

Narrative Reading using mE-book in Polytechnic Classroom

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Abstract—This study attempts to examine the effects of narrative reading using multimedia E-book (mE-book) in an English language classroom of a group of Diploma students at a conventional Polytechnic in Malaysia. Among the aspects that were examined were the students' reading comprehension and their cognitive styles. A set of test and a questionnaire were used as instruments in this study and the data collected were analysed using ANCOVA. The results revealed that the Polytechnic students who experienced narrative reading using mE-book showed a significantly higher reading comprehension regardless of their cognitive styles.

Index Terms— Polytechnic, English classroom, mE-book, narrative reading, reading comprehension, cognitive styles.

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1 INTRODUCTION

Electronic books, also known as E-books have been introduced to all levels of age, from young children to adults. It is clear that E-books are evolving swiftly, from reading to its application in teaching and learning environment [1]. These E-books are relatively a recent addition to book styles, which offers students, teachers, and schools, an additional tool for the teaching of reading and the integration of reading into specialized areas.

The new trend of E-book is not only limited to static text and pictures but it can also integrate narration. This type of E-book is called multimedia E-book (mE-book). It is integrated with narration that synchronizes with the text simultaneously.

The integration of narration feature into E-books, into the second language classroom is becoming a potential teaching and learning tool in language learning, especially teaching reading in English as Second Language (ESL) classes [2]. These mE-books have become an innovation that supports flexible learning strategies. In addition, mE-books can be used to improve students' reading skill and the students would feel more motivated towards learning a second language by integrating the technology into teaching and learning session.

2 BACKGROUND OF THE STUDY

This research emerged out of the reviews on the English language proficiency level of the Polytechnic students. It has been noted that Polytechnic students have low ESL reading comprehension [3]. In a study conducted by Sanmugam [4], Polytechnic students were described to have average ESL reading ability and low ESL reading comprehension.

In a research done by Md. Yasin [3], these students were found to have limited vocabulary, poor mastery of grammar, have problems in speaking English, difficulties

with spelling and poor writing style. This affects their opportunities for further studies and to get employed as the Polytechnic students' lack of proficiency in English deprives them of the opportunities opened to those who are able to use the language well [5].

Therefore, to motivate the students in the language classroom and improve their reading comprehension, the instructional strategies used to teach reading in the language classroom in Polytechnic have to be upgraded incorporating the use of technology and computers [6]. One way to effectively integrate technology into reading instruction is by using multimedia [7]. By integrating multimedia into reading lessons, students' motivation to read will increase [7]. Thus, this study aimed to overcome the weaknesses in the conventional language classrooms in Polytechnics, by integrating multimedia E-book (mE-book) in the students' reading learning process.

3 RESEARCH OBJECTIVES

The main aim of this study was to investigate the effects of the narrative reading on Polytechnic students' reading comprehension, moderated by their cognitive styles. Thus, the objectives of the study are as follows:

- a) To investigate the effects of the narrative reading by using mE-book on students' reading comprehension.
- b) To investigate the interactive effect of narrative reading by using mE-book on students' cognitive styles (field-dependent or field-independent).

4 RESEARCH METHODOLOGY

A sample of 100 students was randomly chosen from a national Polytechnic in Malaysia. The convenience sampling method was employed to select samples for this study. The subjects were chosen from five departments:

Civil, Mechanical, Electrical, Information Technology and Business as these departments represent courses offered in Malaysian Polytechnics. These students were randomly assigned into two groups; control and experimental. The control group experienced traditional reading and the experimental group experienced narrative reading using mE-book.

For this study, pre-test and post-test questions were developed to measure the students' reading comprehension scores on one of the topics in the Polytechnic's Communicative English module. These pre-test questions were given to the students, before the intervention. Then, the students experienced the mE-book and at the end of the intervention, they were given the post-test questions. The students' scores were recorded to determine the effectiveness of the narration in mE-book on their reading comprehension.

3.1 Me-book

The students in the selected Polytechnic were randomly assigned to mE-book. mE-book is a multimedia E-book incorporated multimedia elements such as narration, text, visuals and videos. This treatment mode has a 'Read to Me' button feature that narrates text when it is clicked. During the narrating process, the text is highlighted accordingly. However, for the purpose of this study, other multimedia elements such as video and animation were removed from the mE-book in order for the researcher to investigate the effect of the narration in improving the students' reading comprehension. The lesson contents for this treatment mode were developed based on the syllabus, lesson plan and the module provided by the Polytechnic Curriculum Division.

3.2 Research Instruments

The research instruments used for this study included pre-test and post-test questions to measure the students' reading comprehension in the 'Greetings and Introductions' topic and Group Embedded Figures Test (GEFT) [8] was used to measure the students' cognitive styles.

To find out whether the use of a specified treatment mode had affected students' reading comprehension, an identical pre-test and post-test with items restructured were administered to access the student' reading comprehension. The test assessed the students' ability to decode words easily, their understanding and their ability to transfer the knowledge of the chosen topic.

Another instrument used for this study was the Group Embedded Figures Test (GEFT) to measure the students' cognitive styles of whether it was field-dependent or field-independent. The cognitive styles were used as a moderator variable in this study. GEFT was developed to determine an individuals' learning style and to what extent the individual is able to overcome the effect of background distractions while staying focused on another issue.

5 ANALYSIS AND FINDINGS

This research examined the main effects of narrative reading using mE-book on students' reading comprehension. The scores were derived from the differences between the post-test scores and pre-test scores. Prior to inferential statistical analysis, the mean and standard deviation of the pre-test, post-test and comprehension scores across the experimental groups were calculated. Table 1 presents the descriptive statistics for the pre-test, post-test and comprehension scores between the control and experimental groups.

From the descriptive statistical analysis (Table 1), it is found that mean for reading comprehension scores for mE-book group is 16.96. As for the control group, the mean for reading comprehension scores is 12.28. The difference of mean score between the two groups is 4.68. The mean scores determined that students who used the mE-book obtained higher comprehension scores as the reading comprehension mean score for mE-book is compared to the control group.

TABLE 1. DESCRIPTIVE STATISTICS FOR READING COMPREHENSION SCORES

Mode of instruction	Score	*n	Mean	Std. Deviation
mE-book	Field dependent	29	13.37	12.23
	Field independent	21	21.90	6.67
	Comprehension	50	16.96	11.03
Control	Field dependent	26	7.84	11.56
	Field independent	24	17.08	9.99
	Comprehension	50	12.28	11.69
Total	Field dependent	55	10.76	12.13
	Field independent	45	19.33	8.85
	Comprehension	100	14.62	11.55

*n denotes number of students

An ANCOVA analysis was conducted to see if there is a significant difference in reading comprehension between the two groups. In order to conduct the ANCOVA test, several conditions has been tested prior to hypothesis testing such as the normality data distribution, variance and linear equivalence relationship between covariate, which concluded that the data come from a normal distribution. The pre-test and post-test comprehension scores are measured on a continuous scale which has no significant outliers. The homogeneity of variances which was be tested using the Levene's test for homogeneity of variances revealed that the *p*-value of 0.762 is greater than 0.05 ($p > 0.05$), indicating that the variances in the post-test scores between the groups are approximately equal, indicating that the students were homogenous with their prior knowledge before receiving the treatment, thus, any gains in their reading comprehension could be because of the treatment received. Analysis also indicated that there is a linear relationship between the independent variables and

covariate for each mode.

In addition, the homogeneity of regression slopes also shows that there is no significant interaction between the covariate and the independent variable. The Post-Hoc analysis was not carried out because the independent variables had only two levels.

TABLE 2. ANALYSIS FOR READING COMPREHENSION SCORES

Variable	t	df	Sig. (2- tailed)	Mean Diff	Std. Error Diff
Mode	2.058	98	.042	4.68	2.27
Cognitive Styles	-3.953	98	.000	-8.57	2.16

Table 2 describes whether the experimental groups are significantly different in terms of the reading comprehension scores. Two analyses were done; the mode of the intervention (control and mE-book) and students' cognitive styles (field-dependent and field independent). The magnitude of the differences in the mean scores for both analyses is 4.86 and -8.57 indicating that the students who used mE-book outstand the control group and field-independent students outstand the field-dependent students. The p-value for both analyses are less than 0.05, therefore indicating that there is a significant difference in reading comprehension between mE-book group ($\bar{X}_m = 16.96$, $SD = 11.03$) and control group ($\bar{X}_c = 12.28$, $SD = 11.69$). This indicates that the students who used mE-book scored higher on their reading comprehension compared to students who experienced traditional reading. This means that the students were more successful in their reading comprehension when they used mE-book.

Preliminary checks ensured that there was no violation of the assumptions of normality, linearity and homogeneity of variances. To further analyse the interaction effects of the treatment modes and cognitive styles on the students' reading comprehension, a 2x2 between-subjects analysis of covariance was conducted. The results of the analysis are depicted in Table 3.

TABLE 3. TEST OF BETWEEN-SUBJECT EFFECTS FOR READING COMPREHENSION

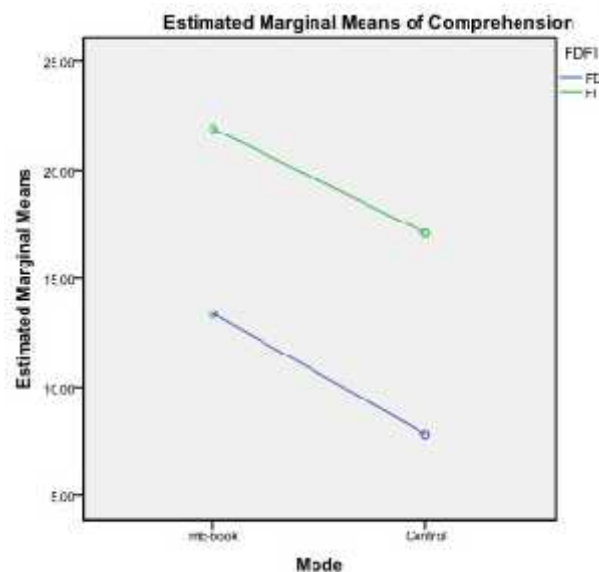
Dependent Variable: Comprehension						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Mode	660.89	1	660.89	211.65	.044	.995
FDFI	1944.83	1	1944.83	622.85	.025	.998
Mode * FDFI	3.12	1	3.122	.02	.868	.000

The analysis of covariance (between subjects) revealed that there is a significant main effect of the narration feature in mE-book treatment mode, on students' reading comprehension, $p = 0.044$ ($p < 0.05$). The analysis indicates that the students who used mE-book obtained

higher reading comprehension scores compared to students who used the traditional method ($\bar{X}_m = 16.96 > \bar{X}_c = 12.28$) (Table 1). This analysis also reveals that there is a significant main effect of the cognitive styles on students' reading comprehension, $p = 0.025$ ($p < 0.05$), indicating that field-independent students obtained higher reading comprehension compared to the field-dependent students ($\bar{X}_{FD} = 10.76 > \bar{X}_{FI} = 19.33$) (Table 1). However, the analysis also revealed that there is no significant interaction effect between the treatment mode and the cognitive styles on students' reading comprehension ($p = 0.868$). This indicated that there is no significant interaction effect between mE-book and students' cognitive styles on reading comprehension. This means that the differences of the reading comprehension scores between the two groups did not vary as a function of the students' cognitive styles. In simple terms, although the treatment modes and cognitive styles have individual significant effects on the students' reading comprehension scores, the cognitive styles was not a main factor for the higher reading comprehension of the students using the mE-book modes.

Figure 1 illustrates the Analysis of Covariance interaction effect between the mE-book and the students' cognitive styles (field-dependent and field-independent) related to students' reading comprehension scores.

Fig.1. Interaction effects between treatment mode and cognitive styles on reading comprehension



6 DISCUSSION AND CONCLUSION

This study attempts to investigate the effects of the narrative reading using mE-book on Polytechnic students' reading comprehension, moderated by their cognitive styles. Overall, mE-book had positive effects in improving the students' reading comprehension. This was evidenced by the statistical results that exhibit the students who experience reading using mE-book obtained higher mean

scores for the comprehension assessment. Students comprehended their reading better when the content, on-screen text (visual) and narration (auditory), were presented concurrently. This study supported a finding that was reported by Moreno and Mayer [9], suggesting that words presented in both the visual and auditory modalities enhanced learning as compared to words presented in only one modality.

Another possible reason for the positive effect of mE-book can be contributed to the potential role of the redundant narration in improving comprehension. In this study, the narration supports the on-screen text decoding for better comprehension. This finding is parallel to the justification by Wise, Ring and Olson [10] who revealed that reading comprehension that is augmented by supporting decoding and listening, will free the listener to focus on the meaning of the text. mE-book provide a supportive reading environment and increase a student's ability to read by minimizing the need for decoding skills and maximizing the student's ability to comprehend.

Indeed, the Polytechnic students are non-native speakers of English. They learn English as a second language which is not their prime language. Hence, these students might have difficulties in comprehending unfamiliar English words with text only. The students' reading comprehension could be impaired because the students missed decoding the information from the text, as they will allocate little or no cognitive capacity to construct and respond to the meaning of the words. The results of the redundancy principle of on-screen text and narration in this study showed that the students were able to comprehend their reading better than text alone. In other words, the narration proved an avenue for the non-native students of English to decode the text they read easily and effectively.

In addition, the results of this study could be a source of reference for the Polytechnics Curriculum Division, Polytechnics Education Department and Ministry of Higher Education (MoHE) especially for designing English modules that incorporate the use of technology-based books such as mE-book.

REFERENCES

- [1] R. Ismail, and A.N. Zainab. Factors Related to E-books Use amongst IT Students. *Proceedings of International Conference on Libraries, Information and Society*, Petaling Jaya, Malaysia, pp. 265-275, 2007
- [2] L. Fang. *Using Multimedia To Motivate Efl Students' Interest In English Language Learning*. Unpublished Master's Thesis. University of Wisconsin, Platteville, 2010.
- [3] A.Y. Md Yasin, W.M.H Wan Mohd Shaupil, A.M. Mukhtar, N.I. Abd Ghani and F. Rashid. The English proficiency of Civil Engineering students at a Malaysian Polytechnic. *Asian Social Science*, 6(6), pp.161-170, 2010.
- [4] T. Sanmugam. Target situation Needs Analysis: Exploring the linguistic needs of Polytechnic engineering students across three majors. *English for Specific Purposes World*, 4 (39), pp.1-9, 2013.
- [5] B.O. Kien and H.T. Su. English proficiency and employability:

Polytechnic students' notions of what it takes to get them employed. *Proceedings of National and Innovation in Technical and Vocational Education System*, Negeri Sembilan, Malaysia, pp.84-96, 2012.

- [6] H. Harwati and M.Y. Melor. Using courseware for teaching and learning English: Effective or useless? *The International Journal of Learning*, 18(4), pp.193-202, 2003.
- [7] R.J. Blake. *Brave New Digital Classroom, Second Edition: Technology and Foreign Language Learning*. Washington, NW: Georgetown University Press, 2013.
- [8] H.A.Witkin, P.K. Oltman, E. Raskin, and S.A. Karp. *A manual for the group embedded figures test*. Palo Alto, CA: Consulting Psychologists Press, 1971.
- [9] R. Moreno and R.E. Mayer. Verbal redundancy in multimedia learning: When reading helps listening. *Journal of Educational Psychology*, 94, pp.156-163, 2002.
- [10] B.W. Wise, J. Ring and R.K Olson. Individual differences in gains from computer-assisted remedial reading. *Journal of Experimental Child Psychology*, 77, pp.197-236, 2009.



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