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THE INFLUENCE OF SCREEN-BASED TEXT TOWARDSTUDENTS' READING COMPREHENSION IN TOEFL PREDICTION TEST

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Abstract: Students' reading comprehension quality is highly influenced by some salient features such as method of instruction, media/technology used, class size, students' prior ability, teaching materials, etc. This experimental study explores the influence of technology in teaching reading through the use of computer screen as opposed to conventional mean, i.e., the use of textbook in teaching reading comprehension for TOEFL test. While some argues that paper-based reading text is still relevant today, the use of technology like screen-based text is believed to help students to understand and comprehend reading text better due to some important reasons. The design of the study is experimental research which includes 117 students from some departments in Riau University. There are two groups of students involved in this study namely control (54 students) and experimental (63 students) group which receive different treatment in the process of teaching and learning within 7 meetings. Based on the result of the study, the students' reading comprehension score in TOEFL after they were given the treatment shows that 36.320 mean score for the control group and 40.310 mean score for the experimental group. The value of Sig. (2-tailed) is 0.001 and it is smaller than the value of Alpha 0.05. Thus, it implies that H0 is rejected, and Ha is accepted. In other words, it can be said that there is a significance difference between students' reading comprehension in experimental and control groups. Based on the statistical analysis of the data, it is found that students who are treated with screen-based text have better reading comprehension than those who used paper-based text. It can be concluded that screen-based text is effective enough to improve students' reading comprehension in TOEFL prediction test.

Keywords: *Reading, Reading Comprehension, paper based, TOEFL*

1. INTRODUCTION

Learning exists in many types of environments. The learning environment affects and determines the output of the learning process. Using advanced technology for instance, the learning environment becomes more sophisticated, interesting, and it will produce output that can be well-determined. To illustrate (in teaching reading for TOEFL), a text from a paper-based format can be converted into digital one. In other words, traditional textbook or reading text can become online reading text using computer screen. Yet, the shift from paper-based text into digitized format carries different perceptions especially regarding the advantages and disadvantages of each type.

Nowadays, people read online for digital information. Online information as an output of computer technology is constructed in a format like printed information. Computer technology and software development have made it possible to transfer printed texts of textbooks, journals, articles, newspapers, course notes from an actual paper page to a computer screen. The advantage of the rising technology can be seen directly in the field of education. For instance, the importance of reading online has encouraged researchers to

investigate factors affecting reading of electronic text. The study of Lachman (1989) on 32 college students of an introductory psychology class at the University of Houston aimed to investigate the effectiveness of online reading strategy. The result of this study proved that reading comprehension scores and processing time increase after using online reading strategy. In addition, the research conducted by Zhang and Duke (2008) on online reading strategies also investigated about reading strategy on twelve undergraduate students, graduate students, and university employees [2]. The study explored different reading strategies 12 adult good Internet readers used while doing 3 Internet reading tasks, each with a different reading purpose: seeking specific information, acquiring general knowledge, and being entertained. The result of the study suggested that it may be helpful to teach readers to be aware of their reading purposes, and to use different reading strategies because of their purpose for reading. This study did exploration only on 12 selected good readers which intentionally reflect its result.

However, the previous study conducted by Lachman (1989) only focused on Psychology class with 32 samples whereas the study conducted by Zhang and Duke (2008) focused on reading in general since it was applied to students and university employees. Meanwhile, this present study includes 117 students from various faculties to address heterogeneity and it focuses on reading comprehension of the TOEFL prediction test. Likewise, for a regular class such as TOEFL preparation class, it is possible to use different technology-related tools to improve the results of the test. Therefore, this study investigates the effectiveness of screen-based text toward students' reading comprehension in TOEFL preparation class.

1.1 REVIEW OF RELATED LITERATURE

1.1.1 The Need of Technologies on EFL Classroom

Technologies may support the learning process in a foreign or second language classroom. L2 teachers have new Opportunities for expanding and reorganizing learning beyond the classroom by creating attractive electronic discourse moments and texts as the result of new digital technologies [3]. In addition, internet is important in all aspects of oureveryday lives, and in educational settings there is a need to put the fact of promoting the development ofcommunicative genres which are part of the competencies needed by educators [4]. Educational settings have used the technologies to introduce a more interactive communication in both EFL and ESL classroom. They are implemented into various types of language learning sources and tasks such as online writing and reading, electronic books (e-books), live streaming news, and many more. Those activities use the computer as a tool. The computer plays an important role in a learning process. The roles of the computer in learning are [5]:

1. The computer is a medium.
2. The computer can be used as the mainstay of a course, or for backup, revision, reinforcement, extension, or a variety of other purposes.
3. The computer may communicate with the student visually by displaying text, graphics (diagrams, graphs, line drawings) or video images on a screen.

The above roles emphasize that electronic media can significantly contribute to making the learning process run welland achieving the expected outcomes or goals. There are eight types of equipment which should be available in the classroom and one of them is audio-visual equipment, such as a filmstrip projector, tape recorder, etc. [6].

1.1.2 The Use of Digital Text in Teaching Reading Comprehension

At the secondary level students often find school texts difficult to understand and lack vocabulary to enjoy literacy readings at their intellectual level [7]. Because their reading level is either below or above their intellectual level, theyread books that are unsatisfying either because they are not interesting or too simple or they read books that are too difficult. Therefore, either way it really affects the students' reading comprehension skill. On the other hand, reading comprehension skill is useful when implemented before, during, or after reading [8], [9], [10], [11], [12], [13]. The skill of reading comprehension is not supported by

the school texts which do not match to their proficiency level [14].This situation makes reading too often a frustrating experience for both students and teachers. The fact is that those frustrating and demotivating experiences have a direct relationship with the learning environment which supports the comprehension reading skill.

Online learning environment are becoming popular for most teachers and students [15]. However, only a few studiesfocus on appropriate online reading strategies (such as: rereading, scanning, summarizing, keywords, context clues, question-answer relationships, inferring, thinking aloud, activating prior knowledge, setting a purpose, and drawing conclusions) for different types of learners, where in most of this focus only on the effectiveness of text-based readingstrategies.

Yet digital text also supports the reading to learn paradigm. [16] studied the effectiveness of Web-based learning with a revised text chapter and obtained the result that the subjects who used the revised chapter made fewer errors on an information retrieval task and reported higher satisfaction than those who read the original text on screen.

Digital text is likewise searchable. Information can be located quickly by using the "find" feature available in browsers, text editors and e-book reading programs. In addition, the availability of online dictionaries increases the usability of digital text, especially for language learners.

1.1.3 The Use of Textbook and Its Issues

Most textbooks are boring and sometimes difficult to understand after he analyzed the students' view of textbooks [17]. It still continues to be prevalent until now even as textbook publishers show more concern on the quality of their textbooks. Textbook usually have non-emotional presentations of facts and tend to have an unattractive presentation to the learners. This unattractive presentation may be the cause of students having a lot of stress.

It is rare to elicit students' comment that a textbook is exciting. Additionally, in this age of computers, students are more interested to read information online [18]. It makes the justification of the use of textbook becoming a larger issue within the educational sphere, particularly for the teachers who have the responsibility to evaluate the teaching materials.

1.1.4 Issues on Digital Text and Printed Text

Many researchers have found that the use of paper is more convenient than using electronic or online text versions. Reading from paper is 20-30% faster than reading on screen [19]. The superiorities of paper include portability, reliability, dazzle, and ergonomics make it a preferred form for printed text [20]. The conclusions of those previous studies seemingly contravene the present studies which tests the hypothesis that reading on screen is more effective than reading from textbook with respect to the increase of the learners' TOEFL score, particularly on their reading comprehension score. However, the present study does not dwell on speed of reading alone as the sole determining the factor but rather on the effectiveness of the online reading method.

1.1.5 Theoretical Framework

Conducting EFL (English as Foreign Language) classroom instruction is not easy. It is important to know how to differentiate between technologies and their application on pedagogical material. Chapelle and Douglas (2006) did evaluation on research done by Madsen (1986) at Bringham Young University in December 1985 which was done to 42 ESL students which focusing on the efficiency of computer-assisted language learning to examinees especially on large-scale computer familiarity study of the TOEFL and found that there should be a re-conceptualization of test development. In short, they concerns primarily only on the test developers in that time so Chapelle and Douglas (2006) tried to investigate the impact of technology on

examinees' performance on reading ability but they did the test on computer. The result of the research shown that the examinees scored lower on the computer delivered version of reading test. In conclusion, Chapelle and Douglas found that there are two issues which must be considered while assessing the important effects of digital technology in the L2 classroom namely: (1) the quality of the new digital technology; and, (2) how the technology matches with our pedagogical approaches. This signifies that the learning process needs technologies to re-shape their application of teaching in classroom. This theory will lead the current study to investigate on the students' reading ability but in different form of test and to find out the answer of research question.

Further, Reinking (1992) stated that reading online or reading electronic texts has become well known among learners and educators because of its attractive presentation, graphics, or interesting images. It has the potential to enhance learning and increases the necessity of knowledge of new teaching methods which apply to new learning environments (Jung, 2001; Romero, Healy & Aberson, 2000) as in Hsieh (2009). According to Reinking (1992), there are six characteristics found in electronic text: it is modifiable, enhanced, programmable, linkable, searchable, and collapsible. This theory was used to apply the treatment on the experimental group in order to answer the research question.

In addition, Warschauer and Kern (2000) did a 2 years ethnography study of online learning in four college language and writing classroom in Hawaii [23]. It was done on three undergraduate and one graduate who are Asian and American students. The result of the study showed that the optimum result of students' writing skill was achieved when both experiences (computer and face-to-face formats) are assessed together in the classroom. The finding is particularly for understanding the writing process itself. It means that the computer-assisted language learning is needed in the foreign language classroom. This theory encourage the current study to see whether the implementation of computer-assisted language learning itself without face-to-face interaction in the EFL classroom can be a more effective rather than traditional method in improving students' reading comprehension skill as the second research question of this current study stated. This theory would be used to compare the effects between reading on screen and reading from textbook on students' TOEFL prediction score when discussing the answer of research question.

2. METHOD

This study was conducted in Riau University, Pekanbaru, Riau Province, Indonesia. The design of the study is experimental research which includes two groups namely control and experimental group. There are 117 students involves and assigned randomly to experimental and control group. Experimental group (63 students) was taught by using digital screen while the control group (54 students) was taught by using conventional way, i.e., paper-based text. These groups were both given pre-test before having the treatment and post-test after seven meeting to measure the significance of the treatment.

3. RESULT & DISCUSSION

3.1 The Result of Students Reading Comprehension in TOEFL

TOEFL test consists of skills to be tested namely listening skills, grammar, and written expression, and reading comprehension skills. The predicted score of the TOEFL is accumulation of these skills. Since this study focuses on reading comprehension only, the correct answer is converted into real score. Thus, the analysis will be on the converted score instead of correct answer. In TOEFL, reading comprehension test is in the third section. The test consists of 50 question and the students are given time 55 minutes to answer the comprehension question of the text which includes identifying main idea, details, implied question, vocabulary questions. This study findings showed that there was a difference between students' reading comprehension score in pre-test or before they were introduced the method of reading on screen and their score after receiving the treatment (post-test). It can be seen from the result of descriptive statistics in the experimental group because only this group received the treatment. The Mean of experimental group in pre-test is only 20.81 with standard deviation 5.346. It was lower than the mean in post-test which was 36.97 with standard deviation 6.818. This showed that the 63 students' score in TOEFL prediction test (post-test) has increased after got the

treatment reading on screen. Below is the pre-test and post-test result of students' reading comprehension score in TOEFL.

Table 1. T-test (Pre-test result)

Group Statistics

	Grup	N	Mean	Std. Deviation	Std. Error Mean
CA Pre Test	Control	54	16.87	5.667	.771
	Experiment	63	20.81	5.346	.673

Table 2. T-test (Post-test result)

Group Statistics

Grup		Mean	Std. Deviation	N
CA Post Test	Control	22.07	6.348	54
	Experiment	36.97	6.818	63
	Total	30.09	9.943	117

Based on the table, it can be seen that the number of students assigned into experimental group is 63 and control group is 54. The mean scores respectively are 20.81 and 16.87. These data were then analyzed. Normality and homogeneity of the data were tested to be able to conduct hypothesis testing using independent sample t-test. Normality of the data is calculated by using Kolmogorov-Smirnov test at significance level $\alpha = 0.05$. Further results of the normality test data variables learning outcomes by treatment group are presented below.

Table 2. One-Sample Kolmogorov-Smirnov Test

One-Sample Kolmogorov-Smirnov Test

Grup			CA Pre Test
Control		N	54
	Normal Parameters[a,,b]	Mean	16.87
		Std. Deviation	5.667
	Most Extreme Differences	Absolute	.166
		Positive	.166
		Negative	-.095
		Kolmogorov-Smirnov Z	1.222

		Asymp. Sig. (2-tailed)	.101
Experiment		N	63
	Normal Parameters[a,,b]	Mean	20.81
		Std. Deviation	5.346
	Most Extreme Differences	Absolute	.116
		Positive	.116
		Negative	-.077
		Kolmogorov-Smirnov Z	.919
		Asymp. Sig. (2-tailed)	.367

One-Sample Kolmogorov-Smirnov Test

Grup			CA Post Test
Control		N	54
	Normal Parameters[a,,b]	Mean	22.07
		Std. Deviation	6.348
	Most Extreme Differences	Absolute	.184
		Positive	.184
		Negative	-.102
		Kolmogorov-Smirnov Z	1.349
		Asymp. Sig. (2-tailed)	.052
Experiment		N	63
	Normal Parameters[a,,b]	Mean	36.97
		Std. Deviation	6.818
	Most Extreme Differences	Absolute	.143
		Positive	.143

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One-Sample Kolmogorov-Smirnov Test

Grup			CA Pre Test
Control		N	54
	Normal Parameters[a,,b]	Mean	16.87
		Std. Deviation	5.667
	Most Extreme Differences	Absolute	.166
		Positive	.166
		Negative	-.095
		Kolmogorov-Smirnov Z	1.222
		Asymp. Sig. (2-tailed)	.101
Experiment		N	63
	Normal Parameters[a,,b]	Mean	20.81
		Std. Deviation	5.346
	Most Extreme Differences	Absolute	.116
		Positive	.116
		Negative	-.077
		Kolmogorov-Smirnov Z	.919
		Asymp. Sig. (2-tailed)	.367

	Negative	-.100
	Kolmogorov-Smirnov Z	1.132
	Asymp. Sig. (2-tailed)	.154

The table shows that the values of the Kolmogorov-Smirnov 1.132 and sig. 2-tailed is 0.154 which is bigger than thevalue of alpha 0.05 for the experimental group. The results suggest that the data distribute normally. Then, test of homogeneity of the data is calculated by using Levene's Test. Below is the result of homogeneity test of the data.

Table 3. Test of Homogeneity of Variances

Reading score

F	df1	df2	Sig.
.046	1	115	.831

The results of homogeneity test suggests that the value of sig. 0.831and it is bigger than the value of alpha 0.05. Thus,it can be implied that the data in this study are homogenous.

3.2 Hypotheses Testing

The hypotheses in this study are:

H_0: The students taught by using screen-based text do not have better reading comprehension than those taughtby using paper-based text.

H_a: The students taught by using screen-based text have better reading comprehension than those taught by usingpaper-based text.

The result of the data analysis of students' reading comprehension in TOEFL test by using independent sample t-testis presented in table below.

Table 4. Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
TOEFL	Equal variance assumed	2.124	.148	3.331	106	.001	3.9903	1.1980	1.6151	6.3656
	Equal variances not assumed			3.361	105.910	.001	3.9903	1.1873	1.6363	6.3444

Based on the table above, it can be seen that the value of Sig. Levene's Test for Equality of Variances is 0.148 and itis bigger than the value of Alpha 0.05. The data are homogenous so that the result of independent sample T-test is based on Equal variances assumed. In the table, it can be seen that the value of Sig. (2-tailed) is 0.001and it is smallerthan the value of Alpha 0.05. Thus, it implies that H_0 is rejected, and H_a is accepted. In other words, it can be said that there is a significance difference between students' reading comprehension in experimental and control groups.

3.3 Discussion

Based on the statistical analysis, it is found that the use of screen helps the students to understand reading text better.The result of post-test in experimental group and control group is significantly different. It is can be seen in only five times meeting in applying reading on screen in the experimental group and the group mean 36.97. The experimental group mean is higher than the control group mean (22.07). The maximum correct answer in both group is also different. The experimental got more correct answers than the control group. The proofs showed by descriptive statistics and t-test, and ANCOVA. This can be concluded that using reading on screen method is more effective to improve students' TOEFL prediction score especially for their reading comprehension score than using reading from textbook method. The study findings have answered Research Question (RQ). It can be seen that the use of reading on screen is more effective than reading from textbook as what theory of reading electronic text (Reinking, 1992) and theory of the implementation of computer-assisted instruction in EFL classroom (Warschauer & Kern, 2000) states about in the previous research. In fact, students do need to be presented with technology to make them to feel 'the effect of learning' for their own benefit and specifically for their reading score on TOEFL prediction test. This is supported by a study which finds that there are two issues which must be considered while assessing the important effects of digital technology in the L2 classroom namely: (1) the quality of the new digital technology; and, (2) how the technology matches with our pedagogical approaches [21]. This signifies that the learning process needs technologies to re-shape application of teaching in classroom. In conclusion, the teaching process needs technology for a better result of learning. The use ofcomputer screen as a treatment in this study is one of manifestation of technology application. Through the use of this,the students listen and do what the lecturer asked them to do. It is because the instruction is easy, i.e., 'with one click',and not monotone, 'not only open the book'. This instruction makes the visual, audio and kinesthetic ability of the students work simultaneously. It is contrast with the teaching instruction using paper-based text. It does not require students to use their kinesthetic ability because they just need to read the instruction from the book.

4. CONCLUSION

The present study attempts to seek the significance of the use of computer screen in teaching reading comprehensiontoward students who will take TOEFL prediction test. Usually, teaching reading is conducted by using conventional paper-based text. In screen-based text, each student is given access to computer and they can read the text from the screen. The finding of this study found that teaching reading comprehension through the use of computer screen is more effective than reading from textbook for the students in TOEFL preparation class. However, for further study in order to have a more thorough analysis and a wider scope of coverage, it is needed to have a bigger sample so that the result might be applied to all EFL learners. Moreover, the further study might investigate on more than one skill reading skill and writing skill or listening and writing skill, which may produce a new useful study finding.

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