes (Ismail & Seow, 2013; Ambotang, Abdullah, Mohamad & Zain, 2011). Mohd Yassin, Aris and Omar (2006) and Sidin, Salim and Mohamad (2003) found that more educators preferred the conventional teaching method relative to Information and Communication Technology (ICT) usage in their teaching. Unfortunately, conventional teaching method only emphasizes teacher-centered learning. It is not effective in creating close interaction between teacher and students (Md Ibrahim, 2007). Furthermore, different students' learning style and cognitive levels has forced lecturers to repeat their explanations, especially to clarify economic theories and concepts (Abd. Samad, Abd. Razak & Zainul, 2014). The dilemma is students who have prior knowledge of the subject taught in their secondary school or pre-university days often get bored should their lecturers keep repeating the same lesson whereas students without prior knowledge in the subject are unable to absorb the knowledge imparted.

As the first category of students become bored, they tend to be not interested in following the lessons and consequently skip lecture and tutorial classes. Students who are absent from lectures and tutorial classes are in fact limiting their interactions with the courses. Md. Salleh and Mat Ali (2011) and Harun and Tasir (2005) had similar views that such phenomenon would stifle the teaching and learning process. In this regard, the usage of multimedia element in education was noted to have a significant impact relative to conventional teaching methods (Mohd Nor, 2003). According to this author, usage of visual multimedia tools as teaching aids enable the teacher to explain the concepts that are difficult to be taught and understood by students, particularly economic theories and concepts.

## **2. Literature Review**

Generally, past researchers (Andrietti & Velasco, 2015; Andrietti, 2014; Arulampalam et al., 2012; Bos et al., 2015; Kinash et al., 2015; Kinlaw, Dunlap and Angelo D, 2012; Landin & Perez, 2015; Mearman et al., 2014) used students' attendance as the dependent or independent variable in their studies. Bos et al. (2015) studied the effectiveness of lecturer's audio-videos on students' academic achievements and attendance levels. A study carried out among students pursuing a psychology biological course in a university in Amsterdam found that lecturer's audio-video recording served as substitute to students' attendance. Students who used lecturer's audio-video recording as supplement to their learning tend to obtain better

academic results. However, the findings by Kinash et al. (2015) in Australia showed that students prefer to surf the information online for their learning to substitute attendance in class.

In Spain, Andrietti and Velasco (2015) evaluated the impact of students' attendance in lectures and learning time used in their study on academic achievement in an econometrics subject in a university. The results through data panel indicated that students' attendance and learning time does influence their academic achievement. Similar findings were noted in the study by Landin and Perez (2015) which found that pharmacy students' attendance in class has a positive relationship with students' academic achievement in a tertiary institution. Apart from that, Andrietti (2014) also proved that student's attendance in class influenced their academic achievement in the Principal of Macroeconomics course in a university in Italy.

In the United Kingdom, a similar study carried out by Mearman et al. (2014) on business school's students in a university also supported Andrietti (2014)'s findings. Likewise, the study carried out by Arulampalam et al. (2012) on students pursuing an economics course in a university proved that absenteeism causes a decline in their academic performance. In the United States, Kinlaw et al. (2012) studied the relationship between online learning and student's attendance in class in a college. They discovered that although students' assignments are submitted online to the lecturer, it did not affect students' attendance level. The students were still present and followed the lessons in class.

Based on past studies it was noted that the impact of applications of new teaching methods is limited on the attendance levels of students. The question in the field of educational research is whether the application of multimedia elements in the learning of an economics course at the tertiary level would act as substitute or supplement to students' attendance in class? To what extent is this question relevant? Taking cognizance of this phenomenon, researchers have attempted to address the above question through quasi experimental studies.

**2.1 Theory of Multimedia Cognitive Learning Mayer (2002)**

The Theory of Multimedia Cognitive Learning was spearheaded by Richard E. Mayer in 2002. The development of multimedia applications is dependent on the learning concepts and the way the human brain functions to remember and to understand what had been imparted. For example, a multimedia presentation with colorful words and moving images would stimulate an individual's interest in learning. The Theory of Multimedia Cognitive Learning is summarized in Diagram 1 as follows:

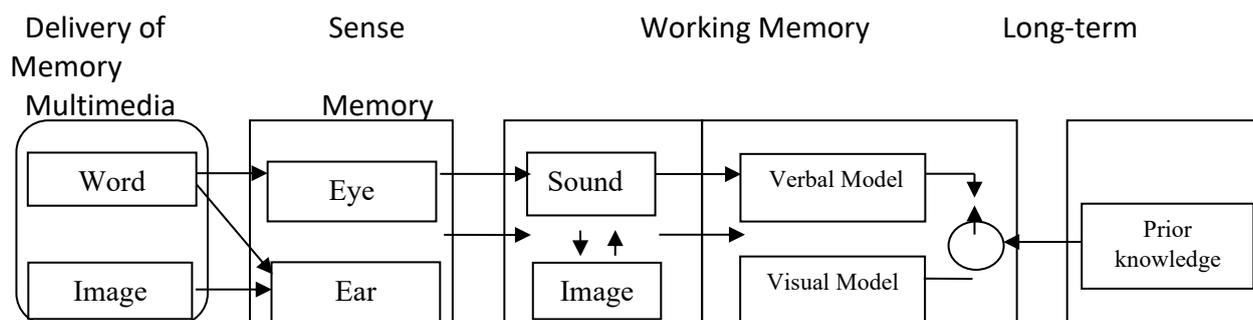


Diagram 1: Theory of Multimedia Cognitive Learning Mayer

Source: Mayer (2009)

Diagram 1 above indicates that the theory of multimedia cognitive learning represents the human information processing system. The large boxes represent memory store such as sense memory, working memory and long-term memory. Words and images from outside or from information senders are transferred into the human brain through the sense memory namely, eyes and ears. Sense memory enables the image and printed text to be perceived as visual image in short time period. Likewise the information heard would be processed as audio image within a short duration.

The arrow in the diagram from word to ear represents the text heard by the ear while the arrow from word to eye represents the text that is printed and seen through the eye. Working memory located in the center is used to keep and manipulate information in a short time span. For example, while reading certain sentences, an individual is able to concentrate on a few other words at the same time. Information heard is organized as verbal model and information seen as image model. Information from verbal model and visual model are integrated with prior knowledge and stored in long-term memory. Any information kept in long-term memory would be retained for a long period in the mind.

## 2.2 Conceptual Framework

In this study, the Theory of Multimedia Cognitive Learning Mayer (2002) was adapted to evaluate the effectiveness of lecturer's audio-video recording for an economics course that served as a multimedia element to assist in explaining the economic theories and concepts. The objective was to identify whether this multimedia element acts as substitute or supplement to student's attendance in lectures and tutorial classes. The conceptual framework is shown in Diagram 2 below.

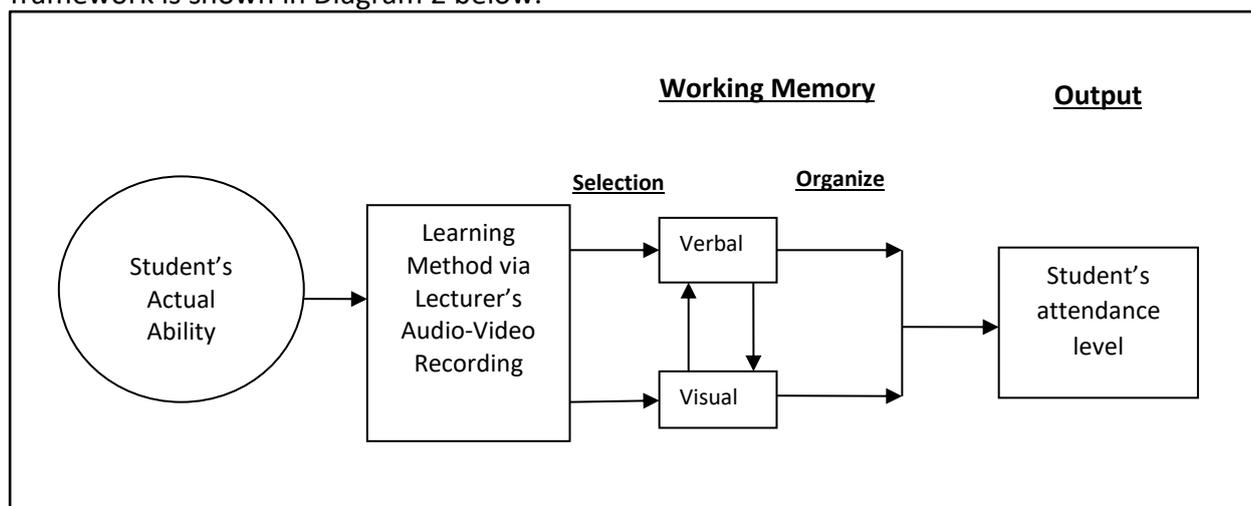


Diagram 2: Conceptual Framework

The conceptual framework in Diagram 2 portrays the effectiveness of lecturer's audio-video recording application in learning economics on students' attendance level in class. The student's actual ability refers to student's existing knowledge that contributes to verbal and

visual element integration in learning economics. Given the learning tools of lecturer's audio-video recording, students are able to watch the video many times until they comprehend the specific topic. They are able to either watch the video individually or with their peers. Mayer's theory states that students who adapt multimedia element in their study undergo three important cognitive processes. The first cognitive process is to select a word or text for processing in working memory. The second cognitive process is to organize the chosen word or text into a verbal model and the chosen images into a visual model. Meanwhile, the third cognitive process involves the integration of the verbal and visual models as well as the existing or prior knowledge of the student (Mayer, 2001). The output in this study is student's attendance level. Overall, this conceptual framework serves as a basic measurement model for research direction of this study.

The issue of whether lecturer's audio-video recording would serve as a substitute or supplement to student's attendance is the research question in this study. That is, if there is any difference in students' attendance level before and after treatment for experimental group relative to control group pursuing an economics course at the tertiary level?

### 3. Methodology

This quasi experiment involved 126 samples, with 63 samples in the experimental group and 63 samples in the control group. Data needed included the student's attendance in an economics course taught in the semester. The student's attendance is recorded on a weekly basis throughout the 14 teaching weeks.

#### 3.1 Population and Sample

The population comprises 159 students pursuing an economics course in a semester at a tertiary institution. A total of 126 students from four tutorials sessions were selected as samples. They were divided into 2 groups, that is, an experimental group sample and a control group sample. Distribution of research samples into an experimental group and a control group is shown in Table 1 below.

Table 1:

Distribution of research samples into an experimental group and a control group

| Research sample |         | Total |
|-----------------|---------|-------|
| experimental    | control |       |
| 32              | 30      |       |
| 31              | 33      |       |
| 63              | 63      | 126   |

Source: Developed for research

#### 3.2 Data Collection

All research sample participants, regardless in the experimental group or control group undergo the conventional lecture sessions using power point slides and white board, known as the instruction method 'chalk and talk' in the lecture theatre. Teaching and learning sessions are carried out for 14 weeks. In first seven first weeks, all those in the experimental group and control group undergo the conventional learning sessions. The participants'

attendances are recorded by the lecturer. During the subsequent seven weeks, treatment in the form of lecturer's audio-video recording of the economics course was given to the experimental group while those in the control group were not subject to any treatment and continued to undergo conventional learning sessions. The time line as shown in Diagram 3 below reflects the procedure for data collection for this study.

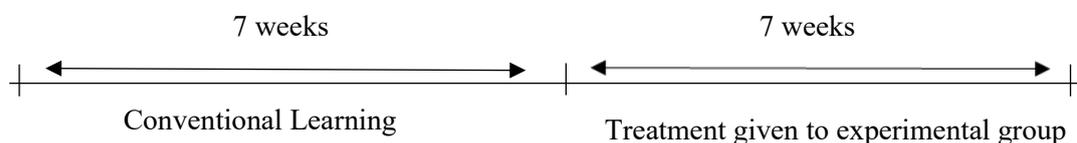


Diagram 3: Time line for data collection

Treatment in the form of lecturer's audio- video recording was supplied to the experimental group whereas the control group's sample was not subjected to any treatment. Sample's attendance for both groups was recorded for 14 weeks, namely first 7 weeks without treatment and the next 7 weeks with treatment given only to experimental group sample. Student's attendances are keyed in into Statistical Package for Social Science (SPSS) version 22.0 to generate the descriptive analysis and inferential analysis, including Independent Sample T-Test.

#### 4. Results

Table 2 below shows the mean for student's attendance, measured in the form of percentage, before and after treatment for experimental and control groups.

Table 2:

Mean for student's attendance before and after treatment for experimental and control groups

| Group        | N  | Student Attendance (mean (%)) |       |
|--------------|----|-------------------------------|-------|
|              |    | Before                        | After |
| Experimental | 63 | 45.76                         | 86.84 |
| Control      | 63 | 46.75                         | 66.51 |

Table 2 reveals that there is a significant increase in student's attendance for the experimental group (45.76 % to 86.84%) relative to the control group (46.75% to 66.51%). Independent Samples T-test was carried out to determine whether there are any differences in student's attendance for the experimental group compared to the control group before and after treatment to answer the null hypothesis as follows.

$H_{01}$ : There are no differences in student's attendance level for the experimental group compared to the control group before treatment in the economics course classes.

Ho<sub>2</sub>: There are no differences in student's attendance level for the experimental group compared to the control group after treatment in the economics course classes.

Table 3:

Independent Samples T-test to determine the differences between student's attendance levels in class for the experimental group compared to the control group before and after treatment

| Treatment        | Group        | t     | df  | Sig.  |
|------------------|--------------|-------|-----|-------|
| Before treatment | Experimental | -.295 | 124 | .768  |
|                  | Control      |       |     |       |
| After treatment  | Experimental | 6.478 | 124 | .000* |
|                  | Control      |       |     |       |

\* Significant at .05 level

Independent Samples T-test analysis as shown in Table 2 was undertaken to answer the null hypothesis 1 and 2. Analysis proved that there is no difference in student's attendance level for the experimental group compared to the control group before treatment in the economics course classes,  $t_{(124)} = .295, p = .768 > .05$ . Thus, null hypothesis 1 is accepted.

After treatment in the form of lecturer's audio-video recording supplied to the experimental group in following 7 weeks, the finding from Independent Samples T-test analysis revealed that there is a difference in the student's attendance level for the experimental group compared to the control group in the economics course classes,  $t_{(124)} = 6.478, p = .000 > .05$ . Hence, null hypothesis 2 is rejected.

## 5. Discussion and Conclusion

Overall the findings showed that there is a difference in student's attendance in percentage terms between the experimental group and the control group. The students appear to have greater understanding of the lecturer's lesson after watching the video during their revision time. It assists the students to understand the economic theory and concepts as well to formulate complicated economic graphs and diagrams. Further, it stimulates student's interest to follow lessons and attend classes. Overall, lecturer's audio-video recording has proven its effectiveness in learning economics, serving as a supplement to student's attendance.

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