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The Development of e-Reading to Improve English Reading Ability and Energise Thai Learners' Self-Directed Learning Strategies

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Abstract. Technological education has changed lifestyles, and educational institutions need to prepare their learners with the necessary tools to be successful in real life. The objectives of the study are: 1) to explore learner's achievements in reading comprehension with the use of e-Reading and traditional teaching methods, 2) to analyse the satisfaction of learners using e-reading and traditional teaching methods, and 3) to observe the effects of the learner's reading comprehension while using e-reading methods versus traditional teaching methods based on a standard 80/80 criterion. The participants were sophomore learners enrolled in English courses. Thirty learners were selected by nonprobability sampling and divided into two groups, the experimental and control. The experimental group received lessons using an e-Reading programme, the control group was taught using a traditional teaching method. The research tools were pre- and post-tests, lesson plans, learners' perception questionnaires, and interviews. Data collected through quantitative means were analysed using a t-test standard and average deviation programme. The interview data were analysed using a content analysis method. Data from the pre- and post-tests show that reading comprehension improved in the experimental group, who used the e-Reading programme. They also showed a "positive" attitude regarding their learning satisfaction and self-directed learning. The learners' satisfaction and self-directed learning were higher in the e-Reading programme. Standard 80/80 criteria were met with an efficiency of 81.6/82.3 in the e-Reading programme. This research could be used as reference for further study and application of the e-Reading programme.

Keywords: e-Reading programme; English reading ability; Self-directed Learning; Thai EFL Learners; Motivation

1. Introduction

Global communication is largely carried out through the internet, and the majority of users on the internet communicate in English. To be competitive in the global economy, individuals need to have proficient skills in English and,

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especially, English reading comprehension. With a strong grasp of the English language, people in every country have access to larger audiences and potential business opportunities. English is also useful in the daily lives of most working individuals (Kruawan & Dennis, 2017).

With English being taught in almost every country, globalisation is fuelled by English as a world language and, in Thailand, English is the language most taught and studied because of its use throughout the world (Nagi, 2012). Since English is a foreign language (EFL) among Thailand learners, instructors need access to multiple teaching techniques. Thai language instructors need to find new and creative ways to teach English to their learners. As a doctor needs different types of medication to treat different kinds of ailments, so language teachers need different kinds of teaching techniques to motivate and improve their learners' learning. Traditional Thai instructors have used a teacher-centred approach to teaching English; however, a more learner-centred approach is becoming more popular. Technology can help promote learner-centred learning in and outside the classroom (Chen, 2010). Educators should try to employ technology in their classrooms whenever possible to help support learner-centred environments.

Not only is reading in English critical for necessary for global communication, but it is also necessary for testing. Being able to read and to understand English text is very valuable (Ellis & Shintani, 2014) for Thai learners. A learner who is proficient in reading in English will be able to expand their writing, listening, and speaking skills more easily in English (Shang, 2015). Reading is one of the most valuable tools a learner can acquire for their educational and professional careers. Being able to analyse and understand textbooks, journals, and online material is important for Thai EFL learners, and reading in English is valuable for graduate learners because most research is published in English journals. Learners with strong reading comprehension skills can spend more time reflecting on English text rather than trying to piece words together to understand each word. Reading is one of the most valuable tools a learner can acquire for their educational and professional careers.

However, learners and instructors can find it difficult to learn and teach English as a second or foreign language. Thai university learners have been found to have low English reading skills, and even EFL learners struggle with English text. Thai learners struggle with remembering vocabulary and understanding sentence structures, which makes it difficult for them to understand what they are reading (Uamduang 2012; Kottong, 2014). Low reading comprehension makes it very difficult for Thai learners to rapidly skim and scan text for relevant information. When learners struggle with reading comprehension, they also have difficulty using teacher resources such as worksheets, short stories, and sentence structure lessons. One reason for Thai learners' lack of reading ability is a limited vocabulary and understanding of sentence structure. Vocabulary understanding enables the learner to understand the meaning of words while understanding sentence structure helps learners recognise word order and patterns in texts. When learners encounter a text which is not relevant to their studies or personal life, it can be hard for them to feel motivated to try and understand the text thoroughly. All of these issues can affect a learner's reading comprehension. Self-

directed learning is a learner's ability to successfully gain more knowledge about a topic or subject without the assistance of a teacher or colleague (Shakeri, 2012) and such self-directed learning can also be influenced by a learner's reading comprehension. For a learner to truly be autonomous, they need to be able to search out information on their own. If they lack reading skills it can be difficult for them to find relevant information.

This study aims to aid language instructors, to investigate learners' achievements in reading comprehension using e-Reading and traditional teaching methods, to analyse the satisfaction of learners using e-reading and traditional teaching methods, and to observe the effects of the learner's reading comprehension while using e-Reading methods versus traditional teaching methods, based on the standard 80/80 criterion. Accordingly, three research questions were formulated as follows:

1. How can an e-Reading programme help learners improve their skills in reading comprehension?
2. What are the effects of the e-Reading programme compared to a traditional teaching method regarding the learner's satisfaction?
3. How does the e-Reading programme improve the learner's reading comprehension?

2. Literature Review

2.1 Reading Comprehension

Reading skills and attitudes toward reading with electronic text have become a popular research topic in recent years, one which has been investigated in many recent studies (Larson, 2010; Short, 2010; Anderson, 2012; Huang, 2013).

For EFL and ESL learners, reading is critical because most tests and evaluations in English courses are conducted by reading text and writing answers; further, being able to understand and interpret English text is a valuable skill for most jobs and careers (Khruawan & Dennis, 2017). Learners have a variety of strategies for developing their reading comprehension; those who find it difficult to improve their reading comprehension can seek guidance from instructors, but ultimately, it is only the learner's discipline and motivation that can truly help them succeed.

The strategies approach has proved effective in improving learners' reading comprehension (McNamara, 2004; McNamara, 2007; Zhang, 2008; McKeown, Beck & Blake, 2009;). Oakley (2011) describes cognitive strategies which can be employed by EFL or ESL instructors to improve reading comprehension in learners. These include summarising, visualising, questioning, making inferences, and predicting. Connecting a learner's background knowledge to the language lesson to make the lesson more engaging and personal, encouraging predictions, organising thoughts into visual charts, and answering questions are a few strategies that can be used.

Reading models can be used to explain what processes are taking place during reading and can explain how a learner perceives text with their eyes and then forms an understanding of the text. Educators need to be fluent in different types of theoretical models and approaches when trying to understand a learner's

ability to read (Tracey & Morrow, 2012). Tracey and Morrow (2012) emphasise social constructivist, constructivist, behaviourist, and information processing cognitive theories. What learners are thinking and doing while reading can be shown in the cognitive-processing theory. The way learners build from the text while interacting with it can be explained in the constructivist theory (Auer, 2016). Cognitive-processing and constructivist theories will be used in this research paper regarding reading and can be used to describe EFL learners' cognitive reading aspects. The following table shows the learners reading models and strategies.

Table 1: Reading models and related reading strategies

Reading model	Examples of reading strategies	Strategy description
1. Participative Model	1. Drawing conclusions.	1. Use world knowledge to identify the meanings of words.
2. Construction Integration Model	1. Activating background knowledge. 2. Identifying the main points.	1. Think about prior knowledge to help to understand. 2. Focus on the main points of the text.
3. Schema Theory	1. Creating reading goals.	1. Understand why reading is valuable.
4. Metacognitive Theory	1. Organising and assessing.	1. Identify key ideas, review while reading, and understand what you are reading.

2.2 Technology Tools that Support Reading Comprehension

The tools used to interact with digital text such as electronic hardware and software are what this study refers to as e-Reading technology. Computers, smartphones, tablets, and e-Readers are some of the tools used in e-Reading (Biancarosa & Griffiths, 2012). The e-Reading programme and all the hardware can be used to create a convenient and practical way for learners to practise reading in English. A study by Mangen, Bente and Bronnack (2013) explains that text displayed electronically might be more useful than text displayed on paper. However, a text which is found online might be more complex for the learners to access than a printed text. Almekhlafi (2020) studied the use of e-Reading books on EFL learners and concluded that e-book reading projects had a positive effect on perceptions of the learners' content learning, reading ability, and English learning.

The use of e-Reading devices is becoming more common in educational institutions as English reading lessons that include e-Reading technology can create better opportunities for learners that struggle with reading and help increase self-directed learning (Pastore, 2008). The features present in e-books can help promote processing and memory as well as increase the learner's motivation and attitude toward the reading lessons which employ reading technology (Ertem, 2010; Korat, 2010; Park & Kim, 2011; Chen, Chen, Chen & Wey, 2013;

Eicker-Nel & Matthee, 2014; Reid, 2016). Traditional reading lessons with drills are not as engaging as newer electronic reading lessons. With relevant and interesting text more widely available in online reading lessons, learners are more able and willing to expand their literacy and to engage more meaningfully in the language lessons (Ertem, 2010; Korat, 2010). Ciampa (2012) and Huang (2013) found that an e-Reading programme increases the convenience for the readers and can improve the learners' reading speed as well as their engagement. Recent studies have proved how reading speed, comprehension, and accuracy can all be improved with electronic reading devices and programmes. Studies by Mangen, Bente and Bronnack (2013) and Almekhlafi (2020) showed that digital text is more useful than printed text.

All these studies imply that teachers who implement electronic reading in their lessons will see improvements in learners' attitudes, engagement, and achievements. The 21st century is bringing newer and more affordable technology which can be used in the classroom. When technology is included in a language programme's curriculum, the learners should be more successful in reading. For these reasons this study examines the impact of portable e-reading programme use on EFL learners' perceived reading skills (comprehension) and attitudes (enjoyment), and identifies the learners' levels of satisfaction when using an e-Reading instructional design programme.

2.3 Technology for Reading Comprehension and Motivation

With all the new and affordable technology introduced each year, academic institutions have an opportunity to add reading technology to the classroom to promote learner literacy rates. Reading comprehension, motivation, and fluency have all been found to be affected by technology. Furthermore, Chen (2010) believes that using technology in the classroom can raise the learner's abilities. A wide variety of technology plays a part in most Thai learners' daily lives. Most learners already have electronic devices that can access the internet, so enabling schools to create assignments and activities that can be done in the learner's home or anywhere the learner might find convenient. Using electronic devices in a learning context excites, interests, and motivates learners (Ciampa, 2012; Fox, 2014; Szabo & Long, 2016; Ingram, 2020). However, Sackstein, Spark and Jenkins (2015) explain that teachers must be able to use the technology themselves if they want to implement electronic devices in their classroom. The success of a lesson using electronic device hinges on the ability of the teacher's knowledge of the technology and their creativity in using it in interesting and engaging ways.

Reading comprehension can be improved if electronic tools are correctly implemented in the curriculum. Different electronic applications can affect a learner's reading comprehension and background knowledge of the desired text (Crum, 2017). More access to computers and electronic devices can improve learners' reading and writing skills and their motivation toward the language being studied (Linik, 2012). Many teachers prefer using electronic devices in their classrooms (Keengwe, Onchwari & Agamba 2014). Therefore, many technology-based lessons and programmes have been created and studied to support reading in an academic environment. Technology can help replace a more teacher-centred learning environment and allow the learners to become more autonomous.

2.4 Self-directed Learning in Language Learning Development

Self-directed learning is a collaborative learning approach. The teacher must provide the learner with the tools and guidance necessary to learn and practise on their own although the learner should seldom have the impression that they are learning entirely on their own (Khodabandehlou et al., 2012). Many learners might have difficulty when reading, such as trying to find an answer, or not understanding what they are reading. Self-directed learning can help learners to recognise their learning techniques and learn how to set goals for personal development and to improve their academic achievements.

Many factors can affect a learner's language ability such as learning strategies, motivation, social anxiety, and learning beliefs (Gregersen & Horwitz, 2002; Osanai, 2000). In ESL and EFL classrooms, self-directed learning should be promoted to encourage learners to become life-long language learners. With regard to life-long language learning, the learner's interests and determination can be important indicators for future success and learning. Holec (1996) showed that language learning programmes need to encourage self-directed learning as much as possible. When learners can learn on their own, they are more likely to be successful language learners and users. In the following figure, a comprehensive model shows how motivation can lead to self-directed learning.

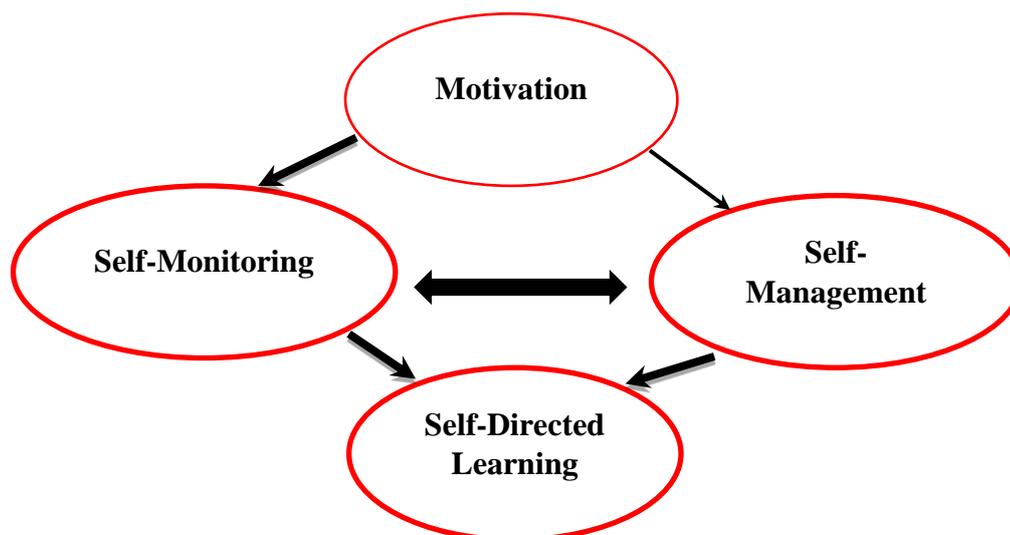


Figure 1: Self-Directed Learning toward a Comprehensive Model (Garrison, 1997).

3. Research Methodology

3.1 Investigative Techniques

The current study employed experimental research. The research design of this study is the plan, structure, and strategy of investigation used to find the solutions to the research questions. A system was created to study the potential of the e-Reading course. This system was split into two parts. The first part of this system was devoted to reading strategies. The second part introduced ten reading activities with practice assignments. The learners then responded to questionnaires that detailed their experiences and thoughts. Finally, the selected learners were interviewed to elicit more qualitative data on their experiences. The goal of the interviews was to support data from the questionnaires. A more thorough picture emerges from examining both the qualitative and quantitative

data. Figure 2 shows the set-up and steps implemented during the conduct of the study.

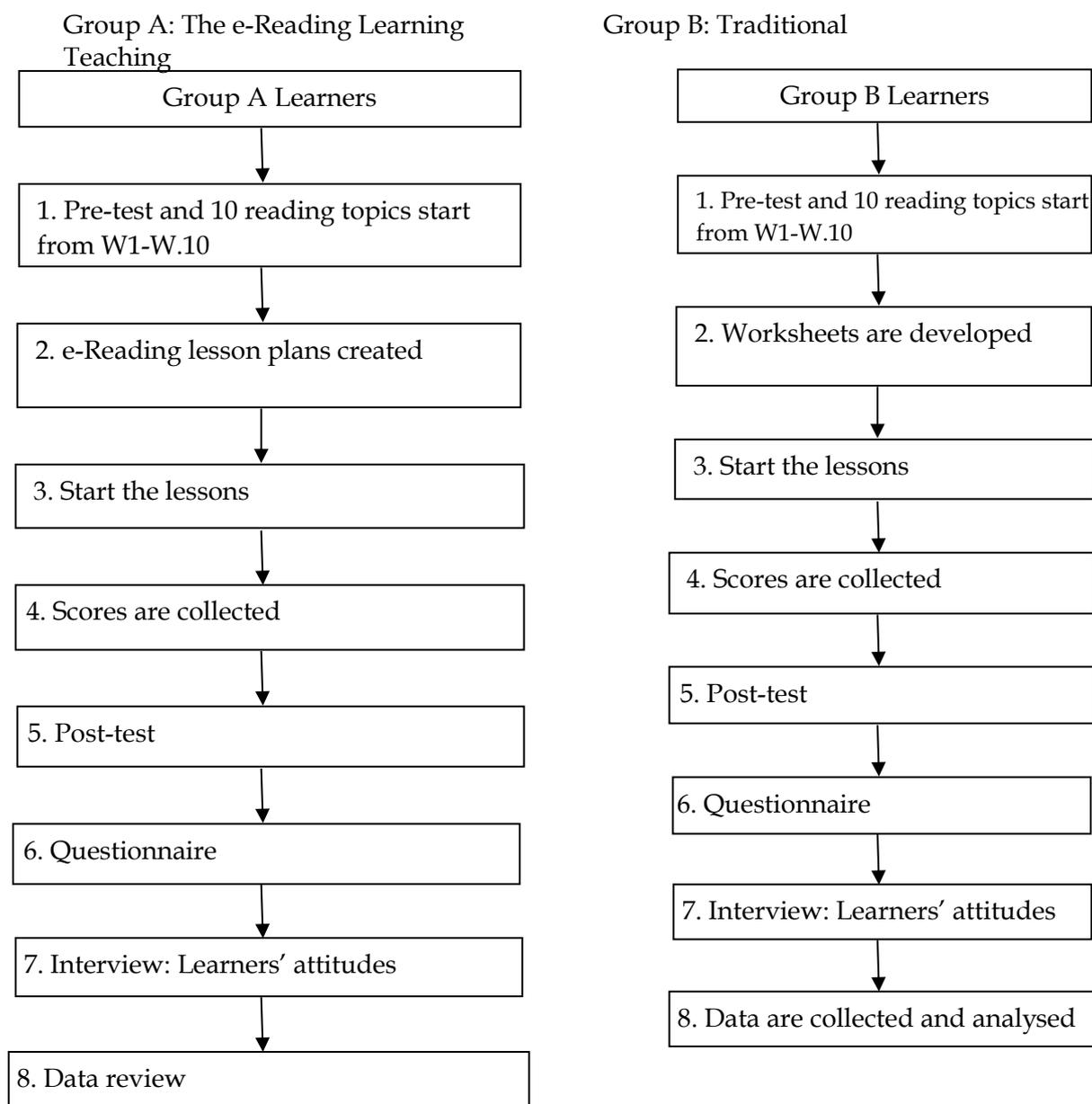


Figure 2: The steps of the experimental and control groups

3.2 Research Instruments

The researcher conducted the learning programme along the following lines:

3.2.1 Lesson Plans

Two types of lesson plans were created. Lesson plans for the e-Reading programme were created first, then the traditional teaching lesson plans. The lesson plans in this study covered 15 classes with a focus on reading comprehension strategies, ten reading assignments with practice activities, and a reading test. Next, the steps taken to create the lesson plans are explained.

3.2.2. Model for e-Reading Instructional Design Programme

The researcher divided the emerging e-Reading instructional design approach into two parts. Lessons on reading techniques were covered in the first section, while reading passages with exercises were covered in the second. Five experts reviewed the effectiveness of the e-Reading lessons once they were completed to check for material correctness, lesson design, and to make other suggestions for improvement. Finally, the e-Reading instructional design model was tested with forty students to establish the validity and accuracy of content and the efficacy of the lessons.

3.2.3 Learners' Perception Questionnaire

The researcher created a perception questionnaire to gauge how happy the students were with their education and these various teaching strategies. There were two sections to the questionnaire: demographic questions were asked in the first section to learn more about the students, and students were asked for their thoughts and reactions to the various teaching strategies in the second section. Each question was answered by the learners using a five-point Likert scale, with the options being 'strongly agree' to 'strongly disagree'. After completion, the questionnaire was given to the experts to review for correctness and suitability. Once the questionnaire had been piloted with the learners, the result of Item Objective Congruence Index by three experts showed a mean value at 0.93.

3.2.4 Interview Questions

Interviews were used as an additional way to consolidate the data. The basis of interviews is a set of prepared questions that allow the researcher to delve deeply into the subject and provide a wealth of information for review. The data collected from the interviews were used to further support or explain the data from the questionnaires. Experts were used to review and edit the interview questions. Ten questions were created and used in each interview.

3.2.5 The Pre- and Post-examinations

A reading section from the TOEFL test was used for the examinations. The test was designed to gauge the learner's reading ability and understanding of the content. The pre-examination was given to the learners before the lessons were taught, and the post-examination took place at the end of the learning programmes. The findings of both tests are compared and evaluated by using the t-test for independent samples to see whether this model enhanced the learners' reading ability or not.

3.3 Participants of the Study

The learners who took part in this research were all second-year English major students. Two groups were created with 30 learners in each group. A non-probability sampling method was used. The first group, Group A, was the experimental group which was exposed to the e-Reading programme. The second group (Group B) was taught using traditional teaching methods. Participants were chosen based on their weak performance in reading comprehension. All the learners took a reading proficiency test and completed a reading strategy

questionnaire before being selected and put into groups to ensure that their English proficiency levels matched or were in the same range.

3.4 Data Collection

3.4.1 Treatment

The learners were exposed to both teaching methods for 15 weeks. Each week the learners took part in one session, for a total of 15 sessions. All the sessions took place in the second semester of the January 2020 to May 2021 school year at Huachiew Chalermprakiet University (HCU) which permitted this study to be conducted on campus. Data collection was done during the learning sessions. The results of the study did not affect the learner's academic report card. Each group spent the following amount of learning time:

1. The e-Reading group (Group A) received 3 hours per week with a total of 45 hours using e-Reading electronic programmes.
2. The control group (Group B) also received 3 hours per week with a total of 45 hours using traditional textbooks and paper worksheets.

In the first week of the programme, all participants in both groups took the pre-test. Sections from the TOEFL test were used for both pre- and post-examination, with topics for the reading passages chosen based on the learners' preferences. When the students in Group A began their lessons, the ten reading topics were deployed using the e-Reading instructional design programme. The conventional teaching approach was used to teach lessons to Group B students. Each learner's scores were recorded once they had finished all the tasks in their programmes. All of the students took the post-test at the conclusion of their reading programme. It was explained to all the participants in each group that the scores from these programmes would not be included in their grades. The participants' perceptions of the benefits and drawbacks of learning English using these instructional approaches were then elicited using questionnaires. Learners were chosen at random to take part in interviews during the final lesson of each learning programme so they could share, express, or make comments about their experiences in the e-Reading programme and the traditional teaching programme.

3.5 Data Analysis

Both quantitative and qualitative analyses of the data were performed in this study. All data were analysed using the following steps.

1. A t-test was used to compute and convert the pre-test and post-test scores into mean values. Each group's mean and standard deviation were used to determine whether there was a statistically significant difference between the mean scores on the pre-and post-tests.
2. The scores of the effectiveness of the e-Reading instructional design programme were calculated with the efficiency of the exercises using the Efficiency Standard Criterion on an 80/80 basis (E1/E2).

3. The scores of the perception questionnaires were analysed in terms of the mean (\bar{X}) and standard deviation (S.D.).

4. Data from the interview questions were read, then read again, and finally coded. The raw data were coded into useful categories. The researcher rearranged the data into increasingly specific groups as the coding process went on. All the data were coded using the final list of codes.

4. Results

4.1 e-Reading programme approach and students' achievement in reading comprehension

The effect of e-Reading programme on students' achievement in reading comprehension were measured through pre- and post-tests.

The pre-test and post-test results for the experimental and control groups are given in Table 4.1.1. As shown in the table during the pre-test only 1 (3.3%) in the experimental group reach an excellent level of performance while 3 (10%) in the control group. The data presented in Table 2 show that the control group performed better than the experimental group in the pre-test since there are 2 (6.7%) in the experimental group in the 'poor performance' level. However, after exposing the two groups to the different methods of teaching, results in the post-test scores reveal that both groups reach excellent (100%) level performance. This implies that e-reading instructional material is of great help in improving the performance level of the experimental group, and the traditional approach did the same for the control group.

Table 2: Level of scores during pre-test scores and post-test of both groups

Evaluation Lists	Experimental Group				Control Group			
	Pre-test		Post-test		Pre-test		Post-test	
	N	%	N	%	N	%	N	%
Excellent	1	3.3	30	100.0	3	10.0	30	100.0
Good	16	53.3	-	-	20	66.7	-	-
Fair	11	36.7	-	-	7	23.3	-	-
Poor	2	6.7	-	-	-	-	-	-
Very poor	-	-	-	-	-	-	-	-
Total	30	100	30	100	30	100	30	100

To analyse in which particular exercises the experimental group improved their performance, each exercise was subjected to statistical analysis, as shown in Table 3.

The experimental group learners had an average score of “excellent” (40.80%), and the control group learners had an average score of “good” (39.83%). This difference was not statistically significant, but it cannot be denied that the experimental group performed better than the control group after they were exposed to e-Reading lessons. Analysis of the association between learning groups and the various levels of the pre-test and post-test scores make it clear that the learners in both groups (experimental and control) had higher post-test scores regardless of the teaching delivery method that they received. However, the experimental group and the control group had somewhat different mean scores for the 10 exercises, according to the average scores for all 10 exercises.

Covid-19 restrictions during the data collection affected the delivery of the teaching programmes. As a result, teaching and learning management was modified to an online format. Using traditional teaching methods in the control group’s classroom was not practical, so the control group’s data collection was adjusted to an online format. It was difficult to control or force learners to search for information from outside resources, so learners in the control group were able to search for knowledge and practise their reading skills using various types of technological media, which may explain the similarity of the control group’s scores to those of the experimental group. The average exercise scores of the experimental group were higher than the exercise average scores of the control group when each exercise is examined separately. This implies that the results of this study found that the e-Reading programme approach can assist learners in improving their achievements in reading comprehension.

Table 3: The scores of each exercise for both groups

Exercise	Experimental Group			Control Group		
	\bar{x}	SD.	Meaning	\bar{x}	SD.	Meaning
Exercise 1 (5 Points)	3.20	1.424	Fair	3.37	.556	Fair
Exercise 2 (5 Points)	4.30	.988	Excellent	2.37	1.245	Poor
Exercise 3 (5 Points)	4.53	.860	Excellent	4.43	1.006	Excellent
Exercise 4 (5 Points)	4.77	.679	Excellent	4.43	.728	Excellent
Exercise 5 (5 Points)	3.20	1.215	Fair	3.87	1.042	Good
Exercise 6 (5 Points)	3.07	1.760	Fair	4.43	1.073	Excellent
Exercise 7 (5 Points)	4.23	.858	Excellent	4.33	1.124	Excellent
Exercise 8 (5 Points)	4.50	.572	Excellent	4.00	.947	Good
Exercise 9 (5 Points)	4.70	.535	Excellent	3.97	.928	Good
Exercise 10 (5 Points)	4.30	.596	Excellent	4.63	.669	Excellent
Total (50 Points)	40.80	9.487	Excellent	39.83	9.318	Good

4.2 Effects of standard teaching approach and e-reading programme on students' pleasure and self-directed learning

The first segment described how students perceived the delivery method used to convey their instruction. Overall results in Table 4 show that the level of the learners' satisfaction in the experimental group with teaching and learning courses had an average of 3.97. Similarly, the control group had a total average of 3.41, which was also a "good" level. These results are evidence that both groups experienced the same satisfaction with the teaching methods they were exposed to.

Table 4: Learners' satisfaction with the two teaching delivery methods

Learners' Satisfaction	Experimental Group			Control Group		
	\bar{x}	SD.	Meaning	\bar{x}	SD.	Meaning
1. Learners are satisfied with the teaching methodology.	3.93	.365	Good	3.57	.568	Good
2. The teaching methodology is suitable for learning English reading.	4.17	.592	Good	3.43	.679	Good
3. Learners often learn with their lessons and practise being responsible.	4.10	.481	Good	3.57	.504	Good
4. Learners like to practise reading with their teaching method.	3.73	.583	Good	3.30	.702	Fair
5. Learners gain more academic knowledge with their teaching method.	3.90	.548	Good	3.57	.679	Good
6. The teaching methods affect the learner's study.	3.47	.681	Good	2.83	.986	Fair
7. Learners have no limit to study and can study any time and place.	4.20	.610	Good	3.47	.681	Good
8. It is convenient for learners to review the lesson outside the classroom using their teaching media.	4.13	.507	Good	3.57	.679	Good
9. Using this teaching media allows learners to meet their learning objectives.	3.90	.662	Good	3.23	.774	Fair

Learners' Satisfaction	Experimental Group			Control Group		
	\bar{x}	SD.	Meaning	\bar{x}	SD.	Meaning
10. Learners have the freedom to study from their teaching method.	4.20	.664	Good	3.60	.724	Good
Total	3.97	.569	Good	3.41	.698	Good

According to the overall results shown in Table 5, the level of the learners' self-directed learning in the experimental group towards teaching and learning had an average of 3.83, which was a "good" level. The control group had a total average of 3.42, which was also a "good" level. According to these findings, the level of self-directed learning toward the instruction in the learners in the experimental group was, by a difference of 0.05, marginally greater than the control group.

Table 5: Level of learners' self-directed learning in the two groups

Learners' Self-Directed Learning	Experimental Group			Control Group		
	\bar{x}	SD.	Meaning	\bar{x}	SD.	Meaning
1. The teaching methods create self-directed learning atmosphere.	3.83	.531	Good	3.43	.728	Good
2. Learners are happy and have fun in their learning.	3.60	.675	Good	3.30	.702	Fair
3. Learners enjoy learning with the teaching media.	3.60	.621	Good	3.37	.809	Fair
4. The teaching methods are suitable for learner-centred learning.	3.97	.615	Good	3.67	.711	Good
5. The teaching methods motivate learners to improve reading skills.	4.13	.507	Good	3.33	.994	Fair
Total	3.83	.590	Good	3.42	.789	Good

4.3 Effects of e-Reading programme on learners' reading comprehension

The researcher used the Efficiency Standard Criterion on the 80/80 basis (E1/E2) to assess the effectiveness of the programme. The results are presented in Table 6 where E1 is the average score of the participants who were able to complete the class exercises with a score of at least 80%. The average score (E2) is that of the individuals who were able to pass the tests with a score of at least 80%.

According to Table 6, the e-Reading programme was effective on the efficiency standard criterion at 81.6/82.3. The efficiency value of exercises (E1) was 81.6% (Mean = 40.8) whereas the efficiency value of the test (E2) was 82.3% (Mean = 16.46). Thus, the e-Reading programme proved efficient and allowed the learners to learn effectively on the efficiency standard criterion of 80/80.

Table 6: Effectiveness value of exercises and achievement test (n = 30)

Scores from exercises/ achievement test	Total Scores	\bar{X}	Percentage
Scores from exercises (E1)	50	40.8	81.6
Scores from the achievement test (E2)	20	16.46	82.3

5. Discussion

During the interviews, the students were asked about their teaching and learning experiences with the e-Reading software, and they reported that they had tailored learning opportunities, enhanced their English reading ability, and understood their reading processes. The e-Reading programme not only brought greater learning access to the classroom, but also enabled the instructor to adapt the lesson to each learner's learning style. The instructor could also customise lessons and homework to fit the learner's unique approaches and optimise their results. This helped turn traditionally dull subjects into interactive and fun activities.

e-Reading can help learners to take responsibility for their education. In the future, learners will be able to use e-Reading programmes to guide themselves through lessons, learn at their own pace, or identify areas of personal interest. The learners expressed their attitudes toward the e-Reading programme in terms of helping them to study outside the classroom after they had finished the class lesson. They also prepared for each lesson before the class met, which helped them to understand the content before the class discussions.

The experimental group learners' exercise scores were higher than those of the control group students. These results are in line with the study by Biancarosa and Griffiths (2012) who believe that electronic tools in the classroom can lead to higher learner motivation and achievements. Teerapaksiri, Watanabut and Sopa (2017) agree that using technology can help learners increase their language abilities. Their findings showed that the learners' communication post-test scores were, with a 0.05 difference, higher than their pre-test scores. The e-Reading programme was convenient for the learners to use in the classroom and at home, which is in line with findings by Ciampa (2012), Huang (2013) and Almekhlafi (2020). Reading programmes that use computers, phones, and other electronic devices proved to be more effective than traditional programmes, according to Ingram (2020). The findings show that technology is an excellent learning and teaching tool for reading. Nevertheless, some limitations of this study must be acknowledged; since the Covid-19 pandemic occurred during data collection, the teaching method was changed from a traditional teaching method to an online format.

According to the study's findings, students in both the experimental group and control group scored better on the post-test than they had on the pre-test.

However, when the students in the control group were questioned about their experiences with the standard instructional delivery technique, they expressed negative feelings towards the traditional teaching method. First, the learners explained that they had wanted to get more learning experiences from this course, that it had been hard for them to gain more learning experience. Second, they had no idea how to create their learning atmosphere. Finally, the learners wanted more time to study and practise. In their opinion, the traditional teaching approach may not be appropriate for learners who take a passive approach to learning, where the instructor is in charge of everything in the classroom.

Additionally, they suggested that undergraduate students study online rather than with chalk, discussion and paying attention to their professors' instructions. During the Covid-19 pandemic, the learners had to study via an online channel, so paper-based forms were not appropriate for them to study. The students offered their comments based on the improvement of the teaching strategy while concentrating on the advice from the traditional classroom. They advised the instructor to create an online course and use technology in educational instruction to hone their media-teaching skills. In conclusion, traditional learning methods allow the instructors to decide how they convey information to their learners, but online learning provides more flexibility for the learners, especially during the Covid-19 pandemic. Most learners provided suggestions in terms of applying technological devices to the classroom and designing an online course.

In response to the second research question, "What are the effects of the e-Reading programme compared to a traditional teaching method regarding the learner's satisfaction?" the outcomes of the perception surveys and interview questions revealed the impact of the traditional teaching technique and the e-Reading programme on learners' satisfaction and self-directed learning. The experimental group's level of student satisfaction with the teaching and learning of the courses was higher than that of the control group, confirming that the learners were satisfied with the e-Reading programme, which offered them learning benefits and reading comprehension practice. The findings of this study were similar to the findings of Vaish (2016) and Klauda and Guthrie (2015) who found that reading speeds, reading comprehension, and interest could all be improved with e-reading programmes. Szabo and Long (2016) also found that electronic books and e-reading programmes could be used to create positive feelings towards reading and improve the learner's achievements. These are similar to the results found in this study. Confirming the results of this research was the research carried out by Fox (2014) and Sackstein, Spark and Jenkins (2015), who found that e-Reading programmes were convenient and affordable for language learners.

Another study with similar results was that of Teerapaksiri, Watanabut, and Sopa (2017) which identified electronic books as effective at raising the satisfaction levels of learners. In their interviews, the students in the experimental group insisted that the e-Reading programme promoted their self-directed learning. The learners tended to find the idea of adopting technology-assisted self-directed learning in language classrooms to be difficult. New methods and technologies that fit learners' lifestyles and those things that attracted and motivated them to study independently were closely tied to innovations in teaching and learning. In

this study, the learners were satisfied with the e-Reading programme because it promoted self-directed learning, and they had a great chance to study, think, and share knowledge with their peers. The learners also claimed that the e-Reading programme helped them and their parents to save on textbook costs. During the Covid-19 crisis, any financial help towards learning and living was welcomed.

In the interview results, the learners expressed satisfaction in terms of independence for learning, reduction of pressure, suitable and useful learning media, and enjoyable learning. The learners claimed that the e-Reading programme helped them to reduce stress and pressure during their learning. They felt relaxed and spent more time studying and practising their lessons. Both inside and outside of the classroom, they felt free to study. Furthermore, the learners could share the learning experience with their peers. Therefore, in general, online reading programmes like the e-Reading programmes instruct learners in key literacy areas within a one-on-one learning environment with instruction being inherently motivational and fun. The learners who participated in the e-Reading programme achieved significantly higher learning outcomes over those in the traditional classrooms and were equally as satisfied with the learning environment.

Responses to Research Question 3, "How does the e-Reading programme improve the learner's reading comprehension?" showed the efficiency standard criterion on an 80/80 basis (E1/ E2) to find the effectiveness of the e-Reading programme was discussed as follows: the e-Reading programme was effective on the efficiency standard criterion at 81.6/82.3; it was efficient and allowed the learners to learn effectively, findings which were congruent with the study by Kongvimon (2016) who had looked into the production of instructional material for elementary-level instructors using the Photoshop application to create electronic books (e-Books). The findings found that the developed electronic book (e-Book) with the Photoshop Programme had an efficiency of 91.17/90.00 which met the set 90/90 criteria. In similar research, a study by Singha-o-pas, Nuchmee and InThanin (2016) proved that an electronic book on Information Technology for education for undergraduate learners at Thaksin University showed an effectiveness of 88.00/89.11, which is in line with the set criteria. Another study by Teerapaksiri, Watanabut and Sopa (2017) showed that the index of the electronic book efficiency was 89.60/87.24 which was higher than the assigned criteria efficiency.

In summary, applying technological devices to teaching and learning might be a good way for learners to study for several reasons: the approach creates new paths for learners to search out knowledge and learn by themselves. The learners also mentioned that studying with the e-Reading programme saved them the cost of textbooks. Furthermore, technology supports collaborative learning and aids in the individualization and personalisation of education as well as reducing the burden of learning for the learners and teaching for teachers. It makes education more interesting and creates a more fulfilling learning atmosphere. The learners in the experimental group expressed positive attitudes towards the e-Reading programme which provided them a chance to study, to practise more on their own, and to improve their reading comprehension skills.

6. Conclusion and Recommendation

The e-Reading programme is a powerful tool for instructors in capturing the attention of today's learners. However, the literature indicates that not many instructors are utilising e-Reading programmes in the classroom, suggesting the need for more research to assess their value. It is recommended that there should be more research and development of e-Reading media formats in other subjects as well. These could be in the form of online media which can be linked to other content resources on websites for dissemination of lessons.

The learning media should have a modern format that meets the needs of the learners. Current educational technology is considered important in teaching and learning and provides an opportunity for learners to learn at any time. Technology is an effective tool and very much part of language learning throughout the world at all different levels. Learners must use technology as a significant part of their learning process and in their careers. Additionally, when used properly and successfully, technology may be a useful approach to help learners create authentic and entertaining environments and enable them to actively interact while learning a language outside of the classroom. Modern technological learning systems, like the e-Reading software used in this study, can give students more engaging material and encourage better language accomplishment. These applications can also help educators interact with younger generations and provide pedagogical tools. Consequently, language instructors worldwide should try to incorporate modern technology into their curricula to promote technical skills and develop their learner's language achievements.

7. References

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