

The Integration of Multimedia Hypertext and Interactive Text: It's Effect on Achievement in Comprehension

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Abstract---This research paper outlines the main objective; to identify the effect of multimedia hypertext and interactive text on student's achievement in comprehension. A group of four students from one of the secondary school in Perak, Malaysia was selected as sample. The researcher conducted an experimental study; one group pre-test and post-test. The first objective of this study is to examine the pre-test and post-test student's achievement. The second objective is to determine if there is any significant difference on student's achievement in comprehension. From the basic criteria of grade that was given by the Malaysian Examination Board, the student's achievement was graded as excellent, credit, good, average and minimum in ideas and elaboration. After implementing multimedia hypertext and interactive text, there was a significance difference on student's achievement in comprehension.

Index Terms---effect, multimedia hypertext, multimedia interactive text, student's achievement, comprehension, experimental study

I. INTRODUCTION

Problems still arise that shows student's low achievement was directly displayed poor quality in all aspects of learning. That issue showed a weak significance for the overall student's performance.

The weaknesses were highlighted on the using of conventional tools in terms of the appearance of contents and language (Jung, Insung Choi & Seong Hee Lim, 2002). He added that some students use text books, note sheets or some other conventional reference material.

Various parties such as school teachers and principals have conducted studies to detect the causes of student's weaknesses in comprehension. The identified sources restrict the ability of student's comprehension and sometime it regards to the unsuitable teaching and learning aids (Elissavet & Economides, 2003). In order to overcome those problems, a variety of teaching and learning aids have been developed. However, those problems continue to recur and still restrict student's performance in comprehension (Sim, MacFarlane & Read, 2006).

II. STATEMENT OF PROBLEM

According to Clark (2004), the quality of student's comprehension was very weak. According to Selwyn and Facer (2007) too, a conventional approach is less suited to help student to think creatively and critically in comprehension. Students were also exposed to a wide selection of vocabulary in comprehension (Rio Sumarni Shariffudin, 2007). By using conventional approach, there is no virtual access to refer to a wider source of knowledge. It is so significant that there is no learning treatment. In several studies, teachers found that students were not giving the accurate answers based on reading (Siemens & Tittenberger, 2009). Actually, they have the opportunity to create a virtual reference on terms, including law of sentences (Rio Sumarni Shariffudin). Siemens and Tittenberger (2009) were able to prove that students acquired higher levels of achievement in expression and integration ideas. Thus, from the strength of those studies, the researcher tried to identify the effect of multimedia hypertext and interactive text on student's achievement in comprehension.

III. RESEARCH OBJECTIVES

The main objective of this study is to identify the effect of multimedia hypertext and interactive text on student's achievement in comprehension. Specific objectives are stated below.

- Identify pre-test and post-test for comprehension; and
- Identify whether it is a significant different between pre-test and post-test for comprehension.

IV. RESEARCH QUESTIONS

From the above objectives, two research questions were formulated. The questions are as follows:

- What are the pre-test and post-test mean scores?
- Is there any significant different between pre-test and post-test mean scores?

V. SIGNIFICANT OF THE STUDY

The research is very beneficial to some parties, particularly the Curriculum Development Centre, the Ministry of Education, Malaysia to review the overall results concerning the achievement of student's comprehension. This study also provides the input of using multimedia hypertext and interactive text in essay writing. It can provides the teacher to avoid any problems that faced by the student, such as generating ideas in comprehension according to the accurate guide.

The positive findings serve to motivate students to be more interested in computer-based learning and information technology. The findings can also help students to be more creative and innovative in learning.

This study was done to support the Ministry of Education to promote teaching aids and learning tool for comprehension with a smart approach to computer-based and information technology. So far, such a tool is not yet widespread. Although there were some tools, the effect towards students' achievements are not tested and adopted to the language learning theory. Thus, the positive findings of this study are so important to convince students to use multimedia hypertext and interactive text.

The outcomes of this research are also important to facilitate students to assess their level of achievement by engaging knowledge and language in comprehension. Therefore, students are encouraged to improve their level of achievement required. The outcomes also benefit students in terms of guidance for the best comprehension, and help the overall performance in examinations.

This study also generally contributes to the development of education. For sure, students preferred to generate an element of multimedia in language learning. Therefore, multimedia hypertext and interactive text were the sources that need to be practiced by the students in language learning in the new millennium.

VI. OPERATIONAL DEFINITION

Operational definitions of the study are as follows:

A. *Multimedia Hypertext and Interactive Text*

Multimedia hypertext and interactive text were suitable for students to generate new ideas, as well as

expressing creative knowledge through liner language that rich in vocabulary, thoughtful, precise and concrete (Gersh, 2002). Dodge (2003) found that multimedia hypertext and interactive text were beneficial for students because of its ability to improve the quality of comprehension, especially developing meaning from one sentence to another sentence.

According to Mitchell, Kelleher and Sundry (2007), multimedia hypertext and interactive text can be centered on multimedia tool. Multimedia hypertext and interactive text were used to develop and strengthen student's learning activity. In addition to assist students' mental strengthening, they were trained to build a mind frame (Selwyn & Facer, 2007). According to Selwyn and Facer, the effectiveness of multimedia hypertext and interactive text were able to increase student's achievement in contents. Multimedia hypertext and interactive text was also systematic because students can do a revision.

Selwyn and Facer (2007) added that multimedia hypertext and interactive text were well suited to help high school students to shape ideas and do improvement. According to Gersh, the integration of multimedia hypertext and interactive text can be used efficiently in language learning because it can improve student's performance through the absorption of ideas and meaning.

Multimedia hypertext and interactive text can also be imposed to virtual reference. According to Selwyn and Facer (2007), it helps students in virtual language learning.

VII. LITERATURE REVIEW

Dodge (2003) has conducted a study of using multimedia hypertext and interactive text which were available freely online. The principle multimedia hypertext and interactive text highlighted learning as a process that required steps and constructs thinking quality. Dodge also found that students are very interested to think without waiting the instructions from the teacher. It also showed that the academic changes occur in a short periods.

Dodge (2003) also found that multimedia hypertext and interactive text help students to develop thinking in learning. He has studied students' attitudes and its relationship in grade and a number of classes. The result shows that multimedia hypertext and interactive text provide an opportunity for students to acquire new ideas in content and contributing progress knowledge.

Computer is one of the cyber tools. The ability of computer in teaching was related to virtual functions. Computers help teachers to improve student's learning, in terms of quality achievement. Computer can reduce the burden of teachers in preparing teaching aids and allowing students centered learning in accordance with the requirements of curriculum (Rio Sumarni Shariffudin, 2007).

Selwyn and Facer (2007) said that the using of multimedia hypertext and interactive text in learning is

easy to guide students to construct critical ideas. Basically, students used three elements in their study. It emphasized on content, proper thinking guide and systematic arrangement of ideas. So, the using of various learning aids can help students to think better, building concepts and doing conclusions.

With respect to a virtual reference, Mitchell, Kelleher and Sundry (2007) stated that multimedia hypertext and interactive text were able to improve students' weaknesses in identifying and construct ideas. In addition, it can help to increase knowledge in vocabulary, content and description. Meantime, they enjoyed in learning.

Mitchell, Kelleher and Sundry (2007) compared the using of two learning tool; multimedia hypertext and interactive text and conventional tool. Their research involves a variety of activities in writing, such as vocabulary selection and language style. The results shows that there was a significant different between pre-test and post-test. The percentage of students achieving the quality of writing using multimedia hypertext and interactive text is very high.

VIII. METHODOLOGY

The specific objectives that set out in this study were to identify whether there is a significant different between pre-test and post-test. To achieve these objectives, experimental design was adopted through purposive sampling.

The subjects for this research were form four students from one of the secondary school in Perak, Malaysia. The subjects are 30 students from Form 4 Science 1.

The subjects were determined by the researcher based on age and science classes. Students have been undergoing a course of using multimedia hypertext and interactive text that organized by the School Computer Club.

Pre-test and post-test instruments were used to identify students' achievement. Two Malay teachers were appointed by the researcher to conduct pre-test and post-test.

IX. RESEARCH PROSEDURES

Pre-test and post-tests were conducted separately for data collecting. Before exposed to teaching, pre-test was conducted. Based on pre-test and post-test instruction, students were required to answer the questions of a proposed topic. Students are required to write ideas and describe them on the paper provided.

In terms of assessment, pre-test and post-test scores were justified to the Comprehension Scoring Rules for Paper 2 under Malaysian Certificate of Education. Level scores were based on scoring criteria. Scoring criteria refer to the excellent, good, satisfactory and minimum achievement. Excellent score level is between 8 to 10, a credit between 6 and 7, 5 to 6 (good), satisfying between 3 and 5 and a minimum of 1

to 3. The content and ideas were also assessed by reference to the level of excellence, distinction, good, satisfactory and minimum achievement.

Two examiners were appointed by the researcher to examine student's answers. The meeting was set up to coordinate student's performance for post-test. The meeting discussed the scoring procedures, including the researcher descriptions about the marking scheme.

Data collected shows students pre-test and post-test scores. Pre-test and post-test scores were analyzed by using Statistical Package for Social Sciences (SPSS) Version 20.0. Descriptive statistics were used to describe the student's achievement. The inferential statistics were used to answer the research questions. By inference, pre-test and post-test scores were analyzed by using t-test at .05 probability level.

X. FINDINGS

A. Students' Demographic

Table 1 showed the students' demographic data based. The distribution is shown in total and percentage.

Gender	(n=30)	%
Male	12	40
Female	18	60
Total	30	100

Table 1 showed students' demographic data based. In Table 1, male students are 12 (40%). Female students are 18 (60%).

B. Pre-test and Post-test Mean Scores

According to pre-test and post-test, the mean scores and standard deviations were identified. Mean scores and standard deviations of pre-test and post-test are shown in Table 2.

Test	Mean	SD
Pre	51.23	6.11
Post	77.51	9.09

SD=Standard Deviation

In Table 2, the pre-test mean score is 51.23 (SD = 6:11). Post-test mean score is 77.51 (SD = 9:09).

C. Pre-test and Post-test Mean Scores' Different

In this research, t-test was used to see whether it is any significant different between pre-test and post-test mean scores. Table 3 shows those mean scores.

Test	Mean	SD	t	Sig
Pre	51.23	6.11	0.29	.021**
Post	77.51	9.09		

**p < .05

SD=Standard Deviation

The findings in Table 3 above showed the post-test mean scores is 77.51 (SD = 9:09), while the pre-test mean scores is 51.23 (SD = 6:11). The findings show also shows, $t(29) = 0.29$, $p < .05$. These results indicate that it is a significant different based on pre-test and post-test mean scores.

XI. DISCUSSION

The findings also support Bernie, Molebash and Maon (2002) idea, which states that the use of Multimedia Hypertext has the capability of providing a valued global, democratic, interactive and has the potential to stimulate creative thinking.

Through Piaget's theory, students are capable to trigger a full opportunity in learning to gain new knowledge (Gersh, 2002). The results of this study can be concluded that there are significance differences in pre-test and post-test. The findings also support previous researches on comprehension in English (Dodge, 2003). According to Carvalho (2003), there is one factor to show that the use of multimedia hypertext and interactive text considered a main preference for students to test the level of thinking in comprehension. In addition, multimedia hypertext and interactive text also helps students to apply the content thoughtful, as well as exploit the wider knowledge to suit the contents (Elissavet & Economides, 2003).

Multimedia hypertext and interactive text were able to help students to improve performance in comprehension and attributed the key features. Among them, multimedia hypertext and interactive text have interactive features, online access, electronic publication and dissemination of global information. For example, with the availability of online access, students can increase their knowledge about the content description, vocabulary, as well as generating new ideas (Selwyn & Facer, 2007). They also briefly defined students wisdom to acquire information using multimedia hypertext and interactive text intensify efforts to identify the source accurately, as well as assessing the information quality.

Student achievement was also related to the diversity factors in virtual activities. This statement is found in line with Siemens and Tittenberger's (2009) opinion, that the knowledge acquired in the classroom was able to integrate efforts in such activities that have the elements of web-based language games.

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