

แบบจำลองการเรียนการสอนโดยใช้สมาร์ทโฟน
ในวิชาการอ่านภาษาอังกฤษ



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**A SMARTPHONE-ASSISTED INSTRUCTIONAL
MODEL IN ENGLISH READING**



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มหาวิทยาลัยราชภัฏร้อยเอ็ด (2) ประเมินประสิทธิภาพบทเรียนการอ่านภาษาอังกฤษ ที่ใช้
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การเรียนการสอน โดยใช้สมาร์ทโฟนในวิชาการอ่านภาษาอังกฤษ สำหรับนักศึกษาสาขาวิชาการ
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ทโฟนในวิชาการอ่านภาษาอังกฤษ ได้ถูกนำมาใช้เพื่อประเมินแบบจำลองการเรียนการสอน ขั้นตอน
ที่ 2 บทเรียนการอ่านภาษาอังกฤษที่ใช้แบบจำลองการเรียนการสอน โดยใช้สมาร์ทโฟน ได้ผ่านการ
ทดสอบประสิทธิภาพเบื้องต้น (Try Out) ประกอบด้วย 1) การทดสอบประสิทธิภาพ แบบเดี่ยว 2)
การทดสอบประสิทธิภาพแบบกลุ่ม และ 3) การทดสอบประสิทธิภาพภาคสนาม และทดสอบ
ประสิทธิภาพสอนจริง (Trial Run) ขั้นตอนที่ 3 ใช้แบบทดสอบก่อนและหลังเรียนเพื่อศึกษาผลการ
ใช้บทเรียนการอ่านภาษาอังกฤษที่ใช้แบบจำลองการเรียนการสอน โดยใช้สมาร์ท โฟนที่มีต่อ
ผลสัมฤทธิ์ทางการอ่านของกลุ่มตัวอย่าง และ ขั้นตอนที่ 4 ใช้แบบสอบถามและแบบสัมภาษณ์ถึง
โครงสร้างเพื่อศึกษาความคิดเห็นของกลุ่มตัวอย่างที่มีต่อบทเรียนการอ่านภาษาอังกฤษที่ใช้
แบบจำลองการเรียนการสอนโดยใช้สมาร์ทโฟน

ผลการศึกษาพบว่า แบบจำลองการเรียนการสอน โดยใช้สมาร์ทโฟนเพื่อช่วยการอ่าน
ภาษาอังกฤษสำหรับนักศึกษาสาขาวิชาการสอนภาษาอังกฤษได้ออกแบบและพัฒนาเป็น 8 ขั้นตอน

หลักและ 9 ขั้นตอนรอง และได้รับการประเมินจากผู้เชี่ยวชาญให้อยู่ในระดับ "มีความเหมาะสมมาก" ($\bar{X}=4.54$) บทเรียนการอ่านภาษาอังกฤษที่พัฒนาตามแบบจำลองการเรียนการสอน โดยใช้สมาร์ตโฟนที่พัฒนาขึ้น มีค่าประสิทธิภาพอยู่ที่ 81.29/80.89, 81.81/80.67, 81.97/80.90, 82.00/81.67, and 81.70/80.89 ตามลำดับในขั้นทดสอบประสิทธิภาพสอนจริง ซึ่งเป็นไปตามเกณฑ์มาตรฐาน 80/80 บทเรียนการอ่านภาษาอังกฤษที่ใช้แบบจำลองการเรียนการสอนโดยใช้สมาร์ตโฟนมีประสิทธิภาพ และเหมาะสมในการใช้สอนการอ่านภาษาอังกฤษ ผลสัมฤทธิ์ทางการอ่านของนักศึกษา ก่อนเรียนและหลังเรียน โดยใช้บทเรียนการอ่านภาษาอังกฤษที่ใช้แบบจำลองการเรียนการสอน โดยใช้สมาร์ตโฟนที่พัฒนาขึ้น พบว่ามีความแตกต่างกันอย่างมีนัยสำคัญทางสถิติระหว่างคะแนนแบบทดสอบก่อนเรียนและหลังเรียนที่ระดับ 0.05 กล่าวได้ว่า บทเรียนการอ่านภาษาอังกฤษที่ใช้แบบจำลองการเรียนการสอนโดยใช้สมาร์ตโฟนที่พัฒนาขึ้นช่วยให้นักศึกษามีผลการเรียนดีขึ้น ผลจากแบบสอบถามและการสัมภาษณ์กลุ่มตัวอย่าง แสดงให้เห็นว่า กลุ่มตัวอย่างมีทัศนคติที่ดี และรู้สึกสนุกในการเรียน โดยใช้บทเรียนการอ่านภาษาอังกฤษที่ใช้แบบจำลองการเรียนการสอน โดยใช้สมาร์ตโฟนที่พัฒนาขึ้นและเสนอแนะให้มีการพัฒนาบทเรียนที่ใช้การเรียนการสอน โดยใช้สมาร์ตโฟนในรายวิชาอื่นเช่น การออกเสียง การฟัง การพูด เป็นต้น



สาขาวิชาภาษาต่างประเทศ
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ลายมือชื่อนักศึกษา ทพ. ทพ. ๖๖๖
ลายมือชื่ออาจารย์ที่ปรึกษา ศ.ดร. ๖๖๖

POONSUK JANTASIN : A SMARTPHONE-ASSISTED INSTRUCTIONAL
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INSTRUCTIONAL SYSTEMS DESIGN, INSTRUCTIONAL MODEL, MOBILE
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This study aimed to (1) develop a smartphone-assisted instructional model in English Reading (SAI Model) for English major students at RERU; (2) evaluate the efficiency of smartphone-assisted English reading lessons based on the 80/80 standard; (3) examine whether or not there are significant differences in students' reading achievements before and after using the SAI Lessons, and (4) and investigate the students' opinions toward the SAI Lessons.

There were two sample groups involved in the study. (1) Three experts in the Instructional Systems Design and English Language Teaching fields were asked to evaluate the SAI Model. (2) Sixty-nine second year teacher students from the Educational College at Roi Et Rajabhat University were selected as the samples in this study. Based on the research objectives, the study was divided into four phases with the following research instruments. In the first phase, an efficiency evaluation form for the SAI Model was used to evaluate the model. In the second phase, the SAI Lessons were tested throughout the three steps of the try-out process: individual testing, small group testing, and field-testing and then in the trial run (experiment). In the third phase, a pre-test and post-test were employed to investigate the effects of the SAI Lessons on the sample students' reading achievement. In the last phase,

a questionnaire and semi-structured interviews were conducted to elicit the sample students' opinions toward the SAI Lessons.

It was found that the SAI Model, designed and developed in eight major steps and nine sub-steps, was rated by the experts arriving at a mean score of 4.54 (SD=0.000). This indicated that the SAI Model was very appropriate for English reading instruction. The efficiency of the learning process and product (E_1/E_2) of the SAI Lessons (five lessons) were 81.29/80.89, 81.81/80.67, 81.97/80.90, 82.00/81.67, and 81.70/80.89 respectively at the trial-run stage. This demonstrated that the efficiency of the process and product of all SAI Lessons met the standard criterion of 80/80 (E_1/E_2) and was thus proven efficient. The results of the students' English reading achievement before and after using the SAI Lessons showed a significant difference between the pre-test and post-test scores of the experimental group at the level of 0.05 ($P=0.00$, $P \leq 0.05$). It indicated that students who learned English reading lessons via SAI Lessons demonstrated progress in English learning. The findings from both the questionnaire and the semi-structured interviews revealed that the sample students had positive opinions toward the SAI Lessons and enjoyed learning English reading via these lessons and suggested that there should be SAI Lessons for other subjects such as pronunciation, speaking and listening etc.

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LIST OF ABBREVIATIONS

ADDIE	Analyze, Design, Develop, Implement, and Evaluation
CALL	Computer-Assisted Language Learning
CMS	Course Management Services
EFL	English as a Foreign Language
ESL	English as a Second Language
ID	Instructional Design
IOC	The Index of Item Objective Congruence
ISD	Instructional System Design
MALL	Mobile-Assisted Language Learning
OTIL	Online Task-Based Interactive Listening
RERU	Rot Et Rajahbat University
SAI	Smartphone-Assisted Instruction
SREO	Suppasetsee's Remedial Online Plan
TELL	Technology-Enhance Language Learning

CHAPTER 1

INTRODUCTION

This study aims to design, develop, implement and evaluate a smartphone-assisted instructional model in English reading for English major students at Roi Et Rajabhat University. This chapter presents the background of the study, the statement of the problems, rationale of the study, purposes of the study, research questions, research hypothesis, significance of the study, the definitions of the key terms, and the conceptual framework of the research respectively.

1.1 Background of the Study

Nowadays, the English language is considered as one of the important subjects in the Thai educational system. It is a compulsory subject for Thai students at all educational levels: primary, secondary, and university level. The purpose of teaching English is to improve learners' four skills of speaking, listening, writing, and reading. However, among the four skills of the English language, reading is considered as one of the most important skills for English learners (Komiyama, 2009). The importance of reading skills in English has long been perceived as being crucial in the context of a globalized world (Rahman, H., 2007). Students need good reading comprehension skills for acquiring knowledge and learning new information when they further their education at higher educational levels. This means that a student who has good reading skills is more likely to do well in school and pass exams than a student who is poor in

reading skills. Thus being able to read English is an important skill for students to study in order to get useful information from English textbooks, articles, and the Internet which is mostly available in English.

Good reading skills obviously affect a student's success in school when academic progress depends on understanding, analyzing, and applying the information gathered through reading. But it goes much further than that because reading skills are not only important for educational achievement but they have also been linked to professional achievement (Liu, Chen & Chang, 2010). In finding a good job, good reading skills are imperative since many well-paid jobs require reading in English as a part of the job. This is consistent with Yusuf (2011) who agrees that English reading skills are one of the imperative skills which play an important role for educational and professional achievement. However, English seems to be a recurrent problem for Thai students at all educational levels and most students reading abilities are not good enough to understand what they read (Songyut, 2011; Wichadee, 2011).

There have been a number of studies focusing on reading in Thailand over the past three decades which suggest that the reading ability in English of Thai students is below the required standard. A study conducted by Laoarun (2013) revealed that many students of Nakhonpathom Rajabhat University lack confidence and motivation in reading English for many reasons. For example, students think that English is difficult and hard to understand and that English is not important in daily life. Students who lack a knowledge of vocabulary and grammar will have a low reading ability. Also, Polmanee and Sinsuwan (2001) conducted a study to investigate the needs and problems in English usage of 60 graduate students from three fields: teaching Thai, social sciences and teaching English at Chiang Mai University. The results of the study

revealed that students in all three fields needed improvement in all four skills for English usage; however reading skill was mentioned as the main problem for these students. Additionally, Wongsothorn (2003) studied the levels of English language skills of 697 Thai students at Matayom Suksa Three, 525 Matayom Suksa Six students in schools of small, medium, large and extra-large sizes in Bangkok under the jurisdiction of the Department of Curriculum and Instruction of the Ministry of Education and 493 tertiary students who were first, second and third year Chulalongkorn University students. Three sets of standardized amplified objective tests were used to collect the data and it was discovered that university students' reading skills were fairly poor and needed improvement. Another study by Chawwang (2008) aimed to investigate the English reading problems of 840 Thai 12th grade students in Nakhon Ratchasima. In this study, the participants were asked to take a reading test to assess their English reading ability. It was found that their reading ability in English was at a low level. From the findings of the studies reviewed above, it can be concluded that over the past three decades the proficiency level of English reading among Thai students is generally unsatisfactory and needs to be improved.

Accordingly, language scholars and instructors are at present exploring teaching and learning methods which can effectively improve students' English reading ability. Some research studies have been carried out to develop new reading instructional models to enhance reading ability and create new materials to increase students' motivation. For instance, Wichadee (2011) developed a self-directed learning instructional model to enhance English reading ability and self-directed learning of undergraduate students at Bangkok University. Also, Tanyeli (2009) created a web-assisted reading instruction to facilitate Law students in an Eastern Mediterranean

University to learn to read better with higher motivation and confidence in order to enhance students' reading ability and to increase their motivation in learning reading.

To resolve this problem, technology which has a high potential for teaching and learning and is a useful tool was integrated in the teaching of reading approach to assist in the learning. Based on a large number of research studies such as Abdous et al (2009), Alemi et al (2012), Azabdaftari and Mozaheb (2011), Begum (2011) and Lee et al (2014), it was revealed that technology could be effective when used in the teaching of the English language and that it has a great potential as a language instructional tool that enhances students' language skills in different aspects. With technology, employing and combining graphics, video, and audio can address varied styles of learning in a more effective way and be a great support to English language learners. By using multimedia technology to incorporate pictures or videos into the lesson, the teacher can provide students with the necessary contextual cues to understand new concepts. Visual information can provide the necessary bridge or scaffolding between everyday language and more difficult academic language (Cruz, 2004). However, in terms of technology, smartphones seem to be most popular among young people. They are nowadays becoming more and more extensively used because of their user-friendly design and convenient multi-function. With respect to language learning, smartphones provide a personal and learner-centered learning opportunity that allows learners to access a large amount of language learning materials, information resources and language activity easily and quickly at anytime and anywhere.

Moreover, the instructional design which is a systematic procedure for instructional development was applied to construct a well-organized instructional model. According to Isman (2011), instructional design is a serious responsibility in

the design of teaching and learning activities because in the instructional design process, there are a lot of factors which are closely related to each other and affect each other that should be taken into consideration. This means that if the first step is inappropriate and incomplete, then the next and the following steps will contain some problems. Therefore, it is very important to order the steps in a way that will be logical and in relation with other steps. Due to the reason that the logical steps play an important role on the outcomes of instruction, they should be seriously taken into consideration and designers should create a model that will help to keep a balance between them. An instructional design model gives methods and implications in the design instruction. During the instructional design process, instructional design models help educators to visualize the problem. If the instructional design model solves the problems in learning-teaching, it means that the instruction should be effective.

1.2 Statement of the Problems

According to the results of some research studies regarding proficiency levels in English language among students at Rajabhat Universities in Northeastern Thailand, it has been shown that there are some problems regarding English language learning among Rajabhat University students in Northeastern Thailand, especially in English reading ability. Based on the research study conducted by Sroinam (2003), it is revealed that English teachers trainees at Udon Thani Rajabhat University who have to study several English courses in order to be English teachers still have problems after graduating in every macro-skill, especially reading. This problem is shown by the English proficiency tests scores in reading English texts of 145 students majoring in English programs in the year 2003. It was demonstrated that the mean scores for the

mid-term test of Reading for text interpretation was 53.22% and for the final test was 69.43% which does not reach the required criteria of 70% for English major students at Udon Thani Rajabhat University. Additionally, from the study conducted by Puangmaliwan (2005) it is pointed out that the results from scores obtained from the reading comprehension test at the end of an English for Study Skills course which focuses on the improvement of English reading ability demonstrated that 50% of the total number of students in the second and third semester of 2003 at Nakhon Ratchasima Rajabhat University achieved no more than 28.95 and 29.60 out of a possible 60 marks indicating a poor level of reading ability (Puangmaliwan, 2005).

Similarly, students at Roi Et Rajabhat University (RERU) are encountering the same problems. The problems of studying reading English at Roi Et Rajabhat University can be divided into two parts. The first part shows the proficiency level in reading English of students at Roi Et Rajabhat University (RERU). This problem is strongly supported by a research study conducted by Pantawee (2008). Three- round questionnaires using the Delphi technique and oral interviews were used for the exploration of the problems in teaching EFL reading for twenty-five pre-service teachers. The findings of the study revealed that pre-service teachers majoring in teaching English at RERU had problems with vocabulary, grammar and reading techniques.

Another problem of studying how to read English at Roi Et Rajabhat University is that the instructional method and materials used in teaching at RERU still use the traditional styles of teaching and are inadequate. After the researcher had conducted an interview with seven teachers who are now teaching Reading 1 and Reading 2 courses at Roi Et Rajabhat University, the data obtained revealed that all teachers are

using traditional methods of instruction which are largely teacher-centered in class instruction and demotivating and without interest to the students. This is supported by a study conducted by Chomchaiya and Dunworth (2008). This study sought to obtain specific information from Thai undergraduate students about their experiences when undertaking formal reading classes in a higher education institution. Group techniques were used to elicit information about students' experience of the reading classroom. The findings revealed that while students appeared to be motivated to develop their English reading, they experienced barriers to learning. One of these barriers is a classroom environment which was not optimally conducive to learning. It was stated that in the reading classes teachers appeared to manage their class and hold their students' interest all the time which caused students to become drowsy and distracted from the class.

Consistent with the researcher's ten years of experience in teaching an English reading course at Roi Et Rajabhat University, it was found that the teaching of reading English is always taught in a teacher-centered approach, in which teachers will translate whatever students read from English into Thai and 80% to 90% of classroom time Thai is spoken in the classroom. This make students become passive learners because they are not responsible for their own learning. Based on this approach, students will be assigned to read stories from the textbooks, and then they are asked to answer the questions by the teacher or by writing the answers to tests. Most of the questions asked by the teachers or in the tests are aimed at asking for facts or information in the text that the students have read. By using this approach, a critical thinking skill which is an imperative skill of reading is not developed at all. According to Khalid & Azeem (2012), a teacher-centered approach ignores the students and consequently the level of

interest of the students. This leads to a lack of motivation in learning and finally leads to a low proficiency level in English reading.

Moreover, it is also found that the teaching materials used to teach reading are not stimulating. Textbooks, worksheets, and the whiteboard are always used in the reading classroom. These also lead to less motivation in learning. As we know, strong motivation is one of the factors which influences learners learning a foreign language well (Motallebzadeh, 2011). It has been said that motivation increases the amount of effort and energy that learners expend in activities directly related to their needs and goals. It also increases students' time on tasks, an important factor affecting their learning and achievement and it often leads to improved performance (Ormrod, 2010). For this reason, it is predictable that students who are most motivated to learn and excel in classroom activities tend to be the highest achievers. On the other hand, students who are less motivated to learn and excel in classroom activities tend to be low achievers. Therefore, teaching materials which help increase level of confidence, interest in taking part in reading activities and willingness to make more effort to understand texts are truly mandatory in reading classes.

Due to the problems mentioned previously, we believe that integrating technology into a well-organized instructional model will increase students' levels of interest and help them have a better understanding of what they are reading. As Instructional Systems Design (ISD) is the process of designing and developing instructional courses or materials, applying this system approach to instruction should lead to greater efficiency and effectiveness in learners' acquiring knowledge and skills. Moreover, as mobile technology is portable it can promote learning both inside and outside the classroom. Use of such devices can also contribute to more attractive teaching

and learning processes, thus catering, with their applications, to different learning styles (Buck et al., 2013). For that reason, mobile phones have the potential to make learning more accessible and they can be used to support different pedagogical tasks.

Therefore, the purpose of the current study is to design and develop an effective instructional model for teaching English major students at Roi Et Rajabhat University how to read English. It is intended to improve the students' English reading ability and increase students' interest in studying on a reading course. The instructional model was constructed based on mobile learning perspectives with the modern ideas of 'anywhere, anytime' learning and a wide variety of language inputs, activities, and materials were provided to enhance and arouse students' interest in learning.

1.3 Rationale of the Study

Technology has significantly evolved over the years to become one of the most useful tools in today's educational systems. The emergence of technology has changed the way of teaching and learning. It started before the 1970's when record players, cassettes, and overhead projectors were adopted in classroom. Later, during the 1970s desktop computers, also called personal computers (PC's), appeared as an effective tool in the teaching and learning process. In the 1990's with the appearance of the internet and the World Wide Web (www), methods in learning and teaching changed drastically. Recently, the use of mobile handheld devices, for example, smartphones, tablets, small laptops, e-books, and iTouch has also been adopted over the last few years for mobile learning in the classroom.

Nowadays, the sale and use of mobile handheld devices has risen very quickly to a high level throughout the world. They are widely spread among the world

population, especially amongst the younger generation. Among the handheld devices most owned and used among students are the mobile phone (P.MTEGA et.al., 2012). At the start of 2001, there were 4.2 billion mobile phones in use worldwide (3.7 billion phone owners = 55% world population). This is nearly four times the number of personal computers (Gutierrez-Colon, 2013). The popularity of mobile phones is due to their rapid spread on the market, their low prices, their ubiquity and the simplicity of their use. Therefore, it can be predicted that the number of students who own a mobile phones will rise year by year.

Undoubtedly, students at the present time are coming to the classroom with a variety of handheld devices, mostly mobile phones, for different purposes. They always carry their handheld devices wherever they go and turn them on almost all the time. These handheld devices are seen by many people as a disruptive technology because they have been identified as a technology which holds the great potential to transform teaching and learning within the classroom. One way of dealing with these potentially distracting elements is to forbid them altogether or find ways to put mobile services of learning to good use, for example, in areas where students are in dire need of assistance (Simon & Fell, 2012). In education, mobile phones have led to the evolution of a new pedagogical paradigm (Muyinda et al, 2007). They are now used in support of teaching and learning. Mobile phones have the potential of improving teaching and learning processes as these tools can provide suitable learning platforms because there are many applications that can help students not only with learning content more conveniently, but also with interacting with others collaboratively at anytime and anywhere. The applications for learning, such as Dictionary App, which is designed as a dictionary for users to look up the meanings of words or as a thesaurus, or TwoMinute App which is

a practical application for those who want to improve their listening skills, or English Reading App for those who want to practice their reading skills.

Nevertheless, among these mobile technologies, smartphones seems to be the most popular among young people and they are probably the most widely owned handheld devices (Trinder, 2005). They are becoming an essential part of students' lives. Due to the increasingly powerful features and services in smartphones, students can obtain access to content at any time or in any place. Smartphones are now becoming an appropriate tool to be used in educational contexts. They also offer the greatest potential for integration of technological hardware into language learning (Barrs, 2011). Thus, these smartphones can potentially offer learners a whole host of multi-sensory learning opportunities and a chance to become more independent in their learning, although, they are still being under-used as learning tools (Peachey, 2010). Currently, there are efforts to incorporate smartphone technologies and capabilities into the teaching and learning on language courses and into students' lives both inside and outside the classroom.

Some research studies have been conducted to examine the effectiveness of smartphone technology in English learning. Lee, Hsu, and Shih (2014) conducted a study to investigate the effects of implementing a ubiquitous multimedia message transmitting platform (C&U-Message) through smartphones for the learning of English grammar for college students. Twenty-six students participated in a 6-week experiment which used a client-side application system C&U-Message (C&U-Msg) for English learning through Android-based mobile phones. The results of the pre- and post-tests and a survey questionnaire about learning satisfaction were analyzed immediately after the experiment. The findings of this study reveal that the C&U-Message system can be

effectively utilized for learning English grammar because via the C&U-Message system students gained more opportunities to practice and get familiar with grammar points taught in class and with greater flexibility in the use of time and less restriction in locations. Another study, which was carried out by Cedergren and Hellman (2012), aims to examine how smartphone applications for vocabulary learning can be used, and what effects it can have on students' learning processes. To conduct some preliminary research, a prototype, FlashWords, was developed and tested on a group of students. The students' activities were logged in a database and followed up by a focus group. The results from the study reveal that students are very positive towards the idea of practicing vocabulary on their smartphones. Moreover, the students practiced more and began earlier when using the application compared to traditional methods.

From the previous studies mentioned above, it can be seen that smartphone devices have been mostly used to ease the learning of sub-skills in a second language, namely, grammar, vocabulary and pronunciation. However, there are a few research studies focusing on using smartphones for the teaching of language skills in Thailand, such as speaking, listening, reading and writing. To create an appropriate model for the instruction of learners, an instructional Systems Design (ISD) was used, which is a necessary process for developing an instruction model. The ISD approach recognizes an association between learners, instructors, and materials. By studying ISD, the instructional developers can understand how learners, instructors, and materials are related and that they are dependent on one another. Moreover they can use the ISD model as guidance for developing instruction step-by-step.

To ensure that a well-structured instructional model for teaching and learning is incorporated in a smartphone device that will be effective, careful preparation is

required. Nowadays, some instructional models are created to serve learners' needs and convey the essential knowledge and skills that people require to perform well. For example, The OTIL model which was developed by Tian (2012) to enhance the possibility of listening, learning, and encouraging the engagement of learners and also the BOLA model which was constructed by Dennis (2011) to enhance students' English language proficiency. However, an instructional model for the teaching of reading English with the use of a of smartphone devices has not yet been conducted, particularly in the context of Rajabhat University.

As the reasons stated previously, this study designed and developed the Smartphone-Assisted Instructional Model (SAI Model) in the teaching of English reading for English major students at Roi Et Rajabhat University in order to promote their reading proficiency. The SAI Model was designed according to the notion of learning at any time and anywhere, convenience, immediate feedback, enjoyment and language skills improvement. The capability of a smartphone to access, manipulate, produce, store or share content as soon as it is created, wherever it is created, provides the rationale for why this study needs to explore the effects of smartphone technology on the educational content. This versatility promises to change the nature of educational content and communication and consequently the nature of learning.

1.4 Purposes of the Study

This study had the four following purposes:

1. To develop a Smartphone-Assisted Instructional Model (SAI Model) in how to read English for English major students at RERU.

2. To evaluate the efficiency of Smartphone-Assisted Instructional Lessons (SAI Lessons) in reading English based on 80/80 standard.
3. To examine whether or not there are significant differences in students' reading achievements before and after using the SAI Lessons.
4. To investigate the students' opinions toward the SAI Lessons in Reading English.

1.5 Research Questions

To accomplish the research purposes, four research questions have been formulated:

1. What are the components and logical steps of developing a Smartphone-Assisted Instructional Model (SAI Model) in reading English as a foreign language?
2. Does the efficiency of the SAI Lessons meet the 80/80 Standard? If yes, to what extent?
3. What are the differences in students' reading achievements before and after using the SAI Lessons?
4. What are the students' opinions toward learning the SAI Lessons in reading English as a foreign language?

1.6 Research Hypotheses

1. A Smartphone-Assisted Instructional Model (SAI Model) in reading English developed by the researcher is rated as "very appropriate" by experts in the Instructional Systems Design and English Language Teaching Field.

2. The efficiency of the SAI Lessons in the teaching of reading English meets the 80/80 standard.
3. Students' language achievement after using the SAI Lessons in reading English shows a significant difference according to their proficiency in the pre-test and post-test scores designed by the researcher.
4. The students are satisfied with learning the SAI Lessons in how to read English as a foreign language.

1.7 Significance of the Study

To deal with the problems of students in reading English at Roi Et Rajabhat University (RERU), this study aims to develop a smartphone-assisted instructional model in reading English in order to enhance the ability of English major students who enrolled on the English Reading I course at Roi Et Rajabhat University in the second semester of the academic year 2014 and also to investigate students' opinions toward the SAI Lessons.

The significance of the study can be explained with regard to six aspects. First, the smartphone-assisted instructional model in reading English in the present study will be used as an authoritative example or a guide to other instructors and instructional designers who are interested in the further development of the instructional model into which the smartphone technology is integrated.

Second, the lessons contributed in the present study can establish a ubiquitous learning environment in which students can be motivated to learn whenever and wherever they want both outside and inside the reading classroom. It also provides more opportunities for learning to read.

Third, the smartphone-assisted instructional model in reading English in the present study can help promote reading activities in settings outside the classroom. Learning activities can take place across time and space and they do not need to be limited to specific formal settings any more.

Fourth, as far as the setting of the present study is concerned research work regarding the integration of smartphone technology into reading instruction is still limited to the best of the researcher's knowledge, so the development of a smartphone-assisted instruction model in reading English has been conducted. As a result, the present study can be considered as the first research work of its kind to be conducted in Thailand. It will also help expand existing knowledge and research work in this area and widen views in conducting research studies in other related fields.

Fifth, it is expected that the smartphone-assisted instructional model in reading English will be effective in the learning and teaching of reading English, with the possible result that curriculum development or syllabus design might shift more towards the integration of technology into reading instruction.

Finally, if the teaching and learning of reading English shifts towards the integration of technology into reading instruction, the findings of this study will send a message to reading instructors that they should not have only have knowledge of the language, but they should also have knowledge of the necessary technology in order to gain more understanding of the new paradigm of reading instruction and to adopt it effectively.

1.8 The Definitions of Key Terms

1) **A Smartphone-Assisted Instructional Model in English Reading (SAI Model):** A smartphone-assisted instructional model in reading English is developed by the researcher. It is a procedure for designing and developing smartphone-assisted English reading lessons to instruct English major students at Roi Et Rajabhat University in the experimental group.

2) **The Smartphone-Assisted Instructional Lessons in English Reading (SAI Lessons):** The smartphone-assisted instructional lessons in reading English in this study refer to the contents of reading English comprising five units, exercises and tests prepared by the researcher for the students in the experimental group.

3) **80/80 Standard:** 80/80 standard in this study refers to the standard criterion used to determine the efficiency of the process and the proficiency of the product of the SAI Lessons used in the study. The efficiency of the process and the efficiency of the product formulas (E_1/E_2) of Brahmawong (2007) are applied in this study. The formula for E_1/E_2 can be seen in chapter.

1.9 Conceptual Framework of Research

According to the research purposes and research questions, the study consists of two stages: to develop the SAI Model and to investigate the effects of using the SAI Lessons. The SAI Model was designed and developed following the seven steps in developing an instructional model (Brahmawong & Vate-U-Lan, 2009). The experiment was conducted to investigate the effects of using the SAI Lessons based on the development of the SAI Model. The conceptual framework of the research for the present study was created by the researcher as follows.

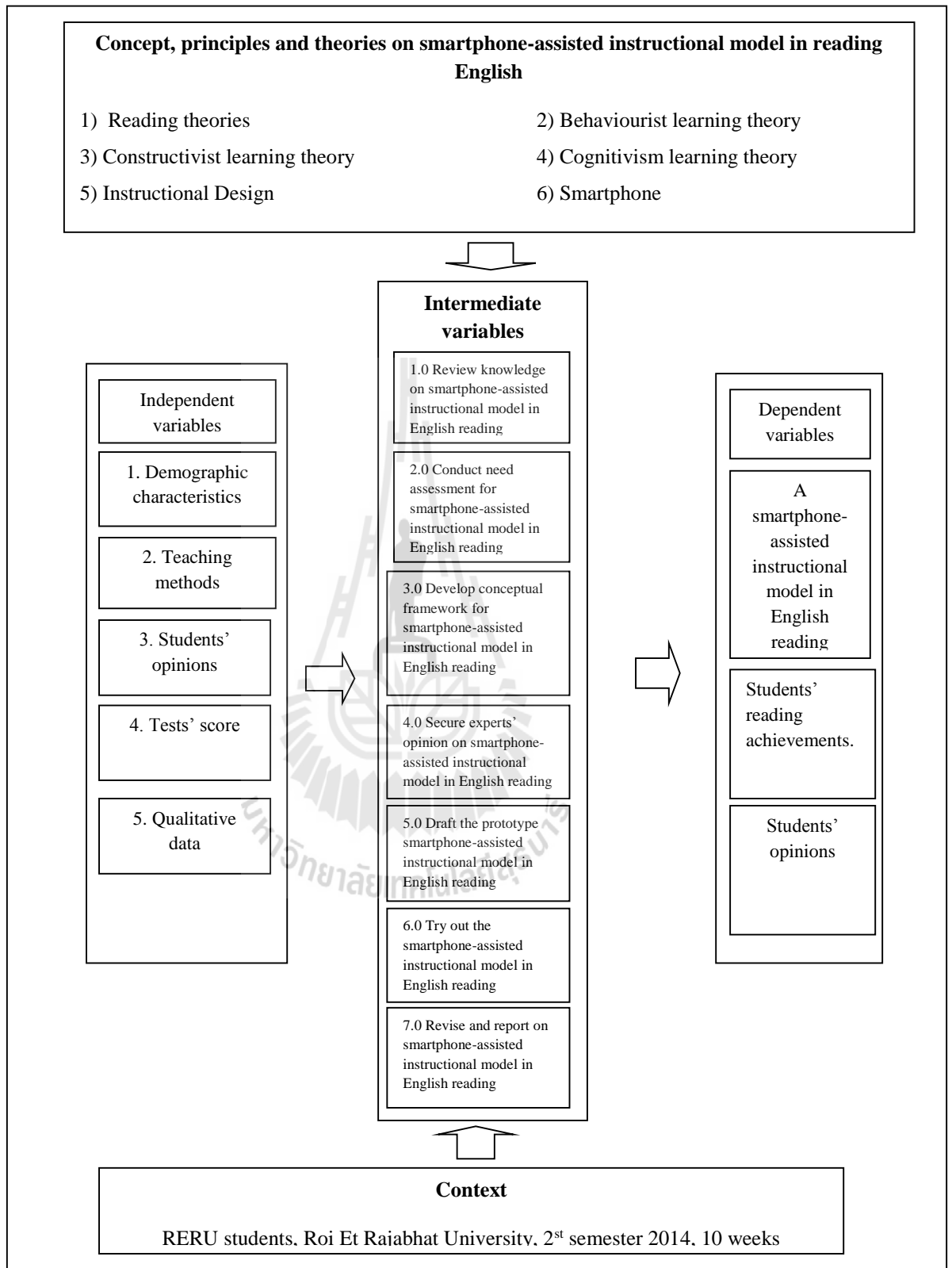


Figure 1.1 Conceptual Framework of Research

Based on the illustrated conceptual framework of the research, in order to construct the SAI Model and assess students' reading achievements and elicit their opinions, the researcher started with studying the concepts, principles, and reading theories which are cognitive, metacognitive and schema theories, three learning theories related to mobile learning including behaviourist learning theory, cognitivism learning theory, and constructivist learning theory, five instructional design models comprising the ADDIE model, the Dick and Carey model, the Kemp model, the SREO model and OTIL model and smartphone technologies. The knowledge gained from this review was used as guidelines to design and develop the SAI Model. Afterward, the context of the study, including who, where, when, and how long was defined in order to specify the scope of the study. In this study, RERU students were used as the sample of the study and the experiment was started in the 2st semester 2014 for 10 weeks in Roi Et Rajabhat University.

To produce the SAI Model, firstly the independent variables were identified. Based on the purposes of this study, five independent variables consisting of the demographic characteristics of the students, teaching methods, students' opinions, tests' scores, and qualitative data were determined. After the independent variables were specified, the intermediate variables, which were the seven steps proposed by Brahmawong & Vate-U-Lan, 2009, were followed. At the first step, knowledge of smartphone-assisted instructional model in reading English was reviewed. After that, the researcher conducted an assessment for the SAI Model. Based on the information obtained from step 1 and 2, at the third step, the researcher developed the conceptual framework for the SAI Model. After the conceptual framework of the SAI Model was established, at step 4 the researcher asked for expert opinion to confirm that the SAI

Model was appropriate. At the fifth step, the prototype of the SAI Model was drafted. Later, the SAI Model was tried out at the sixth step. After the try out step, for the last step the researcher revised and reported on the SAI Model. Finally, by following all the seven steps, the dependent variables of the SAI Model, students' reading achievements and students' opinions were obtained.

1.10 Summary

In this chapter, the background of the study on the importance of English reading skills and the problems of teaching and learning the reading of English in an EFL context, specifically in Thailand, was presented. After that, the needs for conducting this study are described in the descriptions of the research problems and the rationale of the study. Next, to accomplish the study, the purposes and the research questions are specified. Later, the significance of the study and the definitions of the key terms are given and the conceptual framework of the study is discussed. In the next chapter, a review of the literature and other related research studies will be presented.

CHAPTER 2

REVIEW OF RELATED LITERATURE

This chapter aims to review the literature on developing a Smartphone-Assisted Instructional Model in how to read English for English major undergraduate students at Roi Et Rajabhat University. The chapter includes seven sections: (1) Reading, (2) Teaching Reading, (3) Technology Enhanced Language Learning, (4) Teaching Reading through Technology, (5) Mobile Learning and Mobile-Assisted Language Learning (MALL), (6) Smartphone, (7) Instructional Design (ID).

2.1 Reading

Of the four skills in ESL/EFL learning, reading skills are seen as one of the most skills in the development of English language proficiency. People can read both silently or audibly. It is one of the crucial communication skills which also benefits the other language skills of writing, speaking and listening. Therefore, the ability to read is highly valued and it is important for personal, social, and economic well-being (Pantawee, 2008). Definitions of reading vary slightly according to different sources.

2.1.1 Definitions of Reading

Basically, reading ability is defined as the act of understanding what you are reading. According to Anderson et al. (1985), reading is the process of constructing meaning from written texts. It is a complex skill requiring the coordination of a number of interrelated sources of information. Additionally, reading is also defined

as “the process of receiving and interpreting information encoded in language form via the medium of print” (Urquhart & Weir, 1998: 22). Another definition of reading is proposed by Hoover and Gough (2011) which states that reading from the cognitive perspective is the ability to construct linguistic meaning from written representations of language. Also, Koda (2005:4) suggests that “Comprehension occurs when the reader extracts and integrates various information from the text and combines it with what is already known”.

In conclusion, from the definitions proposed above, the definition of reading for the purposes of this study can be defined as a certain ability that enables a person to read silently with both dependence and independence to comprehend the meaning of written texts. In order to enhance English reading achievement in an ESL/EFL learning situation, we need to fully understand the ESL/EFL context. The next section will provide some important distinctions between ESL and EFL and how reading in English for non-native speakers can be affected by them.

2.1.2 Reading in an ESL/EFL Context

As the rise of English as a universal language has had a major impact on educational systems around the world, school systems require students to learn English to access information and eventually become economically and professionally independent. For these reasons, millions of students are expected to learn English to some degree as an additional language to their native language (Grabe, 2009).

However, it is noted by Rivers (1981) that in a foreign language situation most of the students who learn English as an additional language hardly ever have the opportunity to have a conversation with native speakers, but they will have access to the literature and periodicals of scientific and technical material written in English

which is, in fact, what they need to assist them with further studies or in their work; or even in their leisure time. Thus, in foreign language settings learning to read in English has become one of the main goals for many students (Kazemi et al., 2013)

Likewise, Gorsuch & Taguchi (2010) who propose that in foreign language situations where second language input sources are limited, reading becomes a worthwhile means of developing a second language ability which can facilitate or hold back academic success for many foreign language learners across educational contexts (Taylor, Stevens, & Asher, 2006). Thus, reading skills are given special attention, due to the fact that it they are one of the most important language learning goals for many foreign language students. Reading, therefore, has become a crucial skill and is probably the most important skill for second language learners to master in academic contexts (Grabe, 1991).

Reading skills become an imperative element which can help students particularly at tertiary level who need good reading skills for acquiring knowledge and learning new information which they can use to advantage in becoming successful in their academic lives. This is consistent with Songyut (2011) who states that if students become skillful in reading English, they will be able to understand the English language materials they read and this will enhance their overall understanding of the subject matter in their realms of study and, of course, their academic performance which also means reading can help to enlarge the readers' background knowledge at tertiary level.

An ability to comprehend written texts is a basic requirement for academic success (Lynch & Hudson, 1991), nevertheless, reading in the context of English as a second (ESL) or foreign language (EFL) is known as highly complex, dynamic, multi-

componential and multi-dimensional because it involves various relations among reader factors and contextual factors (Phakiti, 2006). For second (ESL) or foreign language (EFL) learners, reading English texts well means to recognize every word and figure out its meaning from the printed text, hence they look every unfamiliar word up, and translate sentences word-by-word. Hence, attaining ability in second/foreign language reading comprehension can be a problematic process and learners of English as a second/foreign language often experience considerable difficulties in developing their expertise in reading (Chomchaiya & Dunworth, 2008).

To help students become successful readers, teachers are required to understand not only the nature of reading and teaching methodology, the nature of learners and the context in which the teaching of reading takes place, but they also need to study reading theories as well. To gain more understanding of how reading should be taught and how messages in a reading text can be comprehended by the readers, three reading theories are studied in-depth in the next section.

2.1.3 Reading Theories

The present study is confined to the context of theories related to reading. As Mokhtari and Reichard (2004) explain there are three dominant reading theories and these can be applied to the current research model: cognitive theory, meta-cognitive theory and schemata theory.

2.1.3.1 Cognitive Theory

Cognitive theory focuses on an individual's thoughts. This theory attempts to explain human behavior by understanding the thought processes (Fritscher, 2011). It is concerned with the development of a person's thought processes. It also looks at how these thought processes influence how we understand

and interact with the world and, additionally, it puts emphasis on the mental processes involved in language learning, and not simply the forming of habits as is encountered in behaviorist views (Schmidt & Richards, 2002). Consequently, learning results from internal mental activity and is not the result of external imposed stimuli.

The term cognition is defined by several researchers. Witkin, Oltman, Raskin and Karp (1971) define a cognitive style as “self-consistent modes of functioning which individuals show in their perceptual and intellectual activities” (p. 3). Besides, the term cognitive style also refers to variations among individuals in their preferred way of perceiving, organizing, or recalling information and experience (Ghonsooly & Eghtesadee, 2006).

Cognitive based views of reading comprehension give emphasis to the interactive nature of reading and the constructive nature of comprehension. Dole et al. (1991) state that, in addition to knowledge brought to bear on the reading process, a set of flexible, adaptable strategies are used to make sense of a text and to monitor ongoing understanding. Likewise, Alvermann and Pheps (2002) find that a cognitive theory from the aspect of reading assumes that an active reader constructs meaning from the texts by integrating prior knowledge and new information with certain strategies.

Reading is not only extracting meaning from a text but also refers to a process of connecting information in the text with the knowledge the reader brings to the act of reading. This cognitive concept is in accord with Tierney and Pearson (1994)’s notion that reading is a dialogue between the reader and the text which involves an active cognitive process in which the reader’s background knowledge plays a key role in the creation of meaning. Another supporter of this concept is

Smith (1994) who states that “reading is not a passive mechanical activity but purposeful and rational, dependent on the prior knowledge and expectations of the reader. It is not merely a matter of decoding print to sound but also a matter of making sense of written language” (p. 2).

To create an effective reading strategy instruction, cognitive knowledge will be of great advantage to teachers. From the cognitive view, the learner comes with knowledge, skills and related experiences to the learning situation and learning is the process of relating new information with what was previously learnt.

In short, cognitive theory in the realm of reading claims that understanding texts is influenced or formed by the whole set of experiences and knowledge the reader brings to reading, rather than extracting meaning from a word, sentence, and text based on a verbatim translation of text.

In this study, to apply cognitivism to design and develop a reading instructional model, learning strategies, activities and materials which facilitate learners to modify, change, and merge what they have already known to take into account the new information is provided throughout the reading process in order to promote their reading ability. For instance, providing students with sets of questions to structure their reading makes it easier for them to relate it to previous material by highlighting certain parts and to accommodate the new material by providing a clear organizational structure. Another theory of reading comprehension used in this study is called “metacognitive theory”, which will be described in the next section

2.1.3.2 Metacognitive Theory

The concept of metacognition is complicated and its definitions are varied. The term metacognitive theory is defined broadly as “systematic frameworks used to explain and direct cognition, metacognitive knowledge, and regulatory skills” (Schraw & Moshman, 1995: 351). Another definition of this term is given by Flavell (1976), which defines metacognition as one’s knowledge concerning one’s own cognitive processes and products or anything related to it, including the active monitoring and consequent regulation in collaboration with information processing activities. More specifically, Taylor (1999) defines metacognition as an appreciation of what one already knows, together with a correct apprehension of the learning task and what knowledge and skills it requires, combined with the ability to make correct inferences about how to apply one’s strategic knowledge to a particular situation, and to do so efficiently and reliably. Livingston (1997), and Alverman and Preps (2002) define it as the awareness of students about the resources and strategies that they can use to complete tasks.

In the language learning context, metacognition refers to a strategy which can help students to be consciously aware of what they have to learn, recognize situations in which it would be useful, involve thinking about the learning process, plan for learning, monitor comprehension or production while it is taking place, and evaluate learning after the language activity is complete (Carrell, 1998)

In terms of reading specifically, metacognition involves thinking about what one is doing while reading. Metacognition concerns learners’ awareness of and use of their own cognitive resources, which involve behaviors such as predicting, self-questioning, paraphrasing, summarizing, rereading to clarify meaning, and retelling.

Thus, metacognitive theory deals with activities in pre-reading, whilst reading, and post-reading stages which one should undergo during independent reading or in reading instruction in order to facilitate comprehension and learning (Carnine, et al., 1997).

According to Klein et al. (1991), while reading strategic readers should attempt to do the following:

- (1) Identify the purpose of the reading before reading
- (2) Identify the form or type of the text before reading
- (3) Think about the general character and features of the form or type of the text. For instance, students should try to locate a topic sentence and follow the supporting details toward a conclusion, thus projecting the author's purpose for writing the text (while reading it),
- (4) Choose, scan, or read in detail.
- (5) Make continuous predictions about what will occur next, based on information obtained earlier, prior knowledge, and conclusions obtained within the previous stages.

Additionally, Heilman, Blair, and Rupley (1994) state that using background knowledge to construct the meaning of what they have read, readers must monitor their comprehension and know when the process is breaking down. This monitoring of their own comprehension is also metacognition.

In conclusion, metacognition theory in the arena of reading refers to the learners' conscious awareness regarding cognitive resources, the learning process, and strategies which can help them to become successful in reading.

With regard to the use of the metacognitive theory, developing metacognitive awareness is an essential part of effective reading strategy instruction. As a result, in this study metacognition knowledge is used to design and develop reading instruction through different ways (Mickulecky, et al., 1989), such as providing graphics or videos to activate the students' background knowledge before reading, giving examples and more practice when reading, and providing feedback to students for the activities conducted in the pre-reading and whilst reading stages. Apart from cognitive theory and metacognitive theory, schema theory is also one of the reading theories used in the present study. Accordingly, in the following section the literature of schema theory is described.

2.1.3.3 Schema Theory

The term schema is used by cognitive scientists to describe how people process, organize, and store information in their minds (Widdowson, 1983). It is based on the belief that every act of comprehension involves one's knowledge of the world as well (Anderson et al. in Carrell & Eisterhold 1983:73). This learning theory views organized knowledge as an elaborate network of abstract mental structures which represent one's understanding of the world. Bartlett (1988) proposes that people have schemata, or unconscious mental structures, that represent an individual's generic knowledge about the world. It is through schemata that old knowledge influences new information.

Another notion of schema proposed by cognitive psychologists is that individuals have schemata for everything. Long before students come to school, they develop schemata (units of knowledge) about everything they experience. Schemata become theories about reality. These theories not only affect the way information is

interpreted, thus affecting comprehension, but also continue to change as new information is received. This is supported by Alvermann and Phelps (2002) who state that schemata are fluid; they overlap and intertwine, and they are constantly modified to assimilate or accommodate new information.

In the process of reading, schema theory is immediately applied to understanding the reading process. It describes in detail how the background knowledge of the learner interacts with the reading task and illustrates how a student's knowledge and previous experience with the world is crucial to deciphering a text. This idea is concordant with Stott's study (2001) who describes schema as the process by which readers combine their own background knowledge with the information in a text to comprehend that text. All readers carry different schemata (background information) and these are also often culture-specific.

Barnett (1988) states schemata are the reader's pre-existing concepts about the world and about the text to be read. Thus, readers develop a coherent interpretation of text through the interactive process of combining textual information with the information a reader brings to a text (Grabe in Widdowson, 1988). Also, Alvermann and Phelps (2002) find that readers' schema pertaining to what they read helps them to anticipate, to infer, to decide what is important or not important. Moreover, it helps build associations amongst ideas, or helps students come to a decision about what information merits close attention. In a post-reading process, the readers use schema as a topic to assist them bring to mind what they have read and put it into their own words to make them understand better.

According to Anderson (1977), schemata are always organized meaningfully, can be added to, and, as an individual gains experience, developed to

include more variables and more specificity. Furthermore, each schema is embedded in other schemata which in itself contains subschema, all of which can change moment by moment as information is received. They may also be reorganized when incoming data reveals a need to restructure the concept. Moreover, the mental representations used during perception and comprehension, and which evolve as a result of these processes, combine to form a whole which is greater than the sum of its parts.

In the perspectives of the reading process, schema knowledge can help readers make use of their past experiences for the creation of mental frameworks that make sense of new experiences. An ability to use this schemata, or background knowledge, plays a fundamental role in one's efforts to decipher and comprehend a text. Therefore, to apply schema knowledge to design an instructional model in how to read English, the researcher provides activities which can motivate students and activate students' schemata in the pre-reading stage in order to promote their reading ability. Having carefully reviewed the three most important reading theories, the teaching of reading from the perspectives of scholars in education is reviewed in the next section.

2.2 Teaching Reading

Promoting reading as a significant and viable means of language development for second and foreign language (L2 and FL) learners has been an interesting issue for instructors in both ESL and EFL settings in the past decade (Day & Bamford, 1998; Krashen, 1995). From then on, teachers in ESL and EFL contexts have attempted to seek out more effective ways to help students comprehend the texts they read. From this reason, opinions and suggestions for the improvement of reading instruction for

learners of English as a foreign language, whether based on the results of research and experience, are available in the language teaching literature (Pardede, 2010).

As mentioned by Dubin and Bycina (1991), teaching reading in an EFL/ESL context previously emphasized knowledge of vocabulary, that is, matching words in the foreign language text with meanings in the students' mother tongue. Not much attention was given to the process of arriving at an understanding of longer texts. Moreover, students were unwilling to read because of their linguistic inadequacy and low interest in reading longer texts which are factors that lead to unsuccessful reading (Kweldju, 2000).

In teaching reading, there are some suggestions and recommendations proposed by several scholars and educational researchers. To become a proficient reader in EFL/ESL environments, Day and Bamford (1998) suggest that one of the best ways to learn English is to read extensively in it. It is believed that extensive reading will decrease the stress of students and it also helps to motivate the students to be more confident and willing to read in English. Besides, Gillet and Temple (2000) propose that the more students read, the more they become familiar with vocabulary and sentence structures. Additionally, it is claimed that (Brown, 1978) once students learn new strategies or thinking processes effectively, they can monitor their comprehension and apply appropriate strategies as needed for comprehending a text.

One recommendation is by Heath (1984), Vygotsky (1962), and others who found that students develop literate skills when teachers encourage them to talk about written language, when teachers model comprehension strategies for them, and when students have opportunities to talk to each other about how they make sense of a text (Hoffman & Heath, 1986). Furthermore, research also shows that students must read

faster and with more fluency if they wish to read effectively (Eskey, 1986; Anderson, 2005). Faster reading promotes reading in thought units instead of one word at a time, and that leads to improved comprehension.

However, teaching reading to EFL/ESL students can be a very challenging experience since teaching reading is a complex activity and teachers need to create an effective learning experience for their students. As we know, the rise of social media and technology has changed the way educators teach, how students learn, the way teachers and students communicate and it has created a new form of classrooms around the world. To know more about how technology reforms the way people learn, the advantages and weaknesses of technology-enhanced language learning is reviewed in the next section.

2.3 Technology-Enhanced Language Learning (TELL)

Since the present study aims to use technology as a significant goal to enhance students' reading comprehension, this section reviews studies of the effectiveness of technology used in education systems. According to Cheung and Slavin (2011), the technology approaches most widely used in schools are primarily supplemental computer-assisted instruction. Yang and Chen (2006) also state that the use of multimedia technology for foreign language instructions has expanded rapidly during the past two decades.

2.3.1 The Definitions of Technology-Enhanced Language Learning (TELL)

The term "Technology-Enhanced Language Learning" has different definitions according to various sources. The Association for Educational Communications and Technology (AECT) (2004) defines the term "technology" in

the field of education as “the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources”. Wang (2007) says that TELL can refer to any technology used in the classroom such as video, tape recorders or even entire language labs. Moreover, Patel (2014) says that technology-enhanced language learning refers to the use of the computer as a technological innovation to display multimedia as a means of complementing the teaching methods of a language teacher.

In conclusion, TELL can refer to the use of technologies in language instruction both in and outside the classroom in order to assist and enhance language learning and to support teachers of foreign languages in facilitating language learning for their students. In order to avoid misusing technology as an educational tool, it is important to be aware both of the advantages and disadvantages of technology for our language teaching and learning.

2.3.2 The Advantages of Technology in Language Learning

During the past two decades, using multimedia technology to support foreign language instruction has gradually become more widespread. A variety of TELL applications have been shown to produce positive effects in the classroom for students learning foreign languages. Significant amounts of recent research have explored its potential and the influence of multimedia technology with regard to teaching and learning languages more effectively. Carr et al. (2011) indicate that incorporating TELL in the language classroom is a positive experience for instructors, tutors and students especially in the areas of comfort/enjoyment, and increased confidence in using technology. In addition, that the study conducted by Peter et al. (2013) also

reveals that the uses of cyber technologies, for both teaching and learning facilitate students to learn faster and easier than before.

Sanders (2005) further states positive results in classes which incorporate technology, particularly CALL, in the form of computer-mediated communication and automated online exercises. Chenoweth, Ushida, & Murday (2006), Gallego (1992) and Schulze (1994) have also demonstrated the effect of TELL on increasing motivation. Moreover, using TELL not only assists students with mastering basic skills such as grammar, vocabulary, listening, pronunciation, reading and writing (Chun, 2007; Corbeil, 2007; Gascoigne, 2006; Scida & Sauray, 2006; Taylor, 2006; Stepp-Greany, 2002; Cononelos & Oliva, 1993) but also helps students become more engaged in the learning process (Salaberry, 2001), and fosters deeper cultural learning (Hager, 2005; Dubreil, Herron & Cole, 2004; Stepp - Greany, 2002; Kern, 1996; Cononelos & Oliva, 1993).

Andrew (2002) also suggests that technology may be of assistance by substituting for or enhancing some functions of teaching and thus may help with a lack of proficient speakers of English or a lack of trained teachers of English. Additionally, technology can also help enhance the learning process and meet the needs of individual learners in a large and diverse society. It is suggested (Andrew, 2002) that the learning process can be improved by providing support to enhance the standard structures which are normally in place; with different purposes of language learners, technology can provided dissimilar learning systems which are accessible and can support learners to complete their tasks individually. As we know that a coin has two sides, so does technology. After the advantages of technology in language teaching have been discussed, its weaknesses are presented as well.

2.3.3 The Weaknesses of Technology in Language Learning

Although there are many evident advantages of technology in assisting language learning, it still has its limitations and disadvantages. The impact of the use of technology on the way English is taught has brought not only advantages, but also, some disadvantages concerning the availability of the technologies to be used, money to invest in technology and teachers' training.

Gips, DiMattia, & Gips (2004) indicate that the first disadvantage of technology and its assisted language learning programs is that they will increase educational costs and harm the equity of education. Further shortcomings of technology are stated by Lai (2006), who argues that although learning language through technology can be a great supportive tool to the classroom, it can also be a source of frustration for both the teacher and the student if both of them lack a basic knowledge of technology. This idea is consistent with that of Roblyer (2003) who states that the benefits of computer technology for those students who are not familiar with computers are nonexistent.

Other weaknesses of using technology in the language classroom are connection problems, downloading issues, policing software and other difficulties which can cause road blocks when implementing a lesson in the technology based classroom. Connectivity issues are one of the important reasons why technology integration often fails in schools. Maintenance expenses are also mentioned as one of the weaknesses of technology in schooling systems. Outdated software and hardware components can be incompatible with available programs. Accordingly, to keep technology current and useful the cost of upkeep can be too expensive for school budgets.

As mentioned previously, the use of technology to support foreign language instruction has shown to produce positive effects in the classroom for students learning foreign languages. However, some weaknesses of using technology in the language classroom are demonstrated as well. So, to make technology effectively use in the language classroom both its limitations and advantages should be considered. As an understanding of using technology in language teaching, especially for reading skills can be used as the foundation for improving the techniques of teaching reading. In the next section, the literature on the teaching of reading through technology is reviewed.

2.4 Teaching Reading with Technology

Inspired by the hasty development of technology, currently technology has become an influential component of educational instruction in all subjects, including reading. Recent literature has demonstrated that a long tradition of book and print media is insufficient, somehow students and teachers often prefer using new and varied forms of technology for reading texts (ERTEM, 2010).

2.4.1 The Potential of Technology-based Approaches for Teaching Reading

With the increased use of technologies in education and the increased availability of instructional materials using technology, technology-based approaches have become more flexible and are therefore able to address more of the learning needs of students for reading.

Rose (2004) indicates that traditional printed books, even those using carefully graded levels, fail to provide the individualized support and guidance that many students will need to stay focused and motivated while they are working

independently. Based on Rose's ideas, it is claimed that well-designed technology can play a critical role in this regard. By providing individualized support and guidance for students, new reading technologies can extend the reach of the teacher, ensuring that every student is engaged in meaningful independent practice that optimizes their development as confident, skillful, and motivated readers.

Furthermore, Dalton and Strangman (2006) specify that "technology and computer-mediated texts have the potential to support students with reading problems in two ways: providing access to text and helping students learn how to read with understanding" (p. 75). Reviews of research on technology involvement with reading problems (Denman, 2004) constantly demonstrates encouraging findings and many studies agree that the contribution of technology results in considerable gains in reading comprehension.

Also, a report from the National Center for Educational Statistics (2004) publicizes the use of computers in general education classrooms is intensifying and the amplified availability of instructional materials in digital formats, computer-based approaches have become more flexible and therefore are able to address more learning needs of students with reading disabilities.

To have more understanding on how technologies are employed in the teaching of reading and how they affect the reading comprehension of learners, some research studies conducted on the integration of technologies in order to improve reading comprehension are reviewed in the next section.

2.4.2 Studies Related to the Applications of Technology to Teaching Reading

Chang and Hsu (2011) investigate the effectiveness of a PDA/web-based translation/annotation application on the L2 English reading comprehension of 43

university students who used it individually and collaboratively for a synchronously intensive reading course in the normal classroom. A computer-assisted-language-learning (CALL) system for use on PDAs, integrating an instant translation mode, an instant translation annotation mode, and an instant multi-users shared translation annotation function was developed to support a synchronously intensive reading course in the normal classroom. Experiments were conducted to analyze the usage of the system, including the attitude and satisfaction of users and determined the optimum number of users in each group for the system to work most efficiently, and for students to improve their reading comprehension. The results indicate that those students who were in groups of 2-4 had significantly higher levels of comprehension than individual students or those in groups of five. Overall, on average around 70% of the students agreed that the system was useful, 75% of the students agreed that the system was easy to use, and 66% of the students expressed satisfaction with the system.

ERTEM (2010) examined the differences in struggling readers' comprehension of storybooks according to the medium of presentation. 77 fourth-grade students who were reading below current grade level and not meeting Sunshine State Standard were selected as the participants of the study. Each student was randomly assigned with one of three conditions: (1) computer presentation of storybooks with animation; (2) computer presentation of storybooks without animation; and (3) traditional print storybooks. Comprehension was measured by using retelling. The results of the study indicate that there was a significant difference in the students' comprehension scores and it was demonstrated that electronic storybooks can improve reading comprehension and can be beneficial for struggling readers.

Lin Liu et al (2010) conducted a research study to investigate the effects of a computer-assisted concept mapping learning strategy on EFL college learners' English reading comprehension. The participants of the study were one hundred and ninety-four freshmen who were enrolled in the English course. They were divided into low-level and high-level groups according to their English proficiency. A computer-assisted concept mapping learning strategy was presented to the learners in the experimental class to improve their reading ability while the control group used the same reading materials. The results of the study demonstrated that the computer-assisted concept mapping learning strategy provided greater reading benefits for the low-level group than for the high-level group. In addition, it also revealed that the computer-assisted concept mapping learning strategy enhanced learners' use of other English reading strategies, such as listing, enforcing, and reviewing.

Marzban (2011) conducted the study to investigate the effect of ICT and more specifically CALL on the quality of students' reading comprehension in an Iranian academic setting. A pre-test and post-test experimental design was conducted. Sixty subjects were randomly selected to participate in the study in which thirty subjects formed the treatment group and the rest of them formed the control group. One instructor taught reading comprehension to both groups, however, the treatment group was taught using CALL while the control group was taught using traditional methods. The results of the study revealed that there was a significant difference between the reading comprehension scores of the two groups with the students who were taught by CALL instructional techniques significantly outperforming the students who were taught by traditional methods.

Wang and Smith (2013) conducted a research study to examine both the feasibility and the limitations of developing English reading and grammar skills through the interface of mobile phones. The participants of this study were 208 first-year students who agreed to join the project. During the experiment, reading and grammar materials were regularly sent to students' mobile phones and students read or took part in any aspect of the materials that appealed to them. The study revealed that reading and learning grammar using mobile devices is regarded as a positive language experience. The data also showed that the criteria including (a) providing engaging learning materials that are neither too long nor overly-demanding; (b) a proper degree of teacher monitoring; (c) student involvement; (d) the need for incentives; (e) a respect for privacy; and (f) a safe and secure mobile-learning technical environment were necessary for the successful application of learning through mobile phones.

In summary, from the research presented above, it can be seen that technologies can play a significant role in reading instruction. All of the research findings cited demonstrated that technologies used as a means of delivering lessons could improve and assist students' reading comprehension effectively. Meanwhile major breakthroughs in information and communication technologies have a high potential to support students in learning to read effectively, and mobility and ubiquitous learning which refers to learning anywhere or anytime have been recently gaining relevance (Moura & Carvalho, 2013). From this point of view, the pedagogical paradigm demands transformation in the way the educational materials should be designed, developed and made available to anyone who wants to learn at any place or at any time. Accordingly, the emerging of mobile learning (m-learning)

seems to fully meet the needs of present-day society. With the rapid development of mobile technologies, a new style of learning, termed as mobile learning, has exploded everywhere in the world. To gain more understanding of mobile learning technology, the literature related to this topic is reviewed in the next section.

2.5 Mobile Learning (M-learning)

M-learning is an evolution of technology's adaptations applied in an educational context. It is part of e-learning and d-learning (Georgiev et al., 2004). Mobile learning is rapidly becoming main stream worldwide. Mobile technology has been fast developing, and the features equipped in mobile devices have become more various. These mobile devices provide many tools to support teaching and learning. To provide a understanding of mobile-learning, a definition of m-learning and its applications will be presented in the following section.

2.5.1 The Definitions of Mobile Learning

Definitions of mobile learning have been given in various papers. According to Hamdani (2013), mobile learning can be defined as the use of mobile devices as mediators in the process of learning and teaching. Another definition of mobile learning is defined by Guy (2009) as electronic learning (e-learning) through mobile computational devices. Learning is taking place via portable, often WiFi enabled, handheld devices. This includes smartphones, e-readers, small laptop computers, the iTouch, and even gaming consoles (Mobile Learning: what is it and why should you care?, 2014).

Another definition of mobile learning (m-Learning) given by Traxler (2005) refers to the delivery of electronic learning materials to mobile devices that currently

exploits both handheld computer, such as small size laptop PCs, tablet PCs but not desktops and mobile phones, such as smart phones, Personal Digital Assistants (PDAs), and Pocket PCs which allow learning that can happen anywhere and at any time.

In summary, the above concepts and ideas in defining mobile learning suggest that mobile learning refers to the use of mobile technologies as tools to deliver learning materials and a learning process which learners can access anywhere or at any time. As mobile technology is the main concept of this study, it will be necessary to explain the advantages and disadvantages of the use of mobile technology as a tool to deliver learning materials. Therefore, the advantages and disadvantages of mobile learning are reviewed in the next section.

2.5.2 The Advantages of Mobile Learning

Because of an increased usage of mobile devices amongst the world population, especially the younger generation, mobile technology is currently considered a booming future trend as a methodology for teaching and learning. For L2 language learning, adoption of mobile devices and applications has translated into huge opportunities for English as a foreign language (EFL) (Pilar et al., 2013). In this section, the advantages of mobile computing devices will be described. According to Gikas (2013), three broad themes of mobile learning applications can be identified.

(1) Engaging Learners with Constant Connectivity

Mobile devices allow learners to access content and communicate with their peers and teachers at any time or anywhere at the exact moment learning is required. Mobile devices also enable learners to find, identify, operate and evaluate existing knowledge and to successfully integrate and transfer this knowledge into their work (Gikas, 2013). Additionally, the persistent connectivity afforded by mobile

devices allows learners to remain engaged in content creation and receive feedback and formative guidance, which is needed to facilitate a learner-centered environment (Valk et al., 2010).

(2) Fostering Collaborative Learning

Wireless-enabled mobile devices have been used as early as 2004 to create a collaborative learning environment. There is a specific focus on the use of mobile technologies to promote, facilitate and enhance interactions and collaboration between students and students and students and teachers. They provide learners with opportunities to collaborate, discuss content with classmates and instructors, and create new meaning and understanding (Gikas, 2013). Both the mobile devices competencies and their wide context of use contribute to their tendency to foster collaboration. Mobile devices can easily communicate with other devices of the same or similar type, permitting learners to share data, files and messages (Gikas, 2013). They also allow for the constant and immediate connection to a shared data network, further enhancing possibilities for communication.

(3) Enabling Authentic Learning on the Move

Applications on mobile devices may be considered as social media tools. They allow learners to create videos/audios, take photographs, geotags, microblogs, receive or send text messages, and access social networking sites to communicate with classmates and their instructors. In substance, by using the applications provided by mobile devices, a personalized, authentic learning experience can be created for learners (Archambault et al., 2010).

In addition, Marpadga (2014) points out some benefits of mobile learning as:

- (1) **Easy Access:** Mobile learning provides easy access to learning at anytime or anywhere, which is more convenient for learners. Learners have the advantage of spending their free time during travelling, in between meetings or during weekends to focus on subjects they want to learn.
- (2) **Collaborative Learning:** Mobile learning encourages collaborative learning allowing learners at different locations to get in touch with their peers or other teams to discuss and learn.
- (3) **Learner Engagement:** Mobile learning can also provide a platform for training. Training at the work place consists of mostly verbal and desktop communication, but adapting mobile learning can bring several opportunities to engage the learner on a digital and social level outside the workplace.
- (4) **Self-Paced Learning:** No learners are the same. Each of them has his or her own way of understanding the content or strategies they need to learn with. With mobile learning, learners are now able to learn in their own style at their own pace.
- (5) **Address All Learning styles:** Mobile learning can fit in to different learning styles, such as reading, learning through videos, listening to podcasts (Audio).

In sum, teachers and educators tend to apply applications of mobile learning devices in teaching and learning methodology because m-learning devices allow learners to access content and communicate with other people whenever and wherever they want to learn. Also, because of their accessibility, mobile devices support

collaborative learning in which learners work together towards one common goal that makes learning become more successful. Additionally, applications on m-learning provide opportunities to personally create authentic learning experiences, such as videos/audios, and taking photographs. Though mobile learning is considered as an effective technique which can offer modern ways to support the learning process through mobile devices, such as handheld and tablet computers, MP3 players, smart phones and mobile phones, the limitations of mobile learning in supporting teaching and learning will also be presented in the next section.

2.5.3 The Limitations of Mobile Learning

Every technology has some limitations and weaknesses, and mobile devices are not an exception. Kukulska-Hulme (2007) has pointed out some of the usability problems of these technologies as follows:

(1) Physical attributes of mobile devices, such as small screen size, heavy weight, inadequate memory, and short battery life;

(2) Content and software application limitations, including a lack of built-in functions, the difficulty of adding applications, challenges in learning how to work with a mobile device, and differences between applications and circumstances of use;

(3) Network speed and reliability; the slow transmission of webpages and occasional weak signals and slow access to documents because of wireless connectivity.

(4) Physical environment issues such as problems with using the device outdoors, excessive screen brightness, concerns about personal security, possible radiation exposure from devices using radio frequencies, the need for rain covers in rainy or humid conditions, and so on.

In addition, Marpadga (2014) also details some limitations of mobile learning which can be listed as:

- (1) **Connectivity:** There may be some connectivity problems while uploading and downloading data and because of poor mobile network signals.
- (2) **Screen Size:** As the screen size is too small, it can strain the eyes of the learners if they use it for long periods of time. Also only a little information or just the gist of the content can be provided due to size constraints.
- (3) **Device:** Learners must possess a mobile device that can support the courseware and such a device may be expensive. As technology keeps changing at a rapid rate, these devices should be upgraded frequently. In addition to the cost of these devices, there are monthly charges for data from mobile network providers; so downloading large amounts of content not only takes time, but can also be expensive.
- (4) **Distraction:** While accessing the course through mobiles, if the learner gets a call or SMS or social media updates, then they are bound to get distracted.

In short, in order to use mobile devices appropriately and effectively in learning and teaching many limitations, such as small screen size, some connectivity problems, and content and software application limitations need to be considered with mobile learning. English language is also one field study which gain benefits from mobile devices. To design and develop an instructional model of language learning which is integrated with a mobile device, knowledge of mobile assisted

language learning has to be explored. In the next section, mobile-assisted language learning is examined and thoroughly presented.

2.5.4 Mobile-Assisted Language Learning (MALL)

From the time when the term mobile-assisted language learning (MALL) was first coined by Chinnery (2006), there has been an exponential increase in the use of mobile devices to support language learning. Mobile-assisted language learning (MALL) is a subset of the growing field of mobile learning (m-learning). It has been developed to maintain students' language learning with the increased use of mobile technologies (Sedighi & Soyooof, 2013). As wireless networks accessibility is expanded as well as ownership of mobile devices communication with such networks includes many of the advantages of mobile technologies, such as flexibility, low cost, small size and user-friendliness, and the use of mobile devices to support language learning becomes ever more common (Kukulaska & Shield, 2008; Huang et al., 2012). Mobile devices have extended opportunities for making teaching and learning language available beyond the traditional classroom.

According to Shield (2008), mobile-assisted language learning (MALL) describes an approach to language learning that is assisted or enhanced through the use of a handheld mobile device. Since the increasing use of mobile technologies is widely spread among the world population, MALL has similarly evolved to support students' language learning. With MALL, students can access language learning materials and connect to their teachers as well as their friends whenever and wherever they want (Zhao, 2005). To demonstrate how mobile technology can be integrated in language learning and teaching and how it plays an important role in improving

language learning and assisting in language teaching, the following section will review some research studies regarding mobile-assisted language learning.

2.5.5 The Studies Related to Mobile-Assisted Language Learning (MALL)

Numerous studies in the last few decades have reported that mobile devices are being used to develop language skills. However, it is only possible to review some of these studies in this section.

Abdous et al (2009) conducted a survey study to evaluate the benefits of integrating podcasts into L2 curriculum compared to using them as a supplemental/review tool in eight university courses over a semester. Completed surveys were obtained from 113 of the students enrolled in the eight language classes that participated in the study. The findings of the study revealed that when podcasts were integrated into the curriculum for instructional purposes such as for student video presentations, for student paired interviews, and for roundtable discussions students were more likely to use this technology and to report on its academic benefits.

Another study was conducted by Alemi et al, 2012. It aimed to investigate the effectiveness of SMS on Iranian university students' vocabulary learning and retention. Forty five university freshman students with upper intermediate proficiency level were chosen to take part in this study. During the experiment, the participants of the experiment were taught 320 head words from the Academic Word List via SMS while the participants of the control group (N=17) were taught the same words by using a dictionary. At the end, a vocabulary test from the Academic Word List was given to the participants in both groups. The results revealed that all students improved on the post-test, but with no significant difference between the groups.

However, the SMS group showed significantly better vocabulary retention on a delayed post-test.

Azabdaftari and Mozaheb (2011) conducted a research study to compare the use of two strategies for vocabulary learning: flashcards and m-learning among 80 university students. Half of these students formed an experimental group that used a phone-based vocabulary program (Spaced Repetition System) complemented by SMS exchanges with the instructor and the use of internet resources. The control group used printed flashcards containing English words with pronunciation on one side and the corresponding L1/L2 equivalents on the other. The findings showed that the use of mobile phones for language learning and vocabulary learning would be a better strategy compared to the use of flashcards.

Baleghizadeh and Oladrostam (2010) investigated the effect of using mobile phones to record L2 English class discussions intended to elicit grammatical forms under review. Forty pre-intermediate Iranian female students participated in this study. The participants in both the experimental and control groups were provided with an opportunity to review and recycle six grammatical forms: present perfect versus simple past, direct versus indirect questions, and comparatives versus superlatives. Students in the experimental group made 2–3 minute recordings of their speech on their mobile phones and as an out-of-class assignment analyzed their spoken mistakes and commented on them in a subsequent session while the participants in the control group, however, received no extra treatment at all. The results showed that students in the experimental group demonstrated significantly better grammatical accuracy compared to the control group of the same size that did not engage in these review activities.

The next study was conducted by Begum (2011). This study aimed to investigate the potential of mobile phone SMS use as a language learning tool in the L2 English classrooms of Bangladesh. For the study, some SMS based class tests were conducted in the English Department of the university where one hundred undergraduate EFL students participated as subjects. Before the tests, students were sent a lesson on English preposition usage, received a multiple-choice quiz, answered it, and received teacher feedback, all via SMS for one week. The data were collected through students' questionnaires, and teachers' interview records and classroom observation reports. The research results demonstrated that SMS-based instruction has great potential as an instructional tool, nevertheless, a number of problems were also revealed: cost, small screen size, text inputting difficulties, and lack of teacher training.

Cavus and Ibrahim (2008) conducted a study to investigate the use of mobile phone SMS text messaging to teach technical L2 English vocabulary to 45 computer science university students. The Mobile Learning Tool (MOLT) developed by the researcher was used to send SMS word pairs every half-hour daily between 9 a.m. and 5 p.m. Students' opinions toward MOLT were collected after the experiment. The research results demonstrated that all participants enjoyed learning out of class with the help of their mobile phones.

Deng and Shao (2011) conducted a study on Self-directed English vocabulary learning with a mobile application in an everyday context. This study explored students attitudes towards and use of a freely available mobile-phone based e-dictionary application (Remword) for self-directed L2 English vocabulary acquisition. Following a one-month trial period, survey and interview data were collected. The

findings indicated that students were self-directed and independent in their vocabulary learning and they were able to afford the necessary software. Additionally, students indicated high readiness for mobile learning and challenges are indicated to the sustainability of mobile learning.

Gikas, J and Grant, M.-M (2013) explored teaching and learning when mobile computing devices, such as cellphones and smartphones, were implemented in higher education. This study revealed a portion of the findings on students' perceptions of learning with mobile computing devices and the roles of social media. The students from three universities across the US participated in this study. The students' teachers had been integrating mobile computing devices such as cellphones and smartphones, into their courses for at least two semesters. Data were collected through student focus group interviews. Two specific themes emerged from the interview data: (a) the advantages of mobile computing devices for student learning and (b) the frustrations from learning with mobile computing devices. Mobile computing devices and the use of social media created opportunities for interaction, provided opportunities for collaboration, as well as allowed students to engage in content creation and communication using social media and Web 2.0 tools with the assistance of constant connectivity.

Dang (2013) investigated learners' previous experience and attitudes towards the use of mobile phones for English language learning in the future in a sample of 76 Vietnamese English majors at HoaSen University. The findings revealed that the majority of the samples had used their mobile phones for the purpose of general education and studying English. Additionally, they also had positive attitudes towards

the use of mobile phones for studying English in the future in the areas of vocabulary, listening and reading.

In conclusion, the above research studies focusing on the combination of mobile devices and language learning recommend that mobile devices can be effectively utilized for English language learning. They have a great potential as language instructional tools that enhance students' language skills in different aspects. Additionally, students were more likely to participate in the integration of mobile devices and a language learning environment. However, to utilize mobile technologies more effectively in a language learning environment, learning theories which are relevant to learning with mobile technologies should be examined. Accordingly, a synthesis of learning theories of behaviorism, cognitivism, constructivism and social constructivism are reviewed in the next section.

2.5.6 Learning Theories Related to Mobile-Assisted Language Learning

In our time, online education has become popular at higher education levels. The way instruction is delivered to students is evolving from face-to-face instruction to online designs. Traditional ideas of classroom-based learning are presently giving way to modern ideas of '24/7 anywhere, anytime' learning (Barrs, 2011). From this perspective, learning can be accessed and managed in part or in whole by the learners themselves, primarily on mobile devices. To create effective learning environments based on mobile devices, several learning theories concerning mobile-assisted language learning have to be studied. Therefore, the behaviorism learning theory, cognitivism learning theory, and constructivism learning theory will be reviewed in this section as they will be applied in the development of an instructional model for smartphone-assisted reading in English.

2.5.6.1 Behaviorism Learning Theory

Based on the belief that behaviors can be measured, trained, and changed (Watson, 1930), the behaviorism theory of learning emerged in the early twentieth century. Behaviorism is a theory of learning based upon the belief that all behaviors are acquired through conditioning. Conditioning occurs through interaction with the environment. Behaviorists believe that our responses to environmental stimuli shape our behaviors. Therefore, behavior can be studied in a systematic and observable manner with no consideration of internal mental states. From learning perspectives, only observable behaviors should be studied, since internal states such as cognitions, emotions, and moods are too subjective.

Behaviorism as a teaching approach is often referred to as directed instruction. In this teaching approach, the learner is dependent upon a teacher for acquisition of knowledge. The teacher has to demonstrate factual knowledge to the students either directly or through the setting up of contingencies, then observe, measure, and modify behavioral changes in specified directions. The use of exams to measure observable behaviour of learning, the use of rewards and punishments in school systems, and the breaking down of the instruction process into "conditions of learning" are all examples of the behaviorist model of learning. Within the behaviourist learning paradigm, learning is thought to be best facilitated through the reinforcement of an association between a particular stimulus and a response.

With the arrival of mobile technology, a behaviourist perspective on the use of mobile devices can be adopted as an effective way of learning. The use of mobile devices to present teaching materials/content, and specific questions, elicit

responses from learners, provide appropriate and immediate feedback, and provide drill and feedback activities fits within the behaviourist learning paradigm.

2.5.6.2 Cognitivism Learning Theory

Based on the belief that learning as a change in behavior is too narrow, the cognitivist approach prefers to study the learner rather than the environment, in particular, the complexities of human memory and its inner processes. Cognitivism is a study in psychology that focuses on inner mental activities, rooted in Gestalt psychology and the work of Jean Piaget who challenged behaviorism in 1960s as the dominant paradigm. Cognitivism is defined as the acquisition of knowledge and skill by mental or cognitive processes — the procedures we have for manipulating information 'in our heads'. The underlying concepts of cognitivism involve how we think and gain knowledge. Thus, it involves examining learning, memory, problem solving skills, and intelligence.

This is in opposition to the behaviorism idea that a black box of the human mind and inner processes were of no concern (Skinner, 1974), cognitivism theory rather opens the “black box” of the human mind is valuable and necessary for understanding how people learn. Mental processes such as thinking, memory, knowing, and problem-solving need to be explored. Knowledge is a storehouse of representations, which can be called upon for use in reasoning and which can be translated into language. Thinking is a process of manipulating representations (Winograd & Flores, 1986).

In a learning environment, there are some educational implications of cognitive development that influence and contribute to learning as suggested by Ormrod (1999).

(1) Cognitive processes influence learning. Cognitive theorists believe that learners are actively involved in the learning process and learning involves the formation of mental associations that are not necessarily reflected in overt behavioral changes.

(2) Learning difficulties often indicate ineffective or inappropriate cognitive processes, especially for children with learning disabilities, who tend to process information less effectively. Therefore, teachers need to be aware that all students are trying to learn something, as well as what they are trying to learn.

(3) As children grow, they become capable of increasingly more sophisticated thought.

(4) People organize the things they learn. Therefore, teachers can facilitate students' learning by presenting information in an organized manner. This organization should reflect students' previous knowledge and show how one thing relates to the other (i.e., helping students understand and make connections).

(5) New information is most easily acquired when people can associate it with things they have already learned. Teachers should then show how new ideas relate to previous learning.

(6) People control their own learning. Ultimately students, not their teachers, determine what things will be learned and how they will be learned.

In sum, according to the cognitivist learning perspective, knowledge can be seen as schema or symbolic mental constructions. Therefore, learning is defined as change in a learner's schemata not as a change in behavior.

Nowadays, mobile technologies are an essential part of education and becoming more frequent in the classroom. They are advancing and becoming easier

for children to use. With the notion of cognitivism, mobile technology can be used to present multimedia learning such as images, audio, video, text, and animations which encourage students' minds to make connections and obtain individualized support and incrementally improve a learner's ability to build on prior knowledge.

2.5.6.3 Constructivism Learning Theory

According to Hoic-Bozic (2009), learning systems should contain "elements of behaviorism, cognitivism, and constructivism", but "constructivism is the most widely accepted model of learning in education today" (p. 21). Based on Alessi and Trollip (2001), constructivist learning theory maintains that "knowledge is not received from outside, but that we construct knowledge in our head" (p. 31). Similar ideas are offered by McDonough (2001) and Hoic-Bozic (2009). McDonough (2001) stated that knowledge is constructed by the individual rather than transmitted to the individual. In accordance with Alessi and Trollip and McDonough, Hoic-Bozic (2009) said that "the constructivist school recognizes learning as an active process of constructing meaning. Students do not memorize what was said by the instructor. Instead, they construct their own versions of the learning matter" (p.20).

The constructivism theory suggests that a learner must actively construct knowledge and skills based on what they already know and experience (Bruner, 1990 quoted in Tian, 2010). In the perspective of learning and teaching, the constructivist approach highlights the active process of learning, whilst teaching activities and instructional methods are downplayed (Alessi & Trollip, 2001). In the process of constructing knowledge, the learner is exploring, experimenting, doing research, asking questions, and seeking answers (Alessi & Trollip, 2001). From this viewpoint, education should be viewed as learners actively constructing their own knowledge and

the role of the teacher moves from one of being the supplier of knowledge to coaches, facilitators, or even partners with learners in the learning process.

During the past two decades, the use of multimedia technology for foreign language instruction has expanded rapidly (Yang & Chen, 2006). Hence, the way instruction is delivered to students is changing from face-to-face to online instruction. Online learning has grown rapidly in the past few years in colleges, and it can create effective interactive learning environments for adult online courses. In the early to mid-1990s, the constructivist approach to learning rapidly spread in the instructional design and multimedia fields (Alessi & Trollip, 2001). Proponents of the constructivist approach suggest that designers should create educational environments that assist the construction of knowledge. To accomplish the goal of applying the constructivist approach to the instruction, the following principles are typically put forward (Alessi & Trollip, 2001).

- (1) Emphasize learning rather than teaching.
- (2) Emphasize the actions and thinking of learners rather than of teachers.
- (3) Emphasize active learning.
- (4) Use discovery or guided discovery approaches.
- (5) Encourage learner construction of information and projects.
- (6) Have a foundation in situated cognition and its associated notion of anchored instruction.
- (7) Use cooperative or collaborative learning activities.
- (8) Use purposeful or authentic learning activities.
- (9) Emphasize learner choice and negotiation of goals, strategies, and evaluation methods.

- (10) Encourage personal autonomy on the part of learners.
- (11) Support learner reflection.
- (12) Support learner ownership of learning and activities.
- (13) Encourage learners to accept and reflect on the complexity of the real world.
- (14) Use authentic tasks and activities that are personally relevant to learners.

Additionally, Jonassen (1991, quoted in Tian, 2010) proposes eight principles to create constructivist learning environments:

- (1) Related real-world environments that employ the context in which learning is relevant.
- (2) Focus on realistic approaches to solving real-world problems.
- (3) View the instructor as a coach and analyzer of the strategies used to solve these problems.
- (4) Stress conceptual interrelatedness, providing multiple representations or perspectives on the contents.
- (5) Instructional goals and objectives should be negotiated and not imposed.
- (6) Evaluation should serve as a self-analysis tool.
- (7) Provide tools and environments that help learners interpret the multiple perspectives of the world.
- (8) Learning should be internally controlled and mediated by the learners. (Tian, 2010)

In summary, constructivism views learning as an active process in which learners actively construct knowledge and skills based on what they already know and experience. It emphasizes the learner rather than the teacher. According to the constructivist point of view, the role of the teachers are being coaches, facilitators, or partners with learners in the learning process. In order to transform learners from passive recipients of information to active constructors of knowledge, teachers must provide learners with an environment in which to participate in the learning process, and the appropriate tools to work with that knowledge. With mobile devices, constructivism can be applied to learning by allowing individuals to connect and share data, files, and messages. They can also be connected to a shared data network, further enhancing possibilities for communication. To gain more understanding of how learning theories evolved in mobile-assisted language learning, some research studies related to the applications of the concepts of learning theories to MALL are reviewed in the next section.

2.5.7 Studies Related to the Applications of the Concepts of Learning Theories to MALL

A great deal of research on mobile-assisted language learning has been conducted on the basis of behaviorism, cognitivism, and constructivism learning theories. This section, therefore, focuses on those research studies.

Al Hamdani (2014) conducted a study on A Constructivist Approach to a Mobile Learning Environment. The study aimed to show how it is possible to start teaching and learning with mobile devices and how students use smart devices to enhance their learning capabilities. This case study was carried out using resource based learning activities over a period of four to eight weeks to teach a

communicative language course to fourth year students at Sohar University. Students used their own mobile devices as tools to acquire knowledge enthusiastically. The study shows a successful attempt of integrating technologies and constructivist learning approach during the teaching of the CLT course with the students reporting that mobile phones helped them to manage the course information, to promote more of their thinking skills and to cooperate with each other.

Guo (2014) conducted a research study on Analyzing and Evaluating Current Mobile Applications for Learning English Speaking. The study proposed to investigate the relevant learning theories underpinning the current mobile applications for English speaking learning, the pedagogic features of those applications, and the evaluations of the applications mainly from the learners' perspectives. To examine the contemporary mobile applications for English speaking learning, 34 applications were explored and selected on Google Play. After that, these applications were analyzed. Then, five representative applications were identified for further evaluation. To collect the data, open-ended questionnaires were sent to five participants and a group interview was conducted to collect the learners' feedback on the chosen applications and their perceptions of mobile assisted language learning experiences. The results of the study revealed that behaviourist learning theory is the dominant theory underpinning the current mobile applications for the learning of English speaking, considering that drill and practices are the most popular activities and five categories were identified for the English-speaking applications, namely pronunciation, conversation, video lessons, reference, and authentic content. Regarding the learners' feedback, both the users' online reviews and the research participants' comments

demonstrated their positive attitudes toward using current mobile applications for English language learning.

Herrington (2009) investigated the educational potential of incorporating mobile technologies in the postgraduate student design of curriculum resources that adopted a constructivist perspective on learning. The approach used in this study was to engage postgraduate students in a constructivist learning environment where they would learn about both the theory of constructivism and the use of mobile devices in learning. The research was carried out with a class of 21 students coming from a diversity of technological, educational and cultural backgrounds. According to the results of the study, it could be concluded that providing students with a complex curriculum task involving mobile technologies set in the context of their classroom or workplace was a daunting but satisfying experience for most students.

Huffman and Hahn (2015) conducted a study on the Cognitive Principles in Mobile Learning Applications. The study aimed to explore the effectiveness of different foreign language learning methods using a computerized learning environment. In the study, a foreign language learning application environment was developed using various learning methods in order to identify optimal m-learning applications. Using computer-based learning experiments that assimilate an m-learning environment, participants were tested over their long-term memory retention of newly learned German vocabulary. The effectiveness of rote learning, retrieval practice, repeated retrieval practice, and the keyword method were compared. The results of the study showed that repeated retrieval practice was more beneficial for memory, especially for longer retention intervals, and it was more effective for learning German vocabulary than the keyword and rote learning methods. No

statistical differences were found between the keyword and rote learning conditions. The research suggested that retrieval practice can be effectively incorporated in m-learning applications.

Suresh and Al-Khafaji (2009) investigated teaching and learning activities through the use of mobile phone technology. The research suggested that teaching and learning activities through the use of mobile technology facilitated a deep approach to learning. 23% of students who participated in the study demonstrated two types of learning by i.e. reflection-in-action and reflection-on-action. The results of a questionnaire showed that mobile phone technology had helped students to learn. The research concluded that three of the six board theory based activity: learning and teaching support activities, constructivist activities and behaviourist activities have been embedded through the use of mobile technology.

From the review above, it can be seen that not only do mobile devices have the potential for effective learning, but learning theories such as behaviorism, cognitivism, and constructivism can be applied to the use of mobile technology which can play a significant role in learning and make mobile learning more effective for learners.

Since the mid-1990s, MALL has shed light on the utilization of five mobile technologies: pocket electronic dictionaries, personal digital assistants (PDAs), mobile phones, MP3 players, and most recently ultra-portable tablet PCs (Burston, 2013). However, among these mobile technologies, mobile phones, especially smartphones, seems to be the most popular among young people, compared to all sorts of mobile devices, and they are probably the most widely owned handheld devices (Trinder, 2005).

Smartphones are becoming an integral part of modern life around the world. Due to increasingly powerful features and services in smartphone, they are able to provide access to content anywhere and at any time. A recent survey found that 60 percent of foreign language students and nearly 14 percent of instructors reported using smartphones for language learning purposes (Simon & Fell, 2012). Smartphones are now becoming an appropriate tool to be used in educational contexts. Because the smartphones will be used as a teaching and learning mediator in this present study, the literature relating to smartphones will be reviewed and presented in the next section.

2.6 Smartphones

The usage of smartphones has grown extensively over the last years, and so have the services and numerous applications offered to users (Cedergren and Hellman, 2012). Based on a survey study conducted by Simon and Fell (2012), 97.5 percent of the students surveyed reported possessing a cell phone (regular or smartphone), with 69.6 percent owning a smartphone specifically. In the Horizon Report, it is stated that “virtually 100% of university students are equipped with mobiles” (Johnson et al., 2011) which means all university students possess at least one mobile. It is also suggested that mobile phones will be most likely updated to smartphones when contracts end or phones are lost or broken (Barrs, 2011).

2.6.1 The Definitions of Smartphone

There is probably no standard definition for the term ‘smartphone’. What we know is that not all cell phones are smartphones, so we need to know exactly how smartphones are different from regular phones. According to Wikipedia a smartphone

refers to a mobile phone with more advanced computing capability and connectivity than the basic features of a regular phone.

Another definition of smartphones is given by Yue et al. (2003) which is that a smartphone refers to "the same appliances as personal computers, with a separate operating system, installed by the user software, games and other third-party service providers, which enable such programs to continue to expand the functionality of the phone, and this can be achieved through the mobile communication network with access to a wireless network (p 107-109).

In conclusion, based on the above definitions of a smartphone, a smartphone as used in this study refers to a mobile phone built on a mobile operating system, with more advanced computing capability and connectivity than a phone with only basic regular features. The prevailing use of smartphones has brought millions of mobile applications to L2 learners. As a part of language learning and teaching, there are ample smartphone applications that are designed for ESL learners. Thus, to create effective smartphones with embedded language teaching and learning, the advantages and weaknesses of smartphones for mobile-assisted language learning have to be identified.

2.6.2 The Advantages of Smartphones in Language Learning

Smartphones are nowadays becoming more and more extensively used because of their user-friendly design and convenient multi-functions. They are being used as educational tools as well. In the realm of language learning, it is claimed that smartphones offer the greatest potential for such invisible integration of technological hardware into language learning (Barrs, 2011). Several of the advantages of the integration of smartphone technology into language learning can be defined as follows:

(1) Smartphones provide students with flexibility, allowing them to gain access to learning content at any time and from any location.

(2) Smartphones help students to learn more new words (Cavus and Ibrahim, 2009).

(3) Smartphones have the best potential to become a normalized language learning technology, both inside and outside of the classroom, and this normalization would bring with it opportunities not only for use in class, but also for the promotion of language learning activities that could be achieved beyond the classroom (Barrs, 2011).

Additionally, Zilber (2012) also claims that smartphones have attributes that make them well suited to the delivery of certain kinds of English language learning and practice because smartphones are:

- (1) familiar and easy to use
- (2) personal, private and can be carried everywhere
- (3) a natural environment for speaking and listening
- (4) equipped with microphone, speakers, and special speech processing hardware and software
- (5) network connected
- (6) fully-capable computing devices, and
- (7) becoming ubiquitous.

There are many ideas about how smartphones can be integrated into schools and learning processes. According to Barrs (2013), smartphones are technically superior to standard mobile phones as they are run on advanced operating systems such as iOS (Apple), Android (Google) and Symbian (Nokia) which allow for the use

of high-resolution touch-screen interfaces and smartphones-specific applications. These tools can provide suitable learning platforms as they have a lot of applications tutors and learners may use in their academic activities (P. MTEGA et al., 2012). One field that could truly take advantage from this is the field of language learning.

In the second decade of the 21st century, smartphones offer the greatest potential for the integration of technological hardware into language learning (Barrs, 2011). According to Sedighi and Soyooof (2013) smartphones can be instrumental in language instruction, their marvelous applications such as internet access, voice and text messaging, and the capacity to record videos and audio can aid language learners in their language learning. The ability to access a huge knowledge source through networking from any point in the world is making smartphones the ultimate source of information.

A survey study conducted by Sedighi and Soyooof (2013) revealed the effectiveness of smartphone applications in teaching new language and that the current applications of smartphones can facilitate students' language learning enormously. Smartphone applications have eased the learning of sub-skills in second language learning, namely, grammar, vocabulary, and pronunciation. They also allow students to boost their skills: speaking, listening, reading, and writing. In terms of language skills, students can listen to different genres of listening directly and record audio in order to listen to it repeatedly, or they can read e-books and download them via the wireless internet, so they can have unlimited access to different websites and they can also read newspapers. In addition, they can also test and evaluate their reading comprehension.

In terms of sub-skills, for instance, mobile dictionaries equipped with audio pronunciation in both British and American of a given word allow language learners to try to imitate the pronunciation or listen to the way native speakers of Britain and America pronounce words in order to check their pronunciation. In addition, language learners can benefit from various vocabulary software applications which enable them to expand their knowledge of vocabulary in different ways and measure not only their knowledge of vocabulary, but also their pronunciation. Furthermore, language learners can make the most of the applications which are concerned with the learning of grammar and after sufficient instruction students can then evaluate their grammatical knowledge. In addition, these evaluative applications offer enough feedback for language learners to be able to find out which particular aspects of grammar they need to devote more time to.

Kim and Kwon (2012) also examined the strengths of smartphone applications in language teaching and learning. They revealed that ESL applications seem effective in that they provide a personal and learner-centered learning opportunity with ubiquitously accessible and flexible resources and activity. Because of this, learners are encouraged to develop a sense of uniqueness and to develop life-long learning behaviors. From this perspective, learners can more easily and promptly access language learning materials whenever or wherever they want to learn, thus, enhancing their language learning motivation and autonomy.

In sum, the invention of the smartphone is a great technological achievement. From the point of view of language learning, smartphone ESL applications provide a personal and learner-centered learning opportunity with access to a considerable amount language learning materials, information resources and language activities

that can be easily used anywhere and at any time. However, every coin has two sides and smartphone devices are no exception. Inevitably, smartphones have various advantages as well as some weaknesses too. Consequently, some of the weaknesses of the smartphone will be considered in the next section.

2.6.3 The Weaknesses of Smartphones in Language Learning

Based on the research study conducted by Kim and Kwon (2012), it was found that currently available ESL smartphone applications also have weaknesses. First of all, smartphone applications are weak in realizing mobility as a more situated, field-dependent, and collaborative learning opportunity. To overcome these problems, a more active use of authentic context, socially interactive tasks, timely and situated materials, such as podcasting, is needed on smartphone applications. Additionally, knowledge of social processes should be also considered as a basis for the design and implementation of technology in smartphone applications.

Furthermore, it has been found that the existing applications facilitate personal learning, but do not effectively assist personalized learning. Though there seems considerable learner-centered learning opportunities through the provision of rich language data, including sound and movies, and test questions, there is a lack of knowledge-building devices, such as hyperlinks, RSS, MoSoSo, CMS, and other web 2.0 tools. To deal with this problem, two recommended are made. First, in order to develop language skills in all aspects more varied and proper technology such as recorder, speech recognizer, audio file controller etc should be embedded in the technology. For instance, to develop productive speaking and writing skills, recorders, speech recognizers, audio file controllers, memo pads, course management services (CMS) should be commonly provided. Second, to serve the individual learning

needs, interests, and learning styles of students, a variety of approaches and methodologies should be adopted in the technology.

Another technical limitation of smartphone applications used for language learning is that many of the ESL applications on the smartphone, need to be mastered to avoid confusions when trying to operating them. The cost of smartphone devices and the diversity of mobile OS, as well as a smaller memory also provide challenges (SELWOOD, 2013). One more weakness of smartphones is disturbances and distractions (Langmia and Glass, 2014). It is stated that when students are allowed to bring these gadgets into the classroom, they pay more attention to them than the lectures. This is similar to a study of Levine, Waite and Bowman (2012) which revealed that mobile phones constitute a distraction and thus can have a negative affect on learning.

To explain clearly how smartphones can be integrated into and what effects they may have on language learning, some studies related to the integration of smartphones in language learning are reviewed in the next section.

2.6.4 Studies Related to Smartphones in Language Learning

Lee et al. (2014) conducted a research study on the effects of implementing C&U-messaging through smartphones on English grammar learning for college students. This study aimed to investigate the effects of implementing a ubiquitous multimedia message transmitting platform (C&U-Message) on college students' English learning.

There were 26 college students who participated in using a client-side application system C&U-Message (C&U-Msg) system for English learning through Android-based mobile phones. After the 6 week experiment, data were collected

from pre-and post-tests and a survey questionnaire was administered to the students about their learning satisfaction. The findings of the study revealed that the C&U-Message application on mobile English learning, learning content for mobile English learning, practical use of C&U-Message, user satisfaction with learning achievements, use of digital learning materials, and users' attitudes toward learning language through mobile devices, and finally the C&U-Msg system itself can be effectively utilized in the learning of the English language.

Leis, Tohei, and Cooke (2015) conducted a study to investigate the advantages of using smartphones in an English as a foreign language (EFL) classroom. One hundred Japanese university students with 82 females and 58 males participated in the study. The study compared two groups of students who were either prohibited from using their smartphones in the classroom, or encouraged to use them only for academic purposes, and the study also investigated whether those using smartphones in their EFL lessons would show a tendency toward becoming autonomous learners. To collect the data, questionnaires and five open-ended questions were used in the study. The results of the study show that the students who were encouraged to use their smartphones during class were motivated to study more in their free time as well as showing signs of autonomy by taking charge of their learning and considering ways to improve their own study habits and English proficiency.

White and Mills (2014) conducted a study to examine attitudes towards and usage of smartphone technology among students studying English as a Foreign Language (EFL) at a private Japanese university over a 12-month period (2011-2012). In 2011, the data was collected in class through a paper-based instrument while the data in 2012 was collected through an online form survey system. 403 students

volunteered to participate in the 2011 survey (White & Mills, 2012) and 162 students volunteered for the 2012 study. The comparison of the two data sets demonstrated that students were increasingly adopting smartphones for personal use, but were still reluctant to use the devices for education purposes. However, attitudes towards the use of these devices for learning became more positive during the course of the 12-month period.

Another study was conducted by Wu (2014). This study investigated the effectiveness of smartphones in helping ESL college students learn English vocabulary. Fifty sophomore college students at Jiujiang University of China participated in the study. They were randomly divided into an experimental group and a control group equally. Students in both groups were instructed in all of the 852 vocabulary items which were listed in a glossary appendix section in their textbook outside class sessions. However, the students in the experimental group were able to study these 852 words using their smartphones. After the experiment, a pre-test and post-test were administered to assess the impacts of the experiment. The results of the study revealed that the students receiving treatment in the experimental group outperformed those in the control group significantly. This indicates that the use of smartphones is a very effective technique in building vocabulary knowledge for Chinese university EFL students.

In conclusion, according to the research studies referred to above it has been shown that smartphones have a positive effect on learning and teaching language and also can motivate students to study more in their free time. It also shows that students have a positive attitude towards using smartphone for studying both inside and outside the classroom. As the instructional design is a significant component in the design of

smartphone assisted English reading instruction, the literature on instructional design which can provide useful guidelines for instructional development will be reviewed in the next section.

2.7 Instructional Design

In the present study, an appropriate instructional model for smartphone-assisted reading in English is designed for use in the experiment. Thus, knowledge of instructional design which is a systematic procedure for instruction is necessary. In this section, a definition of instructional design and a few well-known instructional design models including the ADDIE model, the Dick and Carey System Approach Model, the Kemp Model, the SREO Model and the OTIL Model will be presented.

2.7.1 Definitions of Instructional Design (ID)

Instructional Design is a key concept in education whose definition varies, usually by discipline. Nevertheless, a few common instructional design definitions are described below:

Reiser and Dempsey (2007) defined Instructional Design as “a systematic process that is employed to develop educational and training programs in a consistent and reliable fashion”. Jacobs (1987) and Rothwell (1996 and 2000) go on to state that instructional design means more than literally creating instruction. Instructional Design is usually associated with the concept of analyzing the problems that occur, identifying the basic causes of the problems, considering various solutions to address the causes, and implementing solutions in ways designed to minimize the unintended consequences of corrective action.

Dick and Carey (2005) view instructional design as an entire system, focusing on the interrelationship between context, content, learning and instruction. Shambaugh and Magliaro (1997) describe instructional design as an intellectual process with systematic features which are generated to assist designers in their construction of structured possibilities to address the needs of learners, and are responsive to the nature of the content to be taught, and the realities of the instructional setting. Smith and Ragan (1999) also describe it as “the systematic process of translating principles of learning and instruction into plans for instructional materials and activities”.

In sum, based on the definitions of instructional design presented above, instructional design (ID) can be considered as a systematic procedure that is employed to develop a kind of instruction which optimizes successful learning.

2.7.2 The Fundamental Principles of Instructional System Design

To develop effective instructional design, a knowledge of instructional design principles is required. Based on Calloway (undated), by following the key principles of instructional design, the instructional designer is assured of designing instruction that is effective and efficient.

In Merrill’s research (2002), a variety of learning theories and models were selected and analyzed to determine a set of common principles for designing instruction. In the end, five main principles of instructional design emerged from Merrill’s research.

Principle 1- Problem centered: Learning is promoted when learners are engaged in solving real-world problems.

Principle 2 - Activation: Learning is promoted when relevant previous experience is activated.

Principle 3 - Demonstration (Show me): Learning is promoted when the instruction demonstrates what is to be learned rather than merely telling information about what is to be learned.

Principle 4 - Application (Let me): Learning is promoted when learners are required to use their new knowledge or skill to solve problems.

Principle 5 - Integration: Learning is promoted when learners are encouraged to integrate (transfer) the new knowledge or skill into their everyday life.

Some other principles of Instructional Design were proposed by Smith & Ragan (2005). There are six key principles or assumptions that underlie or form the basis for instructional design:

- (1) ID is a systematic process rather than a chaotic and random activity.
- (2) ID is problem-solving oriented.
- (3) ID is learner- and learning-centered in contrast to teaching- or medium-centered.
- (4) ID has as its main goal to be effective, efficient, and motivationally instructive.
- (5) ID insists on congruence among objectives, instruction, and evaluation.
- (6) ID is both empirical and theoretical as opposed to intuitive.

Additionally, Yelon (2001) stated that an instructional design plan facilitates learning by the interaction of the following components:

- (1) **A problem or a need** – there must be a problem of practice or an educational need that should be addressed during the lesson.
- (2) **A real-world performance** – how the learning objectives fit into a real-world activity or need.

- (3) **An instructional objective** – the objectives are based on the final outcome, activity or test. These objectives will each be different for the four types of knowledge: performing skills, recalling facts, identifying examples of concepts, and applying principles.
- (4) **A set of essential content** – the basic ideas and skills that will allow the learner to complete the task or understand the content.
- (5) **An evaluation consisting of a test or observation** – an assessment, observation or product providing evidence that the objectives have been accomplished in the real-world setting.
- (6) **A method to help participants learn** – the method to deliver the content; a lesson.
- (7) **Motivation** – three basic principles of motivation were mentioned
- Meaningfulness – content and activities must have meaning for the learner
 - Pleasant consequences – the effects that achieving the goal will have on the learner
 - Novelty – an attention-getting, humorous or curious manner that relates to the useful information in your lesson
- (8) **Socialization** – a strong motivator for student learning
- (9) **Audience** – for what audience are you designing this lesson? Consider the following:
- Age
 - Skill level (including technology skills)
 - Prerequisite knowledge (including technology background)

- What motivates your audience (Cleman, 2006)

2.7.3 Instructional Design Models

According to Boettcher et al (2005, p. 164), design models can be defined as “the visual representations of an instructional design process, displaying the main phases and relationships. Each phase has an outcome that feeds the subsequent phase”. The nature of instructional design is made available for a systematic approach of implementing the instructional design process for a specific educational initiative (Morrison, Ross, & Kemp, 2004). Additionally, Branch and Gustafson (1998, p 4) defined an instructional design model as “a way of doing something; an explicit representation of a reality. It is an example or pattern that describes relationships in a normative sense”. Moreover, Shambaugh and Magliaro (1997) state that an instructional design model is a “written and visual depiction of a designer’s framework for addressing instructional issues and for constructing instructional design plans”.

Instructional design models propose design steps, management guidelines, and teamwork collaboration options with designers, technicians and clients. Likewise, models also help conceptualize multifaceted schematics along with how the range of stages or elements relate to each other (Gustafson & Branch, 2002a). Nonetheless, Siemens (2002) and Ryder (2006) point out that the application and value of instructional design models often depend on the instructional situation, problem or task. Currently, there have been several instructional design models that have been developed and implemented over the years. In this section, five models (ADDIE, Dick & Carey, Kemp, SREO, & OTIL) are presented below in order to serve as the underpinning and supporting points required for creating the instructional model used in the present study.

2.7.3.1 The ADDIE Model

According to Dick, Carey and Carey (2001), the ADDIE model is “a generic and systematic approach to the instructional design process which provides instructional designers with a framework in order to ensure that their instructional products are effective and that their creative processes are as efficient as they can possibly be”. The acronym “ADDIE” stands for Analysis, Design, Development, Implementation and Evaluation. It is well-known that frequently used models in instructional system design are usually based on ADDIE (Zimnas, Kleftouris & Valkanos, 2009). Kruse (2009) further states that there are more than 100 different ISD models, but almost all are based on the generic ADDIE model. The ADDIE model was originally created in 1975 by the Center for Educational Technology at Florida State University for the U.S. Army (Branson et al, 1975). In the beginning, the ADDIE model consisted of 19 steps that were considered essential to the development of educational and training programs (Hannum, 2005). However, in order to make it simpler and more comprehensible, the steps were clustered into five phases to facilitate the communication of the model to others. Currently, the ADDIE model has been illustrated in several ways. The diagram below shows the interrelationships of the components in the ADDIE model.

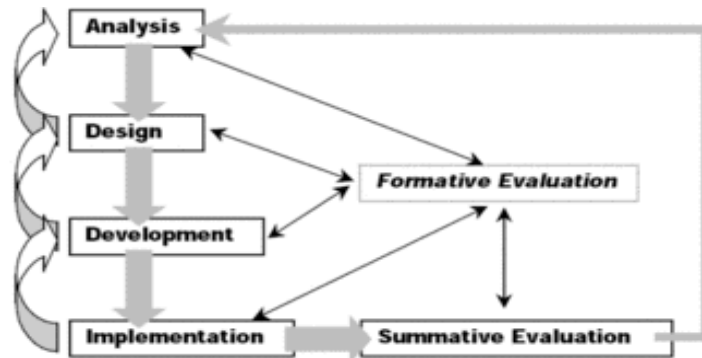


Figure 2.1 ADDIE Model, Diagram by: Steven J. McGriff, Instructional Systems, College of Education, Penn State University.

The phases of the ADDIE model can be explained as follows:

Analysis

Rossett and Sheldon (2001) state that “analysis is the study we do in order to figure out what to do”. Thus, in the analysis phase, the designer identifies learning problems and learning needs. Based on the results of the problems and needs identification, the instructional goals and objectives are established and the learners’ existing skills are also identified. Analysis is also concerned with the learning surroundings, any constraints, the delivery options and the timeline for the project (Zimnas, Kleftouris & Valkanos, 2009).

Design

During the design phase, the specific learning objectives, assessment instruments, exercises, content, subject matter analysis, lesson planning and media selection should be figured out systematically and specifically by the instructional designers.

Development

The development phase mostly depends upon the design phase. During this phase, the instructional designers and developers create and assemble the content assets that were blueprinted in the design phase. The actual production of the learning materials is also completed in this phase.

Implementation

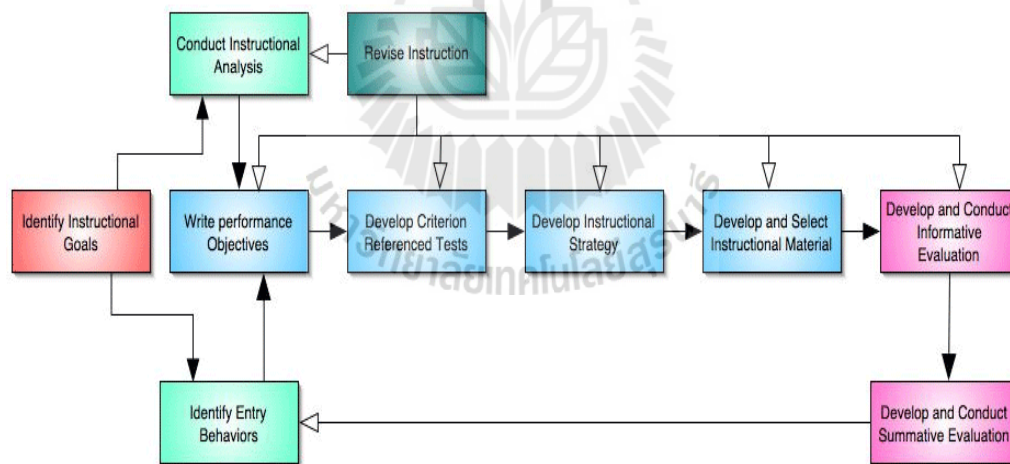
In the ADDIE model, the implementation phase is the authentic presentation. During this phase, a procedure to educate the facilitators and the learners is developed and the materials are delivered and distributed to the learner group. The facilitators' instruction should cover the course curriculum, learning outcomes, method of delivery, and testing procedures.

Evaluation

There are two parts in the evaluation phase: the formative evaluation and the summative evaluation. Formative evaluation refers to a range of formal and informal assessment procedures employed by teachers during the learning process in order to modify teaching and learning activities to improve student attainment (Crook, 2001) and it is present in each stage of the ADDIE process. It is used to gather information to identify the required revisions to the instruction. Formative evaluation is normally contrasted with summative evaluation which refers to the assessment of the learning and summarizes the development of learners at a particular time and aims to evaluate the overall effectiveness of the instruction at the end.

2.7.3.2 The Dick and Carey Model

Based on previous design models, the Dick and Carey (1990) model views instruction as a system of instruction as opposed to smaller subsystems (Brown & Eberwein, 2011). Akbulut (2007) pointed out that the model favors a behaviorist approach in that the instruction tasks must be in sequence and students are required to master each task before moving to the next level of instruction. Currently, the Dick and Carey model has become one of the most influential Instructional Design system-oriented models. Like most models, its system bears the conventional core elements of the ADDIE model. The five core elements of the ADDIE model are broken down into a variety of additional steps with different terminology (Brant, 2001; Gustafson & Branch, 2002a) that make it more complex than the ADDIE model.



Dick and Carey Instructional Design Model

Figure 2.2 The Dick and Carey Design Model

According to Dick, Carey & Carey (2001), the components of the model consist of nine procedural steps (see Figure 2.2). Each of these components depends upon one another. The direction of the sequential steps of the design is indicated by the black arrow lines presented in Figure 2.2. White arrow lines representing

formative evaluations point to the section of revised instruction that originates from a reassessment of the instructional analysis validity and the entry behaviors of learners. The linear sequences of the Dick and Carey Model are as follows: (a) assess needs to help identify learning goals, (b) conduct instructional analysis and analyze learners and contexts, (c) write performance objectives, (d) develop assessment instruments, (e) develop instructional strategies, (f) develop and select instructional materials, (g) design and conduct formative evaluations, (h) revise instruction based on formative evaluations, (i) design and conduct summative evaluations (Dick, Carey & Carey 2001; Gustafson & Branch, 2002a).

Assess needs to help identify learning goals

In order to identify learning goals, assessing the needs of the learners is conducted in the first step of the Dick and Carey model. According to Dick, Carey and Carey (2001), goals are clear statements of behaviors that learners are to demonstrate as a result of the instruction. Likewise, the instructional goals have to be created ahead of the implementation of the ID process (Dick et al 2001; Gustafson & Branch, 2002).

Conduct instructional analysis

Before proceeding with the instructional implementation, designers must conduct the process of instructional analysis to find out learners' prior skills, knowledge and attitudes (Dick & Carey, 2001). Gagne et al. (2005) also state that performing an instructional analysis allows designers to settle on targeted cognitive, affective, and psychomotor skills for the course and identify entry skills and characteristics the students should bring to the course. During this stage, the

designers must also carefully examine and create step-by step task descriptions to help the learners achieve the prescribed instructional goals (Dick & Carey, 2001).

Analyze learners and contexts

Learners and the contexts in which they will learn are analyzed in parallel while the instructional analysis is in progress. In this stage, the information on learners' entry behaviors, characteristics, prior knowledge, skills and attitudes, academic motivation and learning preferences must be analyzed. Then, the instructional design can continue with the selection of a suitable environment that can support learning. The performance context for learning applications and skills is important for the creation of instructional strategies (Dick, Carey & Carey, 2001).

Write performance objectives

In order to determine what learners will do during instruction and upon completion of an instructional module, writing up the performance objectives in the form of specific statements is an indispensable step. Performance objectives also serve as a guideline to develop the instructional material and design instruments to measure student performance and determine whether the lesson objectives were achieved. Dick, Carey and Carey (2001) consider this as a foundational step to the assessment stage.

Develop assessment instruments

To measure the students' ability to achieve the desirable goals, assessment instruments are developed (Ely & Plomp, 1996). In this stage, the knowledge of each objective's behavior, conditions and criteria is involved as guidance for the designer on how to select appropriate assessment instruments that are able to measure

performance objectives. Both objectives and assessments are dependent on each other (Dick, Carey & Carey, 2001).

Develop instructional strategies

Based on the information from the previous stages, the instructional strategies will be developed. According to Dick, Carey and Carey (2001), an instructional strategy consists of four major components: pre-instructional activities, content presentation, learner participation (including feedback) and follow-through activities. While the instructional designer should consider the learning theories, and the medium for instructional delivery, including interactivity.

Develop and select the instructional material

To create the instructional material, the instructional designer must carefully consider the content being taught, the availability of existing relevant materials, and other resources. Instructional materials to be utilized are an important resource for knowledge and skills. By the end of this stage, the designer should have draft copies of materials, assessments and an instructor manual. However, revising and improving lesson material can continue during the evaluation process (Dick, Carey & Carey, 2001).

Design and conduct formative evaluation

The process of designing and conducting formative evaluations is conducted to help assess the value of instructional goals (Gustafson & Branch, 2002). Dick, Carey & Carey (2001) propose three types of evaluations for the process, one-to-one evaluation, small group evaluation and field evaluation.

Revise instruction based on formative evaluations

After the formative evaluation stage, the results from the formative evaluations are then used to identify the obstacles to learning which are connected to specific

drawbacks of the instruction. Subsequently, this indicates how the instruction needs to be revised. This is the final step of the design process, but also functions as the first step of the interaction process (Dick, Carey & Carey, 2001).

Design and conduct summative evaluation

After revisions to the instruction, a summative evaluation will be conducted to evaluate the absolute worth of the instruction. Though the summative evaluation is considered a culminating evaluation for examining the instructional effectiveness, it is not a part of the nine basic components of the systems approach model (Dick, Carey & Carey, 2001).

2.7.3.3 The Morrison, Ross and Kemp Model (The Kemp Model)

The Morrison, Ross and Kemp Model is more commonly referred to as the Kemp Model. It is one of the most widely used models in the field of instructional design. The Kemp model defines different elements (Morrison, Ross & Kemp, 2004) of the instructional design, and emphasizes the adoption of continuous implementation and evaluation throughout the instructional design process.

According to the authors, the learning outcome factors which contribute to the construction of the Kemp Model, include the following: (a) level of readiness in dealing with lesson objectives, (b) instructional strategies related to objectives and student characteristics, (c) media and resources selection, (d) support for successful learning, (e) determination of objective achievements, and finally (f) needed revision for improvements. In this model, there are nine elements of the instructional design process and all elements are arranged in a circular manner in the form of an oval shape (See Figure 2.3).

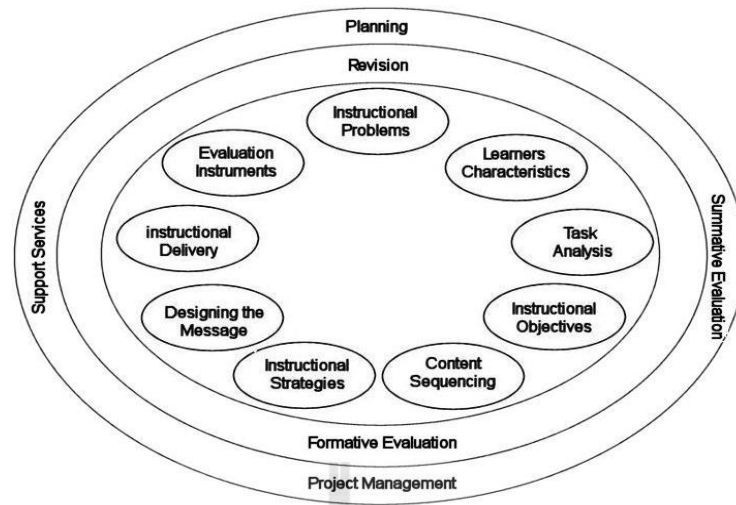


Figure 2.3 The Kemp Model, from Morrison, Ross & Kemp (2004)

The nine elements of the Kemp Model are: (a) Identify instructional problems, and specify goals for designing an instructional program; (b) examine learner characteristics that should receive attention during planning; (c) identify subject content, and analyze task components related to targeted goals and purposes; (d) inform the learners of the instructional objectives; (e) organize instructional units in a logical and sequential order for learning; (f) design instructional strategies to help the learner master the lesson objectives; (g) plan and develop instruction; (h) develop evaluation instruments to assess instructional goals; and (j) select resources to support instruction and learning activities (Morrison, Ross & Kemp, 2004). In the Kemp Model, the elements are independent of each other. The process is non-linear, and arranged in an oval pattern to indicate that the steps are not predetermined: hence, there is no particular start-and-end point. The instructor has the freedom to start developing from any point in the oval and to proceed in any manner at any stage of the process whichever is convenient and supports the design context and individual preference.

In addition, the two outer ovals which surround the nine interior ovals are meant to suggest that the activities each represent a ‘surround’ for the integral project and that they are ongoing throughout (Gustafson & Branch, 2002). The outermost oval contains the overall steps in ‘Planning’, ‘Project management’, ‘Support services’ and ‘Summative evaluations’ while the inner oval includes, ‘Revision’ and ‘Formative evaluation’. Based on Gustafson and Branch (1997), the revision and formative activities are meant to be undertaken at each stage of the development process, and if carried out conscientiously, can assist in making the learning materials very effective by the end of the project. Note that ‘Planning’, ‘Project management’, ‘Support services’ and ‘Summative evaluations’ in the inner oval are also required throughout the process.

2.7.3.4 The SREO Model

The acronym “SREO” stands for Suppasetseree’s Remedial English Online Plan. It was designed by Dr. Suppasetseree in 2005. The SREO Model is an Internet-based instructional system for language teaching which focuses on interactivity or interaction involving learners with the content (Tian & Suppasetseree, 2013). According to Tian and Suppasetseree (2013), “this model considered instructional design issues for E-learning: structure, content, motivation, feedback, interaction, and involvement” (p.34). The SREO Plan was derived from many instructional designers such as Dick and Carey (2001), Kemp (1971), Klausmeier and Ripple (1971), Gerlach and Ely (1971). The SREO Plan is shown in Figure 2.4

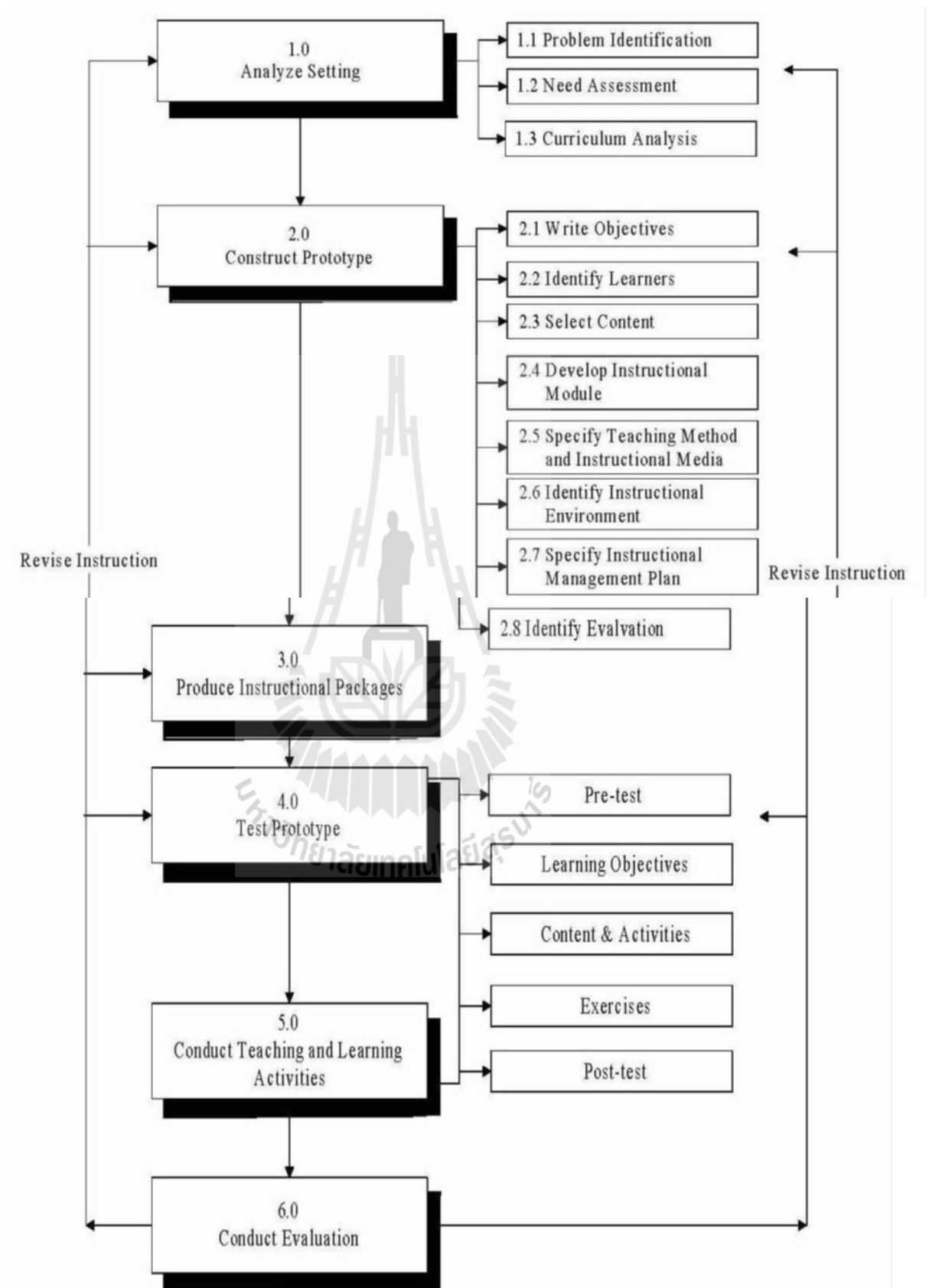


Figure 2.4 The SREO Model (Suppasetsree, 2005, p. 108)

According to Suppasetsee (2005), the SREO model consists of 6 major steps that are: analyze setting, construct prototype, produce instructional packages, test prototype, conduct teaching and learning activities, and conduct evaluation.

Step 1: Analysis Setting

In the first step of the SREO model, a survey is conducted to identify problems, and assess the needs and expectations of learners. The data obtained from the analyses is used as a framework for developing the curriculum of the program of study. At this stage, problem identification, needs assessment, and curriculum analysis are focused on.

Step 2: Conduct Prototype

Based on results from the first step, conduct the prototype, the second step then follows. There are 8 sub-steps focused on in this step. It starts first with writing objectives. As mentioned by Suppasetsee (2005) “it is necessary to translate the needs and goals into performance objectives that are sufficiently specific and detailed to show progress toward goals” (p. 110). The next sub-step is to identify the learners. This step is to determine which of the required enabling skills the learners bring to the learning task (Suppasetsee, 2005).

The third sub-step is to select content. According to Suppasetsee (2005), the content description contains only that which is needed to fill the gap between what students already know and what they must know before they can achieve the objective. The fourth sub-step is to develop the instructional module. To develop a successful module, the instructional design should be focused on an intended audience, and present the information contained there in a logical sequence.

The fifth sub-step is to specify the teaching method and the instructional media. At this stage, learning activities should be selected to provide students with examples and non-examples of desired outcomes and guide students to practice new behaviors or skills to master objectives have to be conducted. The sixth sub-step is to identify the instructional environment. It is suggested by Suppasetsee (2005) that “the learning packages work well in specially designed virtual environments to provide self-paced learning on the part of the students” (p. 112). The seventh sub-step is to specify an instructional management plan. As soon as a materials development project has been established, the next stage is the development of a plan.

As mentioned in Suppasetsee (2005), the plan must be realistic in its requirements and consistent with the available resources and time. Moreover, the planning function sets forth the important objectives, quality, and quantity of the materials to be developed. The last sub-step is to identify evaluation. In this stage the two "phases" of evaluation, formative and summative must be conducted. They are used to determine any weaknesses in the instructional plan before a full scale implementation.

Step 3: Produce Instructional Packages

This step is aimed (1) to construct the lesson plans that support each objective and (2) to create learning activities based on the content associated with the learning objectives.

Step 4: Test Prototype

To guarantee that the ISD model has followed all the objectives, in this step, each step must be tested and evaluated.

Step 5: Conduct Teaching and Learning Activities

It is suggested by Suppasetseree (2005) that “the learning packages are delivered in the form of web-based media via the Internet and other on-line components such as e-mail and web boards” (p. 114).

Step 6: Conduct Evaluation and Revision

In this step, the designer is recommended to observe students using the materials and to collect data from the student surveys. Then, the results obtained must be used for the revision process which should be on-going.

2.7.3.5 The OTIL Model

The OTIL Model was constructed by XingbinTian of Tongren University (TU), China, (2010). OTIL is an acronym for Online Task-Based Interactive Listening. This model is aimed to help instructors to design lessons for listening English which will enhance the possibility of improving students' listening skills and also encourage the learners to become fully engaged in the listening process. The orientation of the OTIL Model is systematic and web-based, using interactive listening instruction with a task-based approach. This model includes 6 phases and 17 steps in the process (see Figure 2.5).

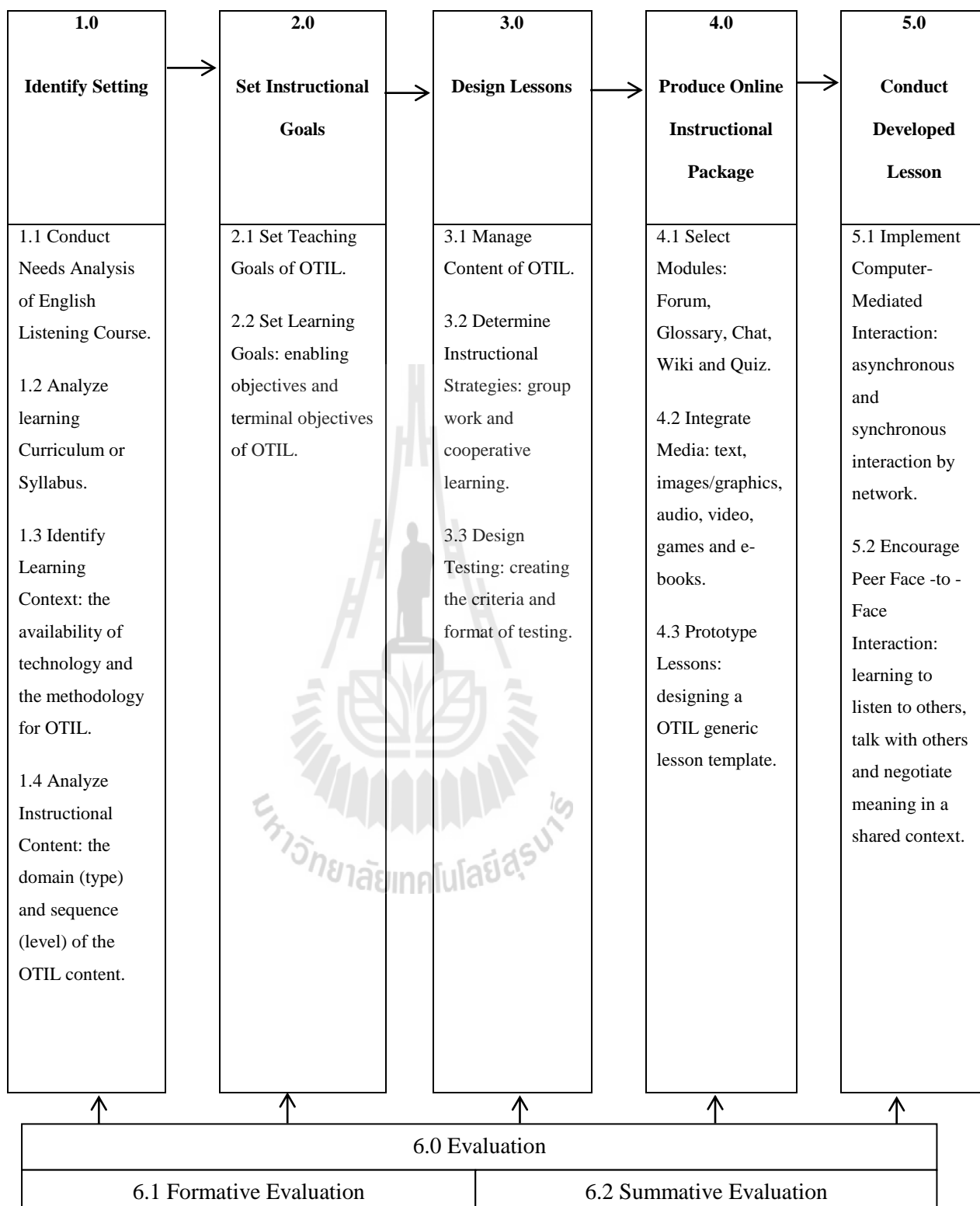


Figure 2.5 The Instructional Model for Online Task-based Interactive Listening

(OTIL Model) for EFL Learners

Phase 1.0 Identify Setting

Before the instructional process is designed, it is necessary to identify the setting of listening in English instruction. This phase is the basis of the whole instructional process. To construct this phase, the four following steps must be included: Conduct Needs Analysis, Analyze Existing Curriculum, Identify Learning Context, and Analyze Instructional Content.

1.1 Conduct Needs Analysis

This step is proposed to identify the needs and problems of the learners of listening in English. The results of this step can contribute towards setting the instructional goals and learning objectives and can help instructors to design the main components and requirements for OTIL.

1.2 Analyze learning Curriculum or Syllabus.

This step is aimed at defining and describing a course of studies, thus it will be necessary to analyze the existing curriculum or syllabus. Instructors should focus specifically on analyzing the requirements for listening skills.

1.3 Identify Learning Context

In this step, analysis is focused on the technical environment and instructional structure. The technical environment is concerned with organizing the minimum requirements including computers, the Internet, the Intranet, network servers, server capabilities, software, and hardware. For the instructional structure, instructors should research teaching methodologies which will be appropriate for instruction in listening in English.

1.4 Analyze Instructional Content

In this step, the type and level of the OTIL contents should be analyzed. A content domain analysis identifies whether the main purpose of the instructional content is to change the learners' cognitive, emotional, or physical status, while a content level analysis determines the optimal range of the sequence of learning required for achieving the instructional goal (Chyung & Trenas, 2009).

Phase 2.0 Set Instructional Goals

In this phase, it is necessary to specify what the learners will be able to do when they complete the instruction. The setting of goals in this phase should be clear, concise, complete and manageable. The instructional goals in this step can be into two parts: the teaching goals, and the learning goals.

2.1 Set Teaching Goals

The teaching goals are about what the instructor plans to teach, what instructors will cover in the course and how instructors will cover it. These goals are usually general, and at times vague depending on different types of learners.

2.2 Set Learning Goals

Learning goals refer to what exactly instructors expect learners will learn. The goals involve enabling objectives and terminal objectives.

Phase 3.0 Design Lessons

After setting instructional goals, phase 3, which is designing the lessons has to be conducted. In this phase, the instructors should outline how to achieve the instructional goals. Attention should be given to the effectiveness of lesson elements and criteria for designing assessment. To conduct lessons effectively, the following 4

steps should be proceeded with: manage content, determine instructional strategies, establish listening tasks, and design testing.

3.1 Manage Content

Authentic resources which are found in books, online or in other media, are required to support instruction in listening in English.

3.2 Determine Instructional Strategies

To achieve the learning objectives, it is necessary to determine proper instructional strategies to maximize learning effectiveness. Based on the nature of listening comprehension and the features of listening instruction, the OTIL Model focuses on interactive instruction.

3.3 Establish Listening Tasks

According to the TBA principles, the tasks applied in the OTIL lessons will be considered real-world tasks.

3.4 Design Testing

Task-based assessment should be used in the OTIL Model. Instructors need to create the criteria for and the format of the testing. The assessment should provide learners with feedback and remediation when necessary.

Phase 4.0 Produce Online Instructional Package

In this phase, instructors should select software or online tools which will be appropriately used as an instructional platform or tools to deliver the lessons according to the learning context analysis. There are 3 steps comprised in this phase.

4.1 Select Modules

The first step is to select modules. At present, software usually provides the modules or tools to create a course website and provides controlled access.

According to the instructional goals, the modules which include “Forum, Glossary, Chat, Wiki and Quiz” can be chosen to deliver the instruction.

4.2 Integrate Media

In the second step, media for online instruction includes text, images/graphics, audio, video, games, and e-books which should be integrated into the OTIL instruction. All media should be optimized to match the minimum requirements of the available hardware for the OTIL instruction and be delivered effectively in order to improve students’ listening ability.

4.3 Prototype Lessons

The OTIL lesson template should be interactive and flexible. In this step, to check whether the template will work for the instructional goals, a formative evaluation will be conducted.

Phase 5.0 Conduct Developed Lessons

The teaching process should emphasize learner-centered learning and learning interaction.

5.1 Implement Computer-mediated Interaction

Computer-mediated interaction allows learners to communicate with other learners in both asynchronous and synchronous modes by network and permits one-to-one and one-to-many communication.

5.2 Encourage Peer Face-to-face Interaction

Peer face-to-face interaction should be managed in OTIL, focusing on the learning process by encouraging interaction among students.

Phase 6.0 Evaluate

In this phase, evaluation should be conducted to evaluate the learning processes and outcomes.

6.1 Conduct Formative Evaluation

Formative evaluation is necessary for each stage of the OTIL Moodle. It provides the information for continuing improvement and adjustment.

6.2 Conduct Summative Evaluation

At the end of the instruction, a summative post-test is used to collect data to assess the effectiveness of the instruction.

After the review of the five instructional design models, a summary of each instructional model was demonstrated in terms of characteristics, descriptions, strengths and weaknesses as shown in Table 2.1.

Table 2.1 Concepts of Instructional Models

Model	ADDIE	Dick and Carey	Kemp	SREO	OTIL
Characteristics	A system-oriented model and linear development	A goal-oriented and linear development	A classroom-oriented model and non-linear (circular) development	A system-oriented model and linear development	A system-oriented and linear development
Descriptions	ADDIE is the traditional and systematic ID model that consists of five phases. The outcome of each step is critical for one after in the sequence.	The Dick and Carey model consists of nine steps. Each of these steps is dependent upon one another.	The Kemp model is created with nine key elements. The elements are independent of each other in that they do not need to be considered in order	The SREO model consists of six major steps. Each of these steps is dependent upon one another	The OTIL model consists of six phases and seventeen steps. As a system-oriented model, each step is critical and needs to be completed.

Table 2.1 Concepts of Instructional Models (Cont.)

Model	ADDIE	Dick and Carey	Kemp	SREO	OTIL
Strengths	<ul style="list-style-type: none"> - Most widely used model and is the foundation for other ID models. - Simple to follow - Structured guidance for design 	<ul style="list-style-type: none"> - Most widely used model and can be applied in any contexts -Based on this model, the designer requires clear and measurable learning objectives, thereby developing instruction as a systematic process -Can adjust well for changes in theory or technology 	<ul style="list-style-type: none"> -More flexible and adaptive and more detailed compared with other models -Allows for incorporation of technology by using instructional strategies and media that are most appropriate for the content and target population - Focuses on the learners' needs and goals 	<ul style="list-style-type: none"> -Very appropriate for Remedial English online - Focuses on interactivity or interaction involves with the content 	<ul style="list-style-type: none"> -Very appropriate for listening in English online - Focuses on learner-instructor, learner-learner and learner-content interaction synchronously and asynchronously with task-based approach -Each component is clear
Weaknesses	<ul style="list-style-type: none"> -It's too generic and leaves out details - You cannot go to the next phase without addressing the one before it -It is time consuming and costly - Does not allow for designer creativity 	<ul style="list-style-type: none"> - Some opponents of the model say it is too rigid for real-life instructional situations (Akbulut, 2007). -The demand for mastery of specified objectives or skills before progression within the system may create difficulty when delivery of the instruction is not directed at a homogeneous group 	<ul style="list-style-type: none"> - Constant revision and formative evaluation can be time-consuming and expensive. -Difficult for novice designers 	<ul style="list-style-type: none"> -As a system-oriented model, each step of the model is critical and complicated to complete 	<ul style="list-style-type: none"> - With six phases and seventeen steps, this model is quite complicated and not easy to follow for novice instructors - It's not clear in some parts of the OTIL model, for example, in the design of lesson phase and prototype lesson steps

According to the information shown in Table 2.1, it was found that none of these instructional models can be properly used to design an instructional model for a smartphone-assisted instructional model in reading in English because the development of an instructional model in this present study had to be designed and developed in order for the notion of mobile learning to work properly. For that reason, the development of a smartphone-assisted instructional model in reading in English (SAI Model) was carefully designed and developed on the fundamental principles of Instructional System Design (ISD) step-by-step with the benefit of insightful studies of various instructional models, such as the ADDIE Model, the Dick and Carey Model, the Morrison, Ross and Kemp Model, the SREO Model and the OTIL model, in addition to learning theories, reading theories and mobile learning perspectives.

2.7.4 The Studies Related to Designing and Developing an Online Instructional Model in the EFL Context.

This section reviews previous research studies in designing and developing online instructional models related to an EFL context.

Kongpet Dennis (2011) conducted a study regarding the Blended Online Learning Approach (BOLA) model: Nutrapha BOLA Model for teaching English for Careers in Technology at Ubon Ratchathani Rajabhat University. The development of the Nutrapha BOLA Model was adapted from several versions of Instructional System Design (ISD) models such as the Morrison, the Ross and Kemp Model, the Seels and Glasgow Model, and the Dick and Carey Systems Approach Model. To determine the efficiency of the developed model, it was evaluated by the experts. The results of the study showed that the Blended Online Learning Approach (BOLA)

model: Nutprapha BOLA model constructed by the researcher was rated by experts as “very appropriate” for use in the teaching of English for Careers in Technology.

Another study was conducted by Saitakham (2010). One of the purposes of this study was to develop a web-based instructional model for enhancing English vocabulary learning ability by context-clues based on a guessing meaning technique at Suranaree University of Technology. The Saitakham Model was designed with the analysis and synthesis of the characteristics, the principles, and the approaches of the ADDIE Model, the Dick and Carey Model, the Kemp Model, the ARCS Model, the ASSURE Model, and the SREO Model. To evaluate the model, the evaluation form of the Saitakham Model was sent to the experts in Instructional System Design and the English Language Teaching field. The results of the study showed that the experts strongly agree that the steps of the Saitakham Model are clear and easy to understand, easy to implement, and the model is appropriate to be used in teaching English Vocabulary by guessing meaning from the context clues.

Suppasetserree (2005) conducted a study to develop Suppasetserree’s Remedial English Online Model (SREO Model) to help first-year students at Suranaree University of Technology learn more effectively. The SREO Model was designed and developed with the analysis and synthesis of the approaches of the Dick and Carey Model, the Kemp Model, and the Gerlach and Ely Model. After the model was developed, an evaluation form together with the SREO Model was sent to the experts in Instructional Systems Technology and in the English Language Teaching field to evaluate the Model. The result of the study shows that the SREO Model was rated by the experts in Instructional Systems Technology and in the English Language

Teaching field as “Very Appropriate” and suitable for the teaching of Remedial English via the Internet for first year students at Suranaree University of Technology.

Another development of the instructional model was conducted by Tian (2010). The study aimed to develop the instructional model for online task-based interactive listening (OTIL Model) for EFL learners. In order to create the OTIL Model, the instructional models such as the ADDIE Model, the Dick and Carey Model, the Kemp Model, and the SREO Model were analyzed and synthesized and used as a guideline to design and develop the model. Later, the developed model was evaluated by the three experts in the fields of instructional systems design and English language teaching. The results of the study reveal that the model was rated by the experts as appropriate and satisfactory.

Walakanon (2014) conducted a study to develop a Wiki-based Collaborative Reading Instructional Model (WCR Instructional Model) for EFL undergraduate students. It was a learner-oriented instructional model that aimed to promote students' discussion and collaboration. The model was designed and developed by the researcher after reviews, analysis, and synthesis of all the three classifications of instructional models: product-oriented, classroom-oriented, and system-oriented, such as the ADDIE Model, the Seels and Glasgow Model, the Morrison, Ross & Kemp Model, the Dick & Carey Model, the SREO Model, the Saitakham Model, and the Nutprapha BOLA Model. After the model developed, it was later evaluated by three experts in the fields of instructional system design and English language teaching. The results of the evaluation of the three experts show that the WCR Instructional Model is appropriate and satisfactory for EFL online reading instruction.

Yutdhana (2005) conducted a study to design and develop a teacher-training model to enhance an instructor's use of the Internet in TEFL. The model was designed and developed on the foundation principles of the ADDIE Model. In order to evaluate the steps and process of the model, an evaluation form of the teacher-training model with the prototype model were sent to three experts in teacher-training and EFL. The results of the evaluation show that the model worked effectively with all the essential training factors clearly identified.

In conclusion, the previous instructional models, such as the Nutprapha BOLA Model, the Saitakham Model, the SREO Model, the OTIL Model, the WCR Instructional Model and a teacher-training Model which used the ADDIE Model, the Dick and Carey Model, and the Kemp Model provide important guidelines in designing and developing an appropriate and effective online instructional model in an EFL context.

2.8 Summary

This chapter has provided a review of the related literature which has been applied in this research work. At first, the subject matter of reading including teaching reading in an EFL/ESL context and reading theories are acknowledged. This study focuses on the development of a smartphone-assisted instructional model in reading in English, so mobile-learning, mobile-assisted language learning and smartphones had to be reviewed in detail. In the final section of the chapter, to gain more knowledge about the development of the instructional model, some acceptable instructional design models were reviewed. To explain how the research was conducted, the research methodology is systematically illustrated in the next chapter.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter aims to describe how the study was conducted. In this section, the detail of the methods utilized in the study with respect to (1) the research design, (2) population and samples, (3) variables, (4) research instruments: construction and efficiency of instruments, (5) data collection procedures, and (6) data analysis for the study are explained respectively.

3.1 Research Design

This study was an experimental research study with one group pre-test and post-test design. There was a single selected group under observation, with careful measurements before applying the experimental manipulation and then measuring afterwards (See Table 3.1).

Table 3.1 Research Design

Pre-test	Treatment	Post-test
T1	X	T2

T1 = Pre-test

T2 = Post-test

X = SAI Lessons

This study had a single selected group because one of the purposes of the study was to examine if there were significant differences in students' reading achievements before and after using the SAI Lessons. The study did not due with comparing two or

more different teaching methods. Before the experiment, the samples were measured for their reading proficiency levels through a paper-based pre-test which was constructed by the researcher. Then, the samples experienced reading activities through the SAI Lessons. Immediately after the experiment, a post-test was distributed to all samples. The data obtained were analyzed to find out whether the samples' reading achievement before and after the experiment was significantly different.

3.2 Population and Samples

The population and samples who participated in this study were separated into two groups: 1) population and samples for the try-out stage of the SAI Lessons, and 2) population and samples for the trial run stage to evaluate the efficiency of the SAI Lessons (experiment).

3.2.1 Population and Samples for the Try-Out Stage of the SAI Lessons

The population of the study in this stage was 130 second- year students majoring in English at the Educational College at Roi Et Rajabhat University (RERU). Most of them were from around Roi Et province, and some of them were from other parts of the country. These students were Thai EFL students, aged between 19-21 years old. They were admitted to Roi Et Rajabhat University by passing the Rajabhat University entrance exam. All of them had previously taken two general English courses which are English for Study Skills course (GEL1102) and English for Communication course (GEL 1104).

Thirty-nine English major undergraduate students with three different English proficiency levels (high, moderate, and low) from the Educational College at Roi Et Rajabhat University who studied the Reading 1 course in the second semester of the

academic year 2014 and possessed smartphone devices were purposively selected as the samples for this stage. The homogeneous sampling technique was used to acquire a group of students that were similar in terms of age, characteristics, background, etc. Samples were divided into three different levels of English learning proficiency based on the results of the English Proficiency Test (EPT) conducted by Roi Et Rajabhat University in July, 2013.

The criteria for dividing the samples into different levels of English learning proficiency were:

- (1) The students who received English Proficiency Test scores from 70 to 100 were rated as high proficiency level.
- (2) The students who received English Proficiency Test scores from 50 to 69 were rated as moderate proficiency level.
- (3) The students who received English Proficiency Test scores from 0 to 49 were rated as low proficiency level.

In the try-out stage, three students with three different English proficiency levels participated in the individual testing (1:1), six students with three different English proficiency levels participated in the small group testing (1:10), and thirty students with three different English proficiency levels participated in the field testing (1:100) respectively.

3.2.2 Population and Samples for the Trial Run Stage to Evaluate the Efficiency of the SAI Lessons

The population of the study at this stage was 91 second- year students majoring in English from the Educational College at Roi Et Rajabhat University (RERU) who were not the samples of the try-out stage who participated in the trial run. Similar to

the try-out stage, thirty students who had three different levels of proficiency, ten with high proficiency, ten with moderate proficiency and ten with low proficiency and possessed smartphone devices were purposively selected as the samples for this stage. The criteria for distinguishing the samples into different levels of English learning proficiency were similar to the criteria used in the try-out stage.

3.3 Variables

According to the purposes and the research questions of the study, three types of variables including independent, intermediate and dependent were clearly defined.

3.3.1 Independent Variables

The independent variables in this study were the SAI Model and the SAI Lessons in English Reading (experimental condition).

3.3.2 Intermediate Variable

The intermediate variable in this study was the seven steps (Brahmawong & Vate-U-Lan, 2009) for developing the SAI Model in English Reading.

3.3.3 Dependent Variables

The two dependent variables were the students' reading achievement and the students' opinions toward the SAI Lessons in English Reading.

3.4 Research Instruments: Construction and Efficiency of Instruments

The research instruments, construction procedures and the determination of the instruments' efficiency of the study were as follows:

3.4.1 A Smartphone-Assisted Instructional Model (SAI Model) in English Reading

After carefully reviewing and analyzing the fundamental principles of Instructional System Design, five instructional design models: ADDIE (Zimnas, Kleftouris and Valkanos, 2009), Dick and Carey (Dick & Carey, 1990), Kemp Model (Morrison, Ross & Kemp, 2004), SREO Model (Suppasetsee, 2005) and ITIL Model (Tian, 2010), learning theories, reading theories, and mobile learning perspective, the SAI Model was then constructed by the researcher. To develop the SAI Model, the following seven steps (Brahmawong & Vate- U -Lan, 2009) were implemented (See Figure 3.1).

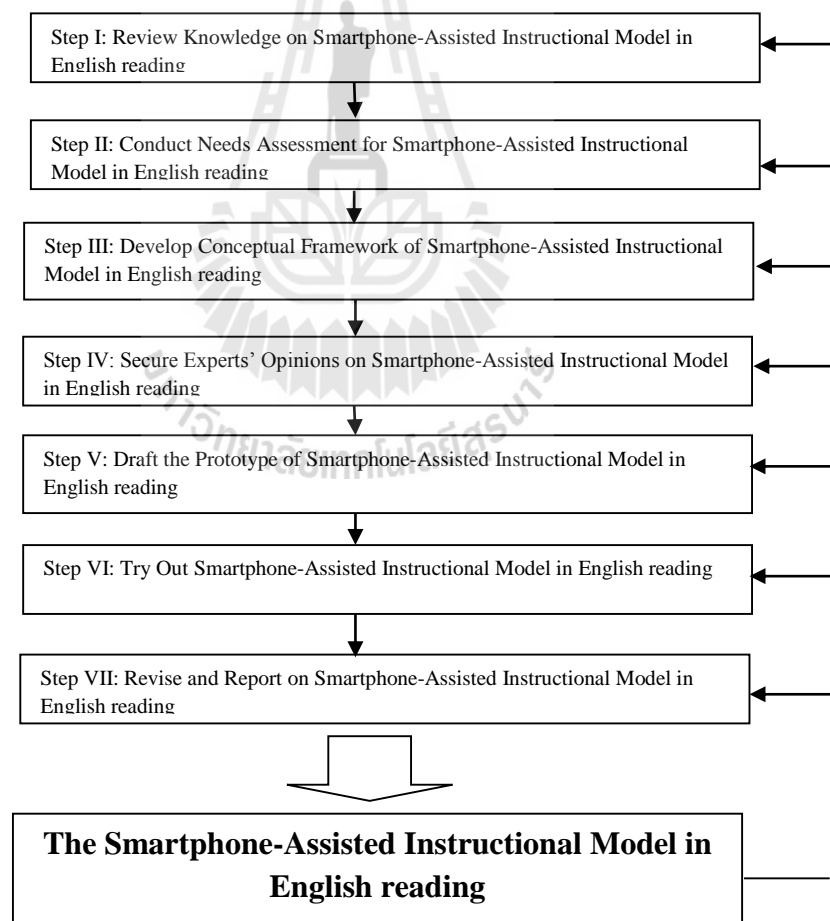


Figure 3.1 Seven Steps in Developing the Smartphone-Assisted Instructional Model in English Reading

3.4.2 Evaluation Form of the SAI Model

The evaluation form of SAI Model was constructed by the researcher and some questions were adopted from Suppatsere (2005) as they were appropriate measure the same purposes. There were two parts in the evaluation form. Part One consisted of 8 items on a five-point Likert scale and Part Two was about other suggestions and comments. To develop the evaluation form, the researcher followed these steps:

1. Studied the evaluation form of the instructional model used by Suppatsere (2005) and reviewed the literature related to smartphones-assisted instruction.
2. Analysed and selected appropriate questions used in this study from the evaluation form of the instructional model used by Suppatsere (2005).
3. Adopted questions 1, 2, 3, 4 and 8 from Suppatsere (2005).
4. Developed questions 5, 6, and 7 which were appropriate for the SAI Model.

To evaluate the SAI Model design, this form together with the smatphone-assisted English reading plan were sent to three experts in Instructional Systems Design and the English Language Teaching field. The information gathered from the evaluation was used to revise the model (See Appendix A).

3.4.3 Smartphone- Assisted Instructional Lessons (SAI Lessons)

In this study, the SAI Lessons were constructed by the researcher. Based on the content of Reading I course at RERU, the lessons were designed to promote the reading ability of English major students at RERU. The SAI Lessons would be used by the samples in the experimental group after the pre-test. To determine the efficiency of the lessons, the 80/80 standard (Brahmawong, 1978) was applied to evaluate the efficiency

of the lessons. To construct the SAI lessons and to determine the efficiency of the lessons, the following steps were conducted:

1. The description of Reading1 course used at Roi Et Rajabhat University was studied.
2. The needs and problems of the students regarding learning English Reading were examined. (See Appendix B)
3. In this stage, three elements from instructional goals would be considered: learners, learning objectives, and instructional media.
4. The contents based on the course description of Reading I course were selected.
5. How to create the English reading lessons by using smartphone devices was studied.
6. The SAI Lessons were designed.
7. Three experts who were specialized in applying mobile learning technology particularly smartphone devices in language learning were asked to examine the lessons.
8. The lessons were revised and improved before the trial run.

3.4.3.1 Try-Out Stage

In order to determine whether the implementation of the SAI Lessons achieved its objectives as planned, three steps of the pilot study were carried out through the use of English lessons produced on the SAI Model: individual testing, small group testing and field testing.

(1) Individual Testing (1:1)

The three students with different English proficiency levels: one high, one moderate and one low, who were not the samples of the major experiment, participated in this stage. The results of the English Proficiency Test (EPT) conducted by Roi Et Rajabhat University in July, 2013 were used as criteria to establish students' English proficiency levels (high = 70-100, moderate = 50-69, low = 0-49). In this stage, the students were asked to learn through SAI Lessons for ten weeks. After that, the data was collected through the exercises, tests scores and the feedback and opinions towards the lessons were utilized to improve the quality of the lessons.

(2) Small Group Testing (1:10)

The second stage of performing the pilot study was the small group testing. It was analogous to the individual testing stage in which the students with three different English proficiency levels participated. However, it was slightly different from the individual test as there were six students two high, two moderate and two low English proficiency levels who took part in this study and the SAI Lessons were modified and revised from Stage 1 and applied at this stage. After taking part in the study, the samples were asked to give some feedback and their opinions towards the lessons. Based on the students' achievement scores of the exercises and the test and the feedback from the students, then the researcher revised and improved the lessons.

(3) Field Testing (1:100)

The final stage of the pilot study was the field testing. Thirty students participated in this stage. Similar to the individual and the small group testing, the students were asked to learn through the SAI Lessons which had been modified and revised from stage 2 for ten weeks. Eventually, students' achievement scores in both

exercises and tests from three stages were determined to establish the efficiency of the SAI Lessons based on criteria of the 80/80 standard level (Brahmawong, 1978). The achievement scores of the exercises and tests from the three stages were calculated for efficiency by using E1/E2 with the following formulas. The formula for E₁ is the following:

$$E_1 = \frac{\frac{\sum X}{N}}{A} \times 100$$

E₁ = The efficiency index for the process in terms of the percentage score from the exercises in the lessons.

$\sum X$ = Summation of exercise scores of students

A = The full scores of the exercises in the lessons

N = The number of students in the samples.

The formula for E₂ is the following:

$$E_2 = \frac{\frac{\sum F}{N}}{B} \times 100$$

E₂ = The efficiency index for the product in terms of the percentage score from the post-test.

$\sum F$ = Summation of the post-test scores of students

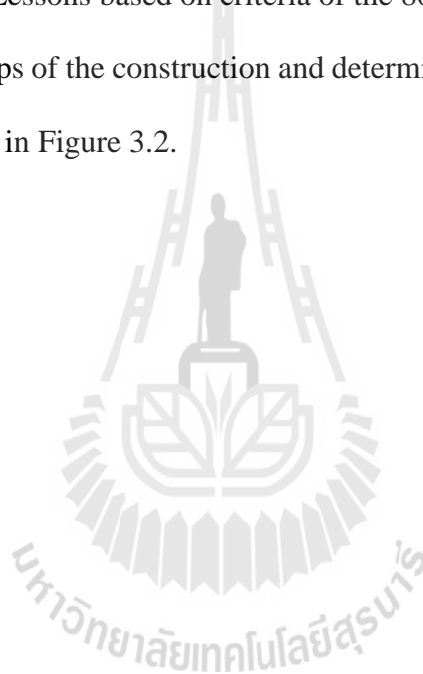
B = The full scores of the post-test

N = The number of students in the samples

3.4.3.2 Trial Run Stage

In the trial run stage, thirty students with three different English proficiency levels: ten high, ten moderate and ten low who were not the samples of the try-out stage participated in this stage. Similar to the try-out stage, the students were asked to learn through the SAI Lessons for ten weeks. After ten weeks, students' achievement scores from exercises and quizzes were determined to establish the efficiency of the SAI Lessons based on criteria of the 80/80 standard level.

The steps of the construction and determination of the efficiency of SAI Lessons are illustrated in Figure 3.2.



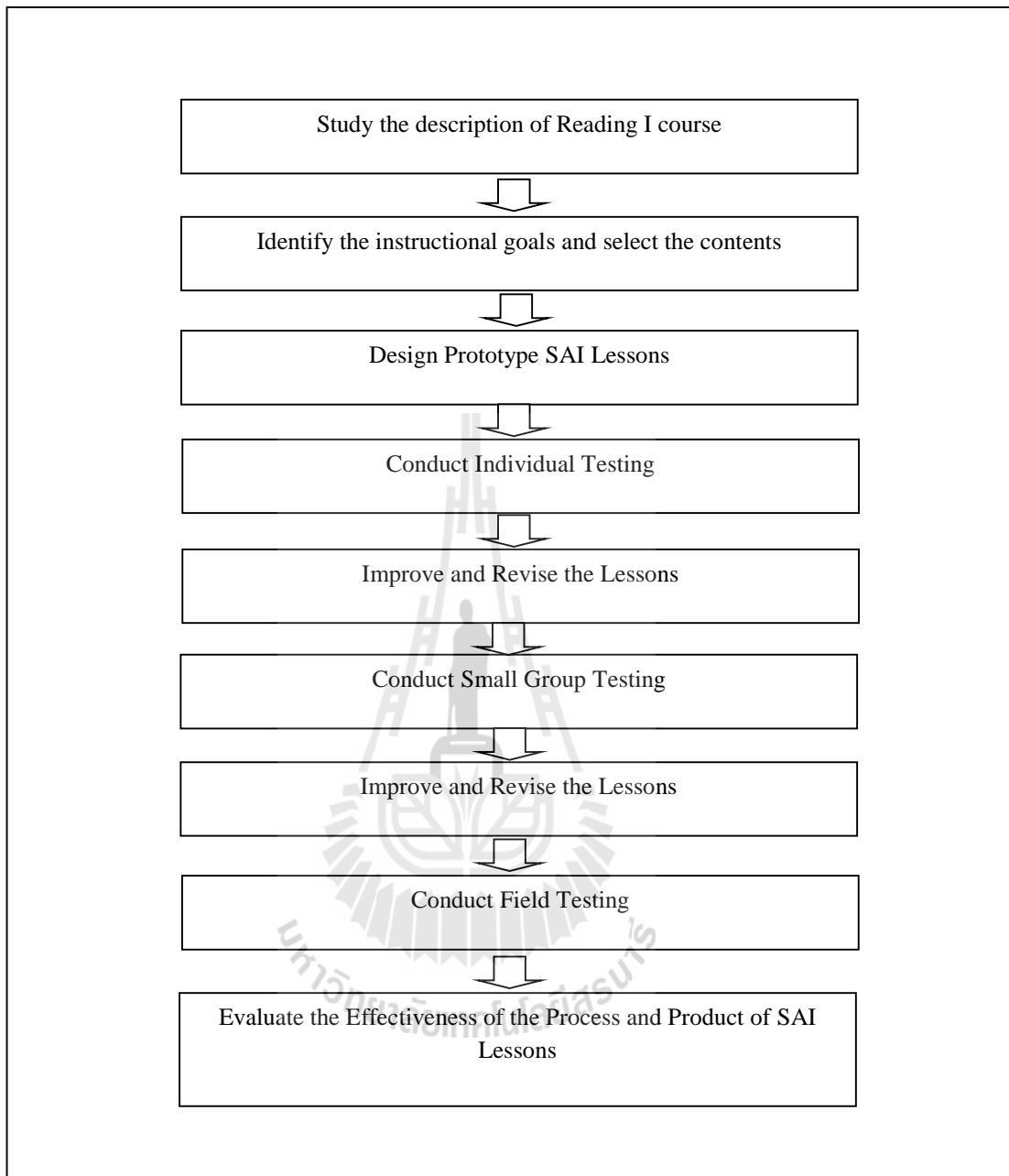


Figure 3.2 Steps of Conducting and Evaluating the SAI Lessons

3.4.4 Pre-and Post-test

In this study, a parallel pre-test and post-test written by the researcher was used to measure the samples' reading proficiency levels. The test was constructed and tested as follows:

1. The researcher studied the curriculum and set the testing goals corresponding to the learning objectives in the SAI Lessons.
2. The researcher asked for advice about the testing principles and procedures of test construction from the experts.
3. The researcher created the reading test specifications to develop a test
(See Appendix C)
4. The researcher developed a multiple-choice test with four alternatives for 80 items.
5. To check content validity, the tests were sent to the three experts who are academically qualified and have been teaching English for more than five years. Based on the experts' advice, the researcher then adjusted the content.
6. To try out the test, a pilot study was conducted with 100 second – year English major undergraduate students at Roi Et Rajabhat University who were not participating in the study.
7. Based on the data obtained from the pilot study, an item analysis was carried out. Each question was analyzed for the level of difficulty (p) and discrimination index (r). The criteria used to select the test items was $p = 0.20- 0.80$ and $r \geq 0.2$. (Suppasetserree, 2005) (See Appendix D).

Item analysis is a process which examines student responses to individual test items in order to assess the quality of those items and of the test as a whole. It is valuable in improving items for future test administrations and eliminating ambiguous or misleading items in a test. The value of the test items in this study was systematically assessed using a test item's level of difficulty and an item's capacity to discriminate.

In test construction, item difficulty is determined by the number of people who answer a particular test item correctly. For example, if the first question on a test was answered correctly by 69% of the class, then the difficulty level (p or percentage passing) for that question is $p = .69$. The higher the percentage of people who answer correctly, the easier the item is. The item discrimination index is a measure of how well an item is able to distinguish between examinees who are knowledgeable and those who are not, or between masters and non-masters. It can be examined by comparing the number of persons getting a particular item correct with the total test score. So, it determines whether those who did well on the entire test did well on a particular item. An item should in fact be able to discriminate between upper and lower scoring groups. The value of a discrimination index can range between 0 and 1; the closer the value is to 1, the better the discrimination. To analyze an item difficulty and item discrimination, in this study, the following formulas were used.

Formula 1: Test Difficulty Formula

$$p = \frac{R_H + R_L}{N_H + N_L}$$

p = Difficulty of the test

R_H = Number of students who answered a test item correctly in the high group

R_L = Number of students who answered a test item correctly in the low group

N_H = Number of students in the high group

N_L = Number of students in the low group

Formula 2: Discrimination Formula

$$r = \frac{R_H - R_L}{N_H - N_L}$$

r = Discrimination index

R_H = Number of students who correctly answered in the high group

R_L = Number of students who correctly answered in the low group

N_H = Number of students in the high group

N_L = Number of students in the low group

8. Sixty test items were selected as a pre-and post-test with 30 items in each. The reliability of the pre-test and post-test were 0.757 and 0.753 respectively. (See Appendix E).
9. The reliability of the tests was determined through Split – half method by using Kuder-Richardson’s formula (KR-20). The IRT software program was used β to calculate the reliability of the test. It was accepted at KR.-20 ≥ 0.7 . The formula of KR.-20 is illustrated below.

$$R_t = \frac{n}{n-1} \left[1 - \frac{\sum pq}{\sigma^2} \right]$$

n = Numbers of question

p = The portion of students who correctly answered each question

q = The portion of students who incorrectly answered each question (1 – p)

σ_t^2 = Variance of the total score

3.4.5 The Questionnaire

To assess the samples' opinions toward the SAI Lessons, a questionnaire was first adopted and then adapted from the research questionnaire conducted by Lee, Hsu, and Shih (2014). The questionnaire was administered to the sample group immediately after the experiment was ended. There were two main parts in the questionnaire. In the first part, general information about the samples was elicited. In the second part, the samples were asked to rate their opinions toward the SAI Lessons as described below:

There were 20 items in this part. Each item was presented in a statement to which students had to respond using a five –point Likert scale labeled from 1 to 5, where 1 means “strongly disagree”; 2 “disagree”; 3 “neither agree nor disagree”; 4 “agree”; and 5 “strongly agree”. To generate a questionnaire and ensure its validity and credibility, the researcher followed these steps:

1. The related literature on mobile-learning attitudes was surveyed.
2. The researcher consulted experts on how to conduct the questionnaire.
3. The researcher constructed statements based on the information obtained from the related literature review.
4. To validate the questionnaire, all statements were reviewed by three experts. After reviewing the statements, their responses were utilized for the improvement of the questionnaire. The index of Item Objective Congruence (IOC) on each item was calculated and the items that showed over 0.5 of IOC were valid and incorporated into the main experiment. (See Appendix F)
5. The refined questionnaire was administered to the students who participated in the pilot study of the SAI Lessons. (See Appendix G)

6. The students were asked for feedback about the time they needed to complete the questionnaire and to identify ambiguities and difficult questions.
7. All unnecessary, difficult or ambiguous questions were discarded.

3.4.6 A Semi-structured Interview

To strengthen data credibility and validity, a data source triangulation approach was applied in this study. Apart from the pre-test, post-test and questionnaire, a semi-structured interview was one of the key qualitative data collection instruments in this study. It was used to elicit the samples' opinions toward the SAI Lessons. The topics of the interview were formed into questions. To investigate whether the interview questions would be appropriate for use in the study, the following procedures were conducted.

1. The interview questions were cross-checked by the researcher's supervisor and experts.
2. All of the interview questions were examined by three experts for content validity using IOC. (See Appendix H)
3. The set of interview questions was piloted with the 10 students who were the respondents of the questionnaire in a pilot group. The interview was tape –recorded.
4. Data obtained from the interview was transcribed and the transcription was later examined to see whether there was anything that needed to be improved.

After these steps, the samples in the sample group were interviewed immediately after the questionnaire was administered. Nevertheless, ten students were interviewed and each interview lasted around fifteen to twenty minutes. To lessen problems of ambiguity and misunderstandings and to acquire more data the samples were interviewed in Thai. Tape recordings of the conversations were made for use as future reference.

3.5 Data Collection Procedure

The experiment took 10 weeks. Before the experiment, students in the sample group were pre-tested for their English reading ability and trained to use the program to make sure that they were able to use it well. After 10 weeks of the experiment, the researcher administered a post-test and a questionnaire to all the samples and ten students were selected for interview. To collect the data of this study, the researcher followed these steps:

Before the experiment, the researcher selected a tertiary level university in the northeast of Thailand as a research site. The selected university must meet the following criteria: (1) has a large population of second-year teaching English major undergraduate students who aged between 19-21 years old, (2) has a large number of students who possess smartphone devices, and (3) has agreed to support the experiment.

After the research site was established, the process of selecting samples was conducted. To select the samples, a purposive sampling method was applied in this study. From 130 of the second-year teaching English major undergraduate students at Roi Et Rajabhat University, 69 students were purposively selected as sample group in this study.

The experiment started immediately after the pre-test. After the final session of the experiment, the post-test, which was parallel to the pre-test, was carried out. Then, the scores of both pre-test and post-test were compared to examine whether the samples' reading achievements before and after the experiment were significantly different. Finally, the samples' opinions toward the SAI Lessons were investigated through the questionnaire and the semi-structured interview. The procedures for data collection are illustrated as follows.

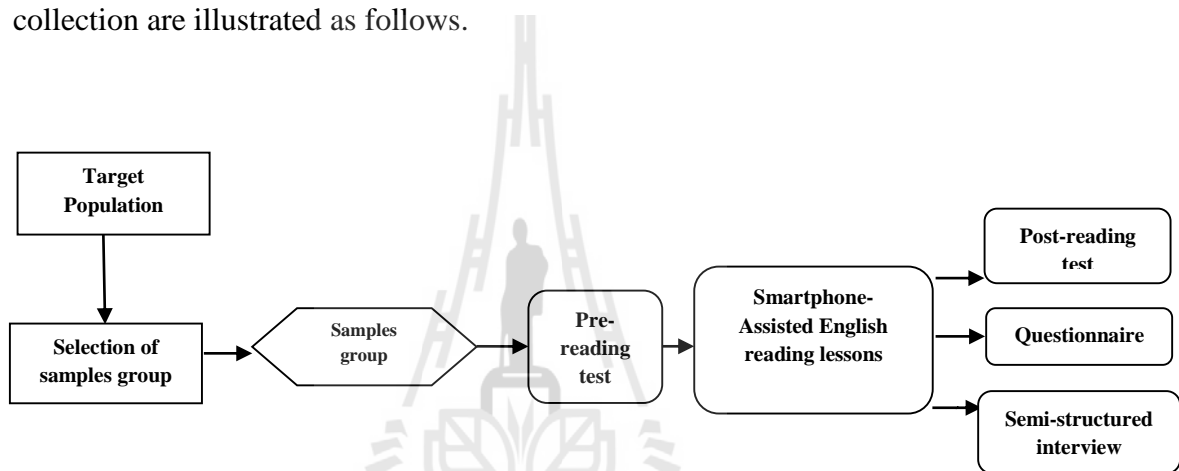


Figure 3.3 Data Collection Procedure

3.6 Data Analysis

The data collected from the study were analyzed and interpreted using both quantitative and qualitative data analysis methods.

3.6.1 Quantitative Data Analysis

The data obtained through the evaluation form, the pre-test and post-test, and the questionnaire were analyzed quantitatively.

3.6.1.1 Analysis of Evaluation Form

To evaluate the SAI Model, the data obtained from the evaluation form of SAI Model were calculated for the arithmetic means. The criteria of means were

adopted from Suppasetsee (2005). These means indicate the experts' judgment regarding the efficiency of SAI Model. The criteria are as follow.

Table 3.2 The Criteria of Smartphone-Assisted Instructional Model in English

Reading Efficiency	
Means	Interpretation
1.00-2.33	The SAI Model is least appropriate
2.34-3.67	The SAI Model is appropriate
3.68-5.00	The SAI Model is very appropriate

3.6.1.2 Analysis of Pre-test and Post-test Scores

To answer research question 3, which asks if there are any significant differences in students' reading achievement before and after the experiment, the means, standard deviations and the analysis of A Paired t-test were calculated. To analyze the data, the computer software program, SPSS, was used in this study.

3.6.1.3 Analysis of Questionnaire

In order to describe the students' opinions toward the SAI Lessons, the data obtained from the questionnaire were calculated for arithmetic means. To examine the levels of opinions that the students experienced after the SAI Lessons, the criteria of means obtained from a range divided by the number of levels were created. This is $(5-1) / 3 = 1.33$ for each level the means would add up to 1.33. The following criteria were used for interpretation (Suppasetsee, 2005).

Table 3.3 The Criteria for Opinions on the SAI Lessons

Means	Interpretations
1.00-2.33	Students have low opinions toward learning the SAI Lessons.
2.34- 3.67	Students have neutral opinions toward learning the SAI Lessons.
3.68-5.00	Students have high opinions toward learning the SAI Lessons.

After calculating the means for each level, the results of the estimated intervals were used to determine the criteria for the levels of students' opinions toward SAI Lessons.

3.6.2 Qualitative Data Analysis

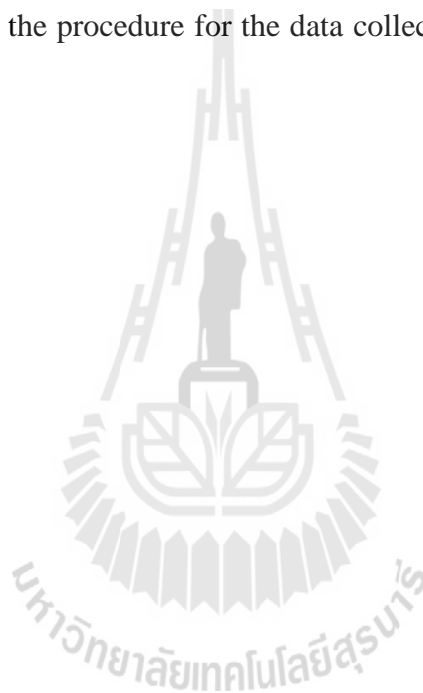
Qualitative data included the data obtained from the semi - structured interview which were analyzed using content analysis.

3.6.2.1 Semi-structured Interview Data Analysis

Data obtained through interviews were transcribed and analyzed by the content analysis. Content analysis mainly involves coding (Nueman, 2006). In the present study, open coding was first used to deal with the data obtained through the semi-structured interviews. In open-coding, data were broken down into discrete parts, then closely examined and compared for similarities and differences (Strauss and Corbin, 1998). The results of the open coding were some tentative categories. Then, these tentative categories were refined in the step of axial coding. In addition, in axial coding, attempts to relate categories to subcategories were made. In selective coding, the final categories would emerge as the students' opinions toward the SAI Lessons.

3.7 Summary

This chapter explains the overall research procedure of the study. It started with a description of the research design. After that the characteristics of the population and samples used in the study were clearly explained. According to the purposes and the research questions of the study, three types of variables and research instruments were defined. Finally, to illustrate the whole picture of how the data were collected and analyzed, a section on the procedure for the data collection and the data analysis was described.



CHAPTER 4

RESULTS AND DISCUSSION

This chapter consists of two sections: results and discussion. The first section presents the research findings of the study which are organized according to the four research questions proposed in Chapter One. In the second section, the findings of the study are discussed.

4.1. Results

4.1.1. Development of the SAI Model in English Reading for English Major Students

To answer research question one, “What are the components and logical steps of developing a Smartphone-assisted Instructional Model (SAI Model) in English reading?”, the data from the evaluation form of the SAI Model obtained from the three experts were analyzed.

After the SAI Model had been developed, it was sent to three experts in the field of Instructional Systems Design and English Language Teaching to be evaluated. The analysis used a five-point rating scale questionnaire (5 = very strongly agree, 4 = strongly agree, 3 = neutral , 2 = slightly agree, and 1 = least agree) for the calculation of the arithmetic means. The results of the analysis are presented in Table 4.1.

Table 4.1 Results of Experts' Evaluation of the SAI Model in English Reading

No	Statements	\bar{X}	SD
1	The components of the SAI Model are appropriate.	4.33	0.577
2	The steps in the SAI Model are clear and easy to implement.	4.33	0.577
3	Each component in the SAI Model has an appropriate connection.	4.67	0.577
4	The SAI Model is appropriate for use as a plan in a course for the teaching of reading.	4.33	0.577
5	The SAI Model can offer activities with self-paced learning.	4.67	0.577
6	The SAI Model can offer learning paths based on learners' needs.	4.67	0.577
7	The SAI Model can facilitate students to learn anytime or anywhere.	4.67	0.577
8	The SAI Model is appropriate for current social conditions.	4.67	0.577
Total		4.54	0.000

The data from the evaluation form of the SAI Model were analyzed for the arithmetic means by adopting the criteria of Suppasetsee (2005). The following criteria were used for interpretation: 3.68-5.00 = the model is very appropriate, 2.34-3.67 = the model is appropriate and 1.00-2.33 = the model is not appropriate. According to the results in Table 4.1, as a whole, it can be seen that the SAI Model was rated by the three experts at the mean score of 4.54 (SD=0.000). This meant that the SAI Model was rated as very appropriate ($\bar{X} = 4.54$). When considering each aspect, it can be seen that the SAI Model was rated by the experts at the mean score ($\bar{X} = 4.67$, SD=0.577) for items 3, 6, 8, 9 and 10 and the mean score ($\bar{X} = 4.33$, SD=0.577) for items 1, 2, and 4 respectively. As a result, it was demonstrated that the mean score of all items is at ≥ 4.00 which means the model is very appropriate.

Based on the results obtained from the experts as very appropriate in terms of its components and logical steps. Eventually, the SAI Model was developed into 8 major steps and 9 sub-steps in the process. The three experts rated the SAI Model as having appropriate components and steps and all of the steps are briefly described in Chapter 5.

In conclusion, the SAI Model was rated by the three experts in Instructional Systems Design and English Language Teaching field as very appropriate. Once the SAI Model had been accepted as appropriate, the SAI Lessons were carefully constructed. To determine the efficiency of the lessons, the 80/80 standard (Brahmawong, 1978) was applied to evaluate the efficiency of the lessons throughout the try-out and the trial run stages. The results of the two processes are presented in 4.1.2.

4.1.2 The Efficiency of the SAI Lessons in English Reading

To answer research question two as “Does the efficiency of the SAI Lessons in English Reading meet the 80/80 standard?”, two stages were included 1) a try-out and 2) trial run. At the try-out stage, the three steps of the testing consisted of individual testing, small group testing, and field testing which were carried out in order to improve the learning content in order to meet the criteria of the 80/80 standard (Brahmawong, 1978). After the try-out stage, a trial run was conducted to test the efficiency of the SAI Lessons in English Reading as well.

4.1.2.1 Try-Out

At the try-out stage, three steps were conducted: individual testing; small group testing, and field testing. The results of the three tests are presented as follows:

1) The Individual Testing (1:1)

In this step, three students with different proficiency levels of English: one high, one moderate and one low were selected to study reading English through the SAI Lessons. These three students were not part of the major experiment. The results of the efficiency of the process (E_1) and product (E_2) for the individual testing are presented in Table 4.2

Table 4.2 Results of the Individual Testing for the Efficiency of the SAI Lessons

Unit	Students	Exercises (49)	Tests (15)	E_1	E_2
Unit 1	S1 (H)	40	12	68.02	66.66
	S2 (M)	38	11		
	S3 (L)	22	7		
Unit	students	Exercises (48)	Tests (10)	E_1	E_2
Unit 2	S1 (H)	38	7	68.75	66.66
	S2 (M)	33	7		
	S3 (L)	28	6		
Unit	students	Exercises (40)	Tests (11)	E_1	E_2
Unit 3	S1 (H)	31	8	69.17	66.67
	S2 (M)	28	8		
	S3 (L)	24	6		
Unit	students	Exercises (35)	Tests (10)	E_1	E_2
Unit 4	S1 (H)	29	8	68.57	66.66
	S2 (M)	25	6		
	S4 (L)	18	6		
Unit	students	Exercises (48)	Tests (15)	E_1	E_2
Unit 5	S1 (H)	36	13	67.36	66.67
	S1 (M)	34	11		
	S4 (L)	27	7		

According to Table 4.2, the efficiency of the process (E_1) and the efficiency of the product (E_2) of the 5 units were 68.02/66.66, 68.75/66.66, 69.17/66.67, 68.57/66.66, and 67.36/66.66 respectively. These results show that none

of the SAI Lessons met the standard criterion of 80/80 (E_1/E_2). According to the students' opinions and feedback after using the SAI Lessons, it was mentioned that (1) the length of the reading texts in each lesson was too long; (2) the vocabulary in each lesson was too difficult; (3) the instructions for the exercises were not clear, and (4) some exercise types which were used in the lessons were not easy to carry out on a smartphone device. The low efficiency of the SAI Lessons possibly occurred for the reason that this reading courseware had been developed for the first time thus it might be possible that both the instructions and types of exercises which were typically suitable for a traditional reading course would not be appropriate for a smartphone device. Therefore, the lessons were revised by editing the instructions which were not clear and altering some of the exercises to make them easier than the previous ones by simplifying the passages and changing vocabulary. Afterwards, the revised lessons were tested with six students in a small group.

2) The Small Group Testing (1:10)

In this step, six students, two with high, two with moderate and two with low English proficiency levels were selected to study reading English through the SAI Lessons which were modified and revised from the previous stage. The results of the efficiency of the process (E_1) and product (E_2) for the small group testing are presented in Table 4.3.

Table 4.3 Results of the Small Group Testing for the Efficiency of the SAI Lessons

Unit	students	Exercises (49)	Tests (15)	E1	E2
Unit 1	S1(H)	44	12	74.48	72.22
	S2(H)	40	12		
	S3(M)	37	11		
	S4(M)	35	11		
	S5(L)	32	10		
	S6(L)	31	9		
Unit	students	Exercises (46)	Tests (10)	E1	E2
Unit 2	S1(H)	40	8	73.55	71.16
	S2(H)	36	8		
	S3(M)	34	7		
	S4(M)	32	8		
	S5(L)	31	6		
	S6(L)	30	6		
Unit	students	Exercises (39)	Tests (11)	E1	E2
Unit 3	S1(H)	33	10	73.92	72.72
	S2(H)	37	9		
	S3(M)	29	8		
	S4(M)	25	8		
	S5(L)	25	7		
	S6(L)	24	6		
Unit	students	Exercises (30)	Tests (10)	E1	E2
Unit 4	S1(H)	27	9	75.56	73.33
	S2(H)	25	8		
	S3(M)	23	8		
	S4(M)	22	7		
	S5(L)	20	6		
	S6(L)	19	6		
Unit	Students	Exercises (47)	Tests (15)	E1	E2
Unit 5	S1(H)	45	14	75.87	74.4
	S2(H)	39	11		
	S3(M)	35	11		
	S4(M)	34	11		
	S5(L)	32	10		
	S6(L)	29	10		

According to Table 4.3, the efficiency of process (E₁) and the efficiency of product (E₂) of the 5 units were 74.48/72.22, 73.55/ 71.66, 73.92/ 72.72,

75.56/73.33, and 75.87/74.44 respectively. The results show that the efficiency of all of the SAI Lessons had improved, but only slightly increased compared with the individual testing. However, they were still lower than the standard criterion of 80/80 (E_1/E_2). When the students were asked for feedback and comments, they explained that (1) in some parts of the exercises and quizzes, the content and questions were placed on different pages so it was difficult to do because they had to go back and forth when doing the exercises and quizzes; (2) to make it more convenient, students suggested that a page number should be given to help them remember where they were before they left the lesson, and (3) the exercises and quizzes should be designed in the form of multiple choice questions because writing on a small screen device was difficult for them. As a result of the students' comments, the researcher revised and improved the lessons by putting page numbers on all the lessons and redesigning some exercises and quizzes as multiple choice questions before the test was used in the field testing with 30 students.

3) The Field Testing (1:100)

The final step of the try-out study was a field test. In this step, thirty students with ten high, ten moderate and ten low English proficiency levels were selected to study reading English through the SAI Lessons which were modified and revised from the previous stage. The results of the efficiency of the process (E_1) and product (E_2) for the field testing are presented in Table 4.4

Table 4.4 Results of Field Testing for the Efficiency of the SAI Lessons

Unit	students	Exercises (49)	Tests (15)	E1	E2
Unit 1	S1(H)	42	12	81.09	80.44
	S2(H)	42	11		
	S3(H)	41	14		
	S4(H)	42	13		
	S5(H)	43	15		
	S6(H)	45	14		
	S7(H)	39	12		
	S8(H)	40	12		
	S9(H)	42	11		
	S10(H)	40	14		
	S11(M)	38	11		
	S12(M)	40	12		
	S13(M)	39	10		
	S14(M)	39	13		
	S15(M)	42	14		
	S16(M)	40	12		
	S17(M)	38	10		
	S18(M)	41	12		
	S19(M)	38	12		
	S20(M)	41	12		
	S21(L)	36	11		
	S22(L)	35	11		
	S23(L)	43	13		
	S24(L)	36	12		
	S25(L)	36	11		
	S26(L)	40	13		
	S27(L)	40	11		
	S28(L)	40	12		
	S29(L)	37	10		
	S30(L)	37	12		

Table 4.4 Results of Field Testing for the Efficiency of the SAI Lessons (Cont.)

Unit	students	Exercises (46)	Tests (10)	E1	E2
	S1(H)	43	9		
	S2(H)	39	8		
	S3(H)	40	10		
	S4(H)	37	7		
	S5(H)	41	9		
	S6(H)	37	8		
	S7(H)	35	7		
	S8(H)	37	8		
	S9(H)	44	10		
	S10(H)	36	7		
	S11(M)	34	6		
	S12(M)	42	9		
	S13(M)	42	10		
Unit 2	S14(M)	36	8	81.30	80.33
	S15(M)	35	7		
	S16(M)	39	9		
	S17(M)	35	8		
	S18(M)	34	8		
	S19(M)	35	7		
	S20(M)	41	9		
	S21(L)	35	7		
	S22(L)	37	8		
	S23(L)	36	8		
	S24(L)	43	8		
	S25(L)	37	8		
	S26(L)	37	8		
	S27(L)	33	7		
	S28(L)	34	8		
	S29(L)	32	7		
	S30(L)	36	8		

Table 4.4 Results of Field Testing for the Efficiency of the SAI Lessons (Cont.)

Unit	students	Exercises (39)	Tests (11)	E1	E2
	S1(H)	34	9		
	S2(H)	33	7		
	S3(H)	37	10		
	S4(H)	33	8		
	S5(H)	32	8		
	S6(H)	33	9		
	S7(H)	34	10		
	S8(H)	32	10		
	S9(H)	35	10		
	S10(H)	33	8		
	S11(M)	36	10		
	S12(M)	38	11		
	S13(M)	31	9		
Unit 3	S14(M)	32	10	81.79	80.61
	S15(M)	32	8		
	S16(M)	31	8		
	S17(M)	28	8		
	S18(M)	32	10		
	S19(M)	32	9		
	S20(M)	33	9		
	S21(L)	31	10		
	S22(L)	29	8		
	S23(L)	32	10		
	S24(L)	30	8		
	S25(L)	28	7		
	S26(L)	30	9		
	S27(L)	29	10		
	S28(L)	30	8		
	S29(L)	29	7		
	S30(L)	28	8		

Table 4.4 Results of Field Testing for the Efficiency of the SAI Lessons (Cont.)

Unit	students	Exercises (30)	Tests (10)	E1	E2
	S1(H)	29	10		
	S2(H)	27	10		
	S3(H)	26	9		
	S4(H)	27	7		
	S5(H)	26	7		
	S6(H)	25	8		
	S7(H)	25	8		
	S8(H)	24	7		
	S9(H)	26	9		
	S10(H)	25	8		
	S11(M)	25	9		
	S12(M)	26	9		
	S13(M)	25	8		
Unit 4	S14(M)	27	10	81.88	80.33
	S15(M)	25	8		
	S16(M)	25	9		
	S17(M)	24	8		
	S18(M)	25	7		
	S19(M)	25	9		
	S20(M)	24	7		
	S21(L)	23	7		
	S22(L)	22	6		
	S23(L)	23	8		
	S24(L)	22	7		
	S25(L)	23	8		
	S26(L)	24	8		
	S27(L)	23	7		
	S28(L)	23	8		
	S29(L)	22	7		
	S30(L)	22	8		

Table 4.4 Results of Field Testing for the Efficiency of the SAI Lessons (Cont.)

Unit	students	Exercises (47)	Tests (15)	E1	E2
	S1(H)	42	12		
	S2(H)	42	13		
	S3(H)	43	11		
	S4(H)	39	12		
	S5(H)	41	11		
	S6(H)	38	12		
	S7(H)	41	13		
	S8(H)	38	12		
	S9(H)	40	13		
	S10(H)	39	10		
	S11(M)	40	10		
	S12(M)	43	13		
	S13(M)	39	10		
Unit 5	S14(M)	39	11	81.56	80.44
	S15(M)	35	10		
	S16(M)	37	11		
	S17(M)	35	12		
	S18(M)	40	13		
	S19(M)	37	10		
	S20(M)	36	10		
	S21(L)	37	11		
	S22(L)	35	10		
	S23(L)	39	9		
	S24(L)	37	12		
	S25(L)	35	10		
	S26(L)	36	9		
	S27(L)	37	11		
	S28(L)	37	12		
	S29(L)	33	10		
	S30(L)	40	11		

According to Table 4.4, the efficiency of the process (E_1) and the efficiency of the product (E_2) of the 5 units were 81.09/80.44, 81.30/80.33, 81.79/80.61, 81.88/80.33, and 81.56/80.44 respectively. These results show that the efficiency of the process and the product of all the SAI lessons met the standard criterion of 80/80 (E_1/E_2). The SAI Lessons had been revised and improved gradually from the individual testing stage until the small group testing stage. However, after the field test, the

students pointed out that the wireless system was sometimes a problem when they studied the SAI Lessons at their dormitories. To solve this problem, students were recommended to use an internet package which could help them access the internet anywhere or anytime. Another problem was going back and forth between the content and the questions of some of the exercises and quizzes when they studied the SAI Lessons. To solve this problem, all of the content and the questions were made to appear on the same page. After the three steps of the try-out stage and the revision, the SAI Lessons were ready to use in the trial run with 30 students.

4.1.2.2 The Trial Run

To test the efficiency of the SAI Lessons, after the try-out stage the SAI Lessons were implemented in a trial run with 30 students who had not participated in the try-out stage. The results of the efficiency of the process (E_1) and product (E_2) for the trial run are presented in Table 4.5

Table 4.5 Results of the Trial Run for the Efficiency of the SAI Lessons

Unit	students	Exercises (49)	Tests (15)	E1	E2
	S1	44	15		
	S2	45	14		
	S3	42	14		
	S4	42	13		
	S5	41	12		
	S6	42	12		
	S7	42	12		
	S8	44	13		
	S9	44	13		
	S10	41	12		
	S11	40	12		
	S12	39	11		
	S13	42	12		
Unit 1	S14	37	11	81.29	80.89
	S15	41	12		
	S16	42	15		
	S17	41	12		
	S18	38	11		
	S19	38	14		
	S20	41	15		
	S21	37	10		
	S22	38	10		
	S23	38	13		
	S24	35	11		
	S25	37	12		
	S26	36	10		
	S27	37	10		
	S28	38	12		
	S29	37	10		
	S30	36	11		

Table 4.5 Results of the Trial Run for the Efficiency of the SAI Lessons (Cont.)

Unit	students	Exercises (46)	Tests (10)	E1	E2
	S1	40	8		
	S2	41	9		
	S3	43	9		
	S4	41	8		
	S5	40	8		
	S6	41	10		
	S7	39	9		
	S8	41	10		
	S9	41	9		
	S10	41	10		
	S11	40	8		
	S12	38	8		
	S13	40	10		
Unit 2	S14	37	8	81.81	80.67
	S15	34	7		
	S16	38	7		
	S17	39	8		
	S18	35	8		
	S19	37	7		
	S20	39	8		
	S21	35	7		
	S22	33	8		
	S23	31	7		
	S24	38	8		
	S25	36	7		
	S26	33	7		
	S27	35	8		
	S28	34	7		
	S29	33	7		
	S30	35	7		

Table 4.5 Results of the Trial Run for the Efficiency of the SAI Lessons (Cont.)

Unit	students	Exercises (39)	Tests (11)	E1	E2
	S1	35	10		
	S2	35	11		
	S3	36	10		
	S4	34	9		
	S5	35	10		
	S6	37	10		
	S7	33	11		
	S8	34	10		
	S9	34	9		
	S10	33	10		
	S11	31	9		
	S12	33	10		
	S13	34	11		
Unit 3	S14	33	9	81.97	80.90
	S15	33	10		
	S16	29	8		
	S17	32	8		
	S18	31	9		
	S19	32	9		
	S20	30	10		
	S21	29	7		
	S22	30	7		
	S23	30	8		
	S24	29	6		
	S25	30	8		
	S26	30	8		
	S27	29	7		
	S28	30	8		
	S29	29	8		
	S30	29	7		

Table 4.5 Results of the Trial Run for the Efficiency of the SAI Lessons (Cont.)

Unit	students	Exercises (30)	Tests (10)	E1	E2
Unit 4	S1	28	10	82.00	81.67
	S2	27	10		
	S3	28	9		
	S4	25	8		
	S5	26	9		
	S6	27	9		
	S7	28	10		
	S8	28	10		
	S9	25	9		
	S10	26	7		
	S11	25	7		
	S12	23	6		
	S13	24	9		
	S14	25	8		
	S15	23	8		
	S16	24	9		
	S17	24	10		
	S18	23	8		
	S19	22	7		
	S20	27	10		
	S21	23	6		
	S22	25	8		
	S23	22	8		
	S24	22	7		
	S25	23	7		
	S26	21	7		
	S27	25	8		
	S28	23	8		
	S29	23	7		
	S30	23	6		

Table 4.5 Results of the Trial Run for the Efficiency of the SAI Lessons (Cont.)

Unit	students	Exercises (47)	Tests (15)	E1	E2
	S1	45	13		
	S2	42	14		
	S3	45	14		
	S4	42	12		
	S5	41	12		
	S6	42	14		
	S7	40	12		
	S8	41	13		
	S9	40	13		
	S10	41	13		
	S11	39	12		
	S12	38	12		
	S13	35	10		
Unit 5	S14	38	12	81.70	80.89
	S15	40	12		
	S16	39	13		
	S17	39	12		
	S18	39	13		
	S19	38	14		
	S20	40	15		
	S21	34	10		
	S22	35	11		
	S23	32	10		
	S24	35	10		
	S25	34	11		
	S26	34	11		
	S27	36	12		
	S28	35	12		
	S29	35	10		
	S30	38	12		

Table 4.5 shows the efficiency of the process (E_1) and the efficiency of the product (E_2) of 5 units were 81.29/80.89, 81.81/80.67, 81.97/80.90, 82.00/81.67, and 81.70/80.89 respectively. From these results, it can be seen that the efficiency of the process and the product of all the SAI Lessons met the standard criterion of 80/80 (E_1/E_2). The lessons were revised and improved each time after the three try-outs: Individual Testing, Small Group Testing and Field Testing. Consequently, the

efficiency met the standard criterion when it was tested in the trial run stage as well. This clearly establishes that SAI Lessons are efficient and can assist students in learning to read English effectively, by allowing the learning process to operate efficiently thus improving students' reading ability.

4.1.3 Students' Reading Achievements before and after Using the SAI

Lessons

To answer research question three, namely, "What are the differences in students' reading achievements before and after using the SAI Lessons?", the data from the pre-test and post-test were analyzed. At the trial-run stage, before studying the SAI Lessons the pre-test was administered to 30 students and the post-test was administered immediately after the students had finished the SAI Lessons. The two tests were parallel tests comprised of 30 questions with four multiple choice questions.

The results of both the pre-test and the post-test were compared to examine whether the samples' reading achievements before and after the experiment were significantly different. Table 4.6 shows the results of the students' English reading achievements before and after using the SAI Lessons.

Table 4.6 Results of the Students' English Reading Achievements

Classes	N	Pre-test		Post-test	
		\bar{X}	SD	\bar{X}	SD
Experiment Class	30	17.93	2.80	22.56	2.48

Table 4.6 shows that the average score of the pre-test was 17.93 (SD=2.80), whereas the average score of the post-test were 22.56 (SD=2.48). This shows that, as a whole, the post-test score was higher than that of the pre-test.

To examine whether there was a difference between the pair scores of the pre-test and the post-test of the experimental group, both scores were analyzed for their statistical differences by using the Paired Sample T-test method. The findings are presented in Table 4.7.

Table 4.7 Results of a Paired Sample T-test for the Experimental Group

Classes	Tests	Paired Differences				T	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Experimental Class	Pretest- Posttest	-4.63333	3.25347	.59400	-584820	-3.41847	-7.800	29	.000

Table 4.7 shows the statistics concerning the distribution of the differences between the pair scores (Paired Differences) of the experimental group, the 95% Confidence Interval of the Difference, the t value, df and the 2-tailed p-value are presented. It can be seen from Table 4.7 that the value of the test statistics (on 29 degrees of freedom) is -7.800, and the 2-tail p-value is .000. This value shows that there is significant difference between the pre-test and post-test scores of the experimental group at the level of .05 ($P=0.00$, $P \leq 0.05$). It also indicates that students who studied the English reading lessons via the SAI Lessons made good progress in learning how to read English. This means that the SAI Lessons helped students improve their English reading proficiency significantly.

4.1.4 Students' Opinions Concerning the SAI Lessons

To answer research question four, which is, “What are the students’ opinions toward learning the SAI Lessons?”, two research instruments consisting of a questionnaire and a semi-structured interview were used to collect data. The questionnaire was divided into two parts. The first part was concerned with general information about the students and the second part was a five-point rating scale questionnaire which was used to elicit the learners’ opinions.

The first part of the questionnaire asked for information about the students’ gender, age, and if they were admitted to Roi Et Rajabhat University by passing the Rajabhat University entrance exam, the English courses they had previously attended, and whether they had used a smartphone device as a tool for learning English. The results of the analysis are presented in Table 4.8.

Table 4.8 Results of Students’ General Information

	Category	Frequency	Percentage
Gender	Male	3	10
	Female	27	90
Age	18 years old	4	13.3
	19 years old	21	70
	20 years old	5	16.7
Admitted to Roi Et Rajabhat University by passing the Rajabhat University entrance exam	Yes	30	100
	No	0	0
Have taken English 1 and 2 courses	Yes	30	100
	No	0	0
Have ever used smartphone device	Yes	30	100
	No	0	0

Table 4.8 shows that a total of 30 students who responded to the questionnaire were majoring in English from Educational College. The results show that most of them were female (70%) and 19 years old (19%) that 100% of the respondents were admitted to Roi Et Rajabhat University by passing the Rajabhat University entrance exam, that they had already taken English 1 and 2 courses, and that they had used a smartphone device previously.

In the second part of the questionnaire, the students were asked to rate their opinions with regard to the SAI Lessons by using a five-point Likert scale for the questionnaire. The mean and standard deviation of the scores obtained from the questionnaire were used to ascertain the students' opinions on the use of the SAI Lessons. To examine students' opinions, the data were analyzed for the arithmetic means and the criteria of means adopted from Suppasetserree (2005) and these were used for interpretation on the basis of the following criteria: 3.68-5.00= students have positive opinions toward learning the SAI Lessons; 2.34- 3.67= students have neutral opinions toward learning the SAI Lessons, and 1.00-2.33= students have negative opinions toward learning SAI Lessons. The results of the analysis are presented in Table 4.9.

Table 4.9 Results of Students' Opinions towards the SAI Lessons

Statements	N	\bar{X}	SD
1. The SAI Lessons are well designed.	30	4.00	.455
2. The reading materials used in the application are appropriate for students' English reading proficiency levels.	30	3.90	.548
3. The reading materials used in the application satisfied the students' English reading needs.	30	4.07	.583
4. The exercises used in the application helped students review the reading skills taught in the reading application.	30	4.23	.504
5. The application allowed students to study English reading wherever there is Internet access.	30	4.40	.621
6. The application is an adequate tool to help students' with learning how to read English.	30	4.27	.640
7. Students feel satisfied that they can figure out some reading strategies.	30	4.03	.669
8. Students are satisfied that they have more understanding about reading in English.	30	4.43	.504
9. Students are satisfied with their reading learning achievement.	30	4.20	.610
10. In comparison with the pre-test, students achieved a greater comprehension in answering the questions.	30	3.97	.615
11. Students are willing to accept using a smartphone device as a learning device for English reading by.	30	4.37	.615
12. For efficient time management, students are willing to learn English reading with a smartphone device.	30	4.00	.587
13. For forced study, students are willing to learn English reading with a smartphone device.	30	4.10	.845
14. To improve students' learning achievement, they are willing to learn English reading with a smartphone device.	30	4.07	.450
15. Students think reading application is suitable as a device for learning how to read English.	30	4.13	.681
16. Students think they can learn English reading by using a reading application at any time or anywhere.	30	4.13	.571
17. Students think it is convenient to use a touch screen to type when they use the reading application to learn English reading.	30	4.23	.568
18. Students think using the reading application as a learning device can motivate them to learn English reading.	30	4.07	.640
19. Students think they can use scrappy time more effectively to learn English reading by using a reading application.	30	4.13	.681
20. Overall, students think the reading application as a learning device can benefit their reading.	30	4.30	.596
Total	30	4.15	.090

The results presented in Table 4.9 show that in total, the mean score of the questionnaire was 4.15 (SD=0.09). Based on the criteria of means adopted from Suppasetserree (2005), this indicates that students had positive opinions towards learning SAI Lessons using a smartphone device.

When considering each aspect, the highest mean score was 4.43 while the lowest mean score was 3.90. The first three highest frequency statements were: (1) The students were satisfied and have more understanding about reading in English after using the SAI Lessons ($\bar{X} = 4.43$, $SD = 0.504$); (2) The application can help them learn how to read English wherever there is Internet access. ($\bar{X} = 4.40$, $SD = 0.621$); and (3) They are willing to learn how to read English by using a smartphone device ($\bar{X} = 4.37$, $SD = 0.615$). On the other hand, the statements with the three lowest frequencies were: (1) The reading materials used in the application are appropriate to their English reading proficiency levels ($\bar{X} = 3.90$, $SD = 0.548$); (2) Compared with the pre-test, they had a greater understanding of how to answer the questions ($\bar{X} = 3.97$, $SD = 0.615$); and (3) The SAI Lessons are well designed ($\bar{X} = 4.00$, $SD = 0.455$). However, the mean score of all aspects was higher than 3.68. This shows that students had positive opinions towards the SAI Lessons in all aspects.

After the questionnaire was administered, the semi-structured interview, which is one of the key qualitative data collection instruments, was used to elicit students' opinions toward the smartphone-assisted English reading lessons. In this part, ten students in the experimental group were interviewed immediately after the questionnaire was administered. Each interview lasted between fifteen to twenty minutes. To avoid ambiguity, misunderstandings and to obtain more in-depth data the students were interviewed in Thai. All interviews were recorded and transcribed for

the data analysis, so that they could be checked and used for future reference. Based on the data, 2 types of opinions were found: positive and negative.

Aspect 1: Students' positive opinions in learning English reading via SAI lessons

First, all of the respondents had positive opinions in learning English reading through the SAI lessons. The reasons for their positive responses were coded and categorized into 5 themes, namely, convenience, immediate feedback, independent learning, English ability improvement, and continuation of the lesson.

Convenience

All of the respondents stated that they liked learning English reading through the SAI Lessons because it was easy for them to learn and they could access the lessons at any time or anywhere. Some of their comments were:

- *“Yes I do. Learning English reading via smartphone is convenient even outside school students can proceed to study by themselves”.*(S2)
- *“I like it because it is convenient and easy to access the lessons. We can learn any time at any place when we have free time by ourselves outside classroom”.* (S5)
- *“I like it because patterns of teaching more interesting and unusual. We can access the lessons, study, and do the exercises anytime anyplace. We do not feel bored as when we do them in the classroom”.*(S6)

- *“I like it because learning through this model is convenient we can go to the lessons easily. This makes it more interesting than learning in the classroom”.*(S9)

Immediate feedback

The interview revealed that the immediate feedback which the respondents received after doing the exercises or the tests was what they liked most when they studied via the SAI Lessons. Some of their comments were as follows.

- *“I think it is exciting when I do the exercises and the tests and right after I finished doing that the results will come out quickly”.*(S5)
- *“I like doing the exercises because I can know the score immediately after I finished doing the exercises. This make can me feel excited while I am waiting for my score”.* (S6)
- *“I like doing exercises because I can know scores immediately after I do the exercises so I can check that how much we understand the story I read”.*(S7)

Independent learning

The interview also demonstrated that the respondents liked learning through these lessons because they can help them develop their independent learning skills. Some of their remarks were:

- *“What I like most when I study through SAI lessons is that without the teacher I still can study or review the lessons wherever I want by myself”.*(S1)
- *“What I like most is that I can look unknown vocabulary up by myself and it’s faster than look up in a dictionary book.”*(S9)

Improving English ability

All of the respondents in the interview stated that the reading activities provided in these lessons can help improve their English ability. Most of them mentioned that the reading activities provided in the lessons helped them improve their reading ability and some of them reported that the SAI Lessons helped them learn more vocabulary and also improved their pronunciation skills. Some comments were:

- *“I think I can improve my reading ability by using the SAI lessons because the contents and exercises are very interesting particularly the relevance pictures of the story are very helpful and make me comprehend the reading easily”.*(S1)
- *“The lessons help to improve my reading ability because there are many reading activities with various vocabulary. In addition, I can gain some knowledge to complete the exercises such as using synonym, antonym, inferences and the context clue”.*(S7)
- *“Yes, the SAI lessons can improve my reading ability because I can review the lessons on my free time and when needed”.*(S10)
- *“Yes I do. Due to the various contents provided in the lessons, they enforce me to read a lot and learn more new words”.*(S3)
- *“Through the SAI lessons, I learn more vocabulary which encourages me to read more and practice the pronunciation with online dictionary”.*(S4)

Continuation

The interview revealed that all respondents would like to study other English subjects through this model. The English subjects which were recommended by the students were: phonetics, grammar, pronunciation, speaking and listening, and vocabulary. Some of their comments were:

- *“I want to learn Phonetics because the smart phone lessons can help to pronounce the sound clearly and conveniently”.*(S2)
- *“I think the smartphone lessons are also suitable for learning phonetics because I can follow how to pronounce correctly”.*(S3)
- *“Yes I do. I think the online lessons designed on a smartphone that I want to learn are listening and speaking. I feel that the smartphone’s applications are suitable for practicing listening and speaking skills”.*(S5)
- *“English grammar is another course I want to learn if the lessons are designed on a smartphone. It will be more interesting if the lessons are more colorful, and not too many contents but précises of what want to be focused”.*(S6)
- *“Yes I want to study the course relating to pronunciation because through smart phone lessons I can hear a variety of accents which is very interesting”.*(S7)
- *“I want to learn vocabulary through smartphone. I think it will be more interesting if the vocabulary lessons are created in a game that helps me practice my vocabulary and play with my friends”.*(S8)

- *“Apart from English reading, I think English grammar is another language that be learned through smartphone. It is more interesting with various examples”.*(S9)
- *“I want to learn pronunciation. I think the applications of the smart phone are suitable for listening skills”.*(S10)

Aspect 2: Students’ negative opinions in learning English reading via SAI lessons

Some negative opinions were also found from the results of the interview. Two aspects of the SAI lessons received negative comments, namely, the small screen size of smartphone and the difficulty of typing in answers on the smartphone.

Small screen size of smartphone

Some respondents said that the small screen size of the smartphone was difficult to read and slowed them down when they were studying the lessons or doing exercises. Some of their comments were:

- *“For me, the screen size which is small sometimes can reduce speed of studying the lessons or doing exercises”.* (S2)
- *“The screen size which is too small makes it difficult when I read”.* (S3)

Typing the answer into a smartphone

Some of the respondents disliked typing the answers into the smartphone because it was not convenient and it was time consuming when typing the answer on a smartphone. Some of their comments were:

- *“I don’t like to give answer by typing. There should be only multiple choice questions to be more convenient”.*(S6)
- *“I don’t like the type of questions which require students to give answer by typing because it is a waste of time when typing the answer on a smartphone. It should be a multiple choice question type that I can tick to give an answer”.*(S9)
- *“I don’t like to type on a smartphone because it is not convenient and takes long time to answer the questions in each lesson”.*(S10)

More details of the students’ comments can be seen in Appendix I.

4.2 Discussion

The findings of the study show that both the SAI Model and the SAI Lessons were effective for the teaching of English reading for English major students. The four main topics relating to the research questions are discussed as follows:

4.2.1 The Development of the SAI Model in English Reading for English Major Students

One of the purposes of the study was to develop a Smartphone-assisted Instructional model (SAI Model) in English reading for English major students at RERU. The model was developed in 8 major steps and 9 sub-steps and submitted to three experts in the field of Instructional Systems Design and English Teaching for evaluation and suggestions. After it was evaluated, the findings revealed that the SAI Model was rated as very appropriate for English reading instruction. This view was possibly due to the fact that the model was carefully designed and developed on the fundamental principles of Instructional System Design (ISD) step-by- step with

insightful studies of various instructional models, learning theories and reading theories.

Based on the key principles of Instructional Systems Design (ISD), the SAI Model was developed systematically for each component of the model rather than as a random activity and all components were related to one another. Dick, Carey and Carey (2001) claim that the systematic approach of the model is an effective and successful approach because there is a careful linkage between instructional strategies and desired learning outcomes. This is consistent with Molenda (2003) who claims that the process of designing instruction can be carried out more efficiently and effectively if the steps are followed in a logical order so that the output of each step provides the input to the next step. For that reason, the SAI Model created on the basis of systematic-oriented models was evaluated by the experts as very appropriate for English reading instruction.

After the SAI Model was rated by the experts, it was shown that it had particular strengths as follows. Firstly, the components of the model were connected appropriately. This was because the SAI Model was designed and developed on the basis of the principles of Instructional Systems Design (ISD) with insightful studies of various instructional models. As stated by Martin (2011), if the instructional components are properly allied with each other, the quality of the instructional design is high. The SAI Model was designed and developed using a systematic-oriented approach with a careful linkage between each component. For this reason, the components of the model were approved by the experts as the strong point of the model.

Secondly, a model that could offer learning activities with self-paced learning was declared to be a distinctive point of the model as well. This was due to the fact that the SAI Model was also designed and developed based on the theoretical perspective

of constructivism. This view focuses on a learner-centered approach in the design step of the model for learning activities. Therefore, a model was designed and developed which allowed learners to review the content repeatedly at their own pace without the pressure that exists in virtual classrooms. With reference to Dunlosky and Theide (1998), it can be seen that self-regulated aspects of learning have important implications for the effectiveness of learners' learning efforts and their achievements in education. Accordingly, the model which focused on designing self-paced learning activities was rated by the experts as one of the strengths of the model.

Thirdly, another strong point of the SAI Model was that it could offer learning paths based on learners' needs. This might be the result of the model being developed on the basis of a behavioristic perspective. According to this view, at the analysis step of the SAI Model, learners, learning context, teacher's roles, and instructional contents were all analyzed to serve the learners' needs. Learning should meet students' needs and interests. If the learning activities are based on students' educational needs and interests, they are more likely to succeed academically, emotionally, and behaviorally (Grant & Basye, 2014). The SAI Model carefully analyzed the learning needs and identified the instructional goals, then created delivery systems, materials, and evaluation tools to address those needs to ensure high quality instruction. Therefore, the learning paths which served the learners' needs were considered as a strong point in the SAI Model.

Fourthly, one more strong point in the SAI Model was the facility whereby students can study at any time or anywhere. This view is possibly the result of the model being designed and developed based on a mobile learning perspective which focused on learner-centered learning. From this perspective, it could be said that m-

learning is any sort of learning that happens when the learner is not at a fixed, predetermined location, or able to use learning opportunities offered by mobile technologies (O'Malley et al, 2003 cited in KESKİN, 2011). For that reason, the SAI Model was developed to enable students to study at any time or anywhere through the use of smartphone devices was valued as one of the strong points of the SAI Model.

Finally, the SAI Model is suitable for current social conditions. This can be explained by the growing mobility and functional convergence of technologies, and the fact that mobile devices are progressively present in everyday life. According to Johnson (2011), it was reported that virtually 100% of university students are now equipped with mobile devices. Students use their mobile devices to communicate with other people, create video/audio, take photos, receive or send text messages. As a result of the benefits of mobile devices for language learning, mobile technology is currently considered to have a promising future in teaching and learning. For that reason, the SAI Model adopted a smartphone technology to assist with instruction which would be appropriate for current social conditions. As a result, the suitability of the SAI Model for current social conditions was evaluated as a strong point of the model.

The results of the evaluation of the SAI Model were consistent with the studies of previous models such as Suppasetsee's (2005) SREO Model, Nutprapha BOLA model (2011), and Tian's (2012) OTIL Model which were rated as appropriate by the experts. These models include the SAI Model which was designed and developed using a systematically-oriented approach with a careful linkage between each component. In addition, the models showed the linear application of the design stage that made each component into clear steps which were easy to understand. Moreover, they placed importance on a learner-centered approach, which allows students to study online at

their own pace and according to their interests. As a result, this model was approved by the experts as a very appropriate model for its learning objectives.

In conclusion, the SAI Model was systematically developed based on the principles of Instructional Systems Design (ISD). Every step in designing and developing the model was evaluated by three experts. As a result of the comments and suggestions of the experts, the model was modified and revised and in the long run approved as very appropriate for English reading instruction for English major students at RERU.

4.2.2 The Efficiency of the SAI Lessons in English Reading

The results of this study show that the efficiency of the process (E_1) and the efficiency of the product (E_2) of the five SAI Lessons for the experiment (trial run) met the standard criterion of 80/80. This indicates that the SAI Lessons were proven to be efficient. This is due to the fact that the SAI Lessons were systematically created in a step by step procedure based on the SAI Model which had been already approved as very appropriate for the teaching of English reading. Another reason why the lessons were proven to be efficient might be that the SAI Lessons, before the experiment, were tested through three steps of the try-out process: individual testing, small group testing, and field testing to determine the efficiency levels of the process (E_1) and the product (E_2) of learning according to the standard criterion of 80/80 (E_1/E_2). The results of E_1/E_2 from each step show the scores of the exercises and the unit test and the feedback from the students for the SAI lessons. As a result, the SAI Lessons were ultimately modified and improved step by step based on students' feedback and opinions. It is believed that the feedback of students can help teachers improve their teaching. According to Moore and Kuol (2005), students can provide useful feedback about the

effectiveness of teaching methods. This made the SAI Lessons more efficient for use in the teaching of reading English for English major students at RERU.

One more reason why the lessons were proven to be efficient was probably that the SAI Lessons were designed and developed on the basis of the theories of behaviorism, cognitivism, and constructivism. Based on a behavioristic perspective, learning is thought to be best facilitated through reinforcement of an association between a particular stimulus and response. With this view, the drills and immediate feedback scores were designed and written for the SAI Lessons. It has been claimed that immediate feedback motivates students to learn more (Bitter, 1989). Thus, the scores provided to the students immediately after the exercises in the SAI Lessons might have motivated the students to learn more and eventually gain more knowledge. Moreover, in the view of the theory of cognitivism, each lesson should be broken down into small sections. By such means, the cognitive load which can cause too much demand on the working memory of learners and therefore leads to ineffective learning might be avoided. According to Merriënboer and Sweller (2005), by carefully managing the working memory capacity of learners during an instructional task, the efficiency of learning can be increased. As a result, students might learn and remember what they learned more easily through the use of the SAI Lessons.

Furthermore, pictures and images in the SAI Lessons which were related to what they read enhanced students understanding and enabled them to make connections between their own background knowledge and the information in the text. Based on the cognitivist view, new information is most easily acquired when people can associate it with things they have already learned (Ormrod, 1999). Therefore, pictures and images which are integrated with the reading content might help students comprehend

the texts they read more easily and eventually improve their reading ability. The last theory which applies to the development of the SAI Lessons is constructivism. According to this theory, it is believed that knowledge is constructed by the individual rather than transmitted to the individual (McDonough, 2001). Due to this notion, the SAI Lessons were designed and developed so that students were inspired to read independently and encouraged to move at their own pace through the self-selected reading materials provided in the lessons. Accordingly, students had a greater opportunity to learn and construct knowledge by themselves through the SAI Lessons rather than from their teacher. For these reasons, as explained above, the design and development of the lessons based on behaviorism, cognitivism, and constructivism made the lessons more efficient.

This result is consistent with the findings in the studies by Tian (2012), Kongpet Dennis (2011), and Suppasetseree (2005). According to Tian's study, the results of E_1/E_2 of the OTIL lessons for the experiment revealed that the level of efficiency was 85.90/86.60 which met the 80/80 standard level. This indicates that the OTIL lessons were proved to be efficient. Tian explains that this is because the contents of the OTIL lessons were constructed based on the results of a needs analysis of students and instructional content, authentic resources, and real-world tasks. In addition, the lessons were tried out and revised through three stages: individual testing, small group testing, and field testing. As a result, the OTIL lessons were proven to be efficient for the teaching of English listening. Likewise, when using the Kongpet Dennis BOLA packages conducted by Kongpet Dennis (2011), it was found that the results of E_1/E_2 of Kongpet Dennis BOLA packages were 87.85/86.08 which met the 85/85 standard level and were thus proven to be effective. Kongpet Dennis stated in her research that the Kongpet

Dennis BOLA packages were proven to be efficient because the teaching materials in Kongpet Dennis BOLA packages were sent to experts to evaluate and the contents were based on the students' needs and interests. Additionally, the Kongpet Dennis BOLA packages were tested through three try-out stages: individual testing, small group testing, and field testing. According to the evidence mentioned previously, the Kongpet Dennis BOLA packages were proven to be efficient for English learning and teaching. Correspondingly, a study conducted by Suppatsereee (2005) revealed that Remedial English lessons via the internet proved to be efficient as well. It was found that the results of E_1/E_2 of Remedial English lessons via the internet were 85.03/86.27 which met the 80/80 standard level. Suppatsereee stated in his research that the Remedial English lessons via the internet proved to be efficient because the lessons were completely developed in three try-outs, in individual, small group, and field tests. The results from each step of the try-out helped to develop the lessons step by step.

In conclusion, based on the results obtained regarding the efficiency of the process (E_1) and the efficiency of the product (E_2) from five lessons which were tested by using developmental steps, it has been shown that the SAI Lessons met the 80/80 Standard criterion of efficiency. This proved that the SAI Lessons which were developed based on the SAI Model were efficient and appropriate for use in the teaching of English reading for English major students at RERU.

4.2.3 Students' Reading Achievements before and after Using the SAI

Lessons

The results of students' reading comprehension achievements before and after using the SAI Lessons showed that the average score of the post-test (22.56) was higher than the pre-test (17.93). When the statistical differences between the pair scores were

examined, it was revealed that there was a significant difference between the pre-test and the post-test scores ($P \leq 0.05$). This indicates that the SAI Lessons had a positive effect on students' reading achievements. The reasons why the students' reading achievements were significantly greater after using the SAI Lessons might be explained as follows.

The first reason was probably because before the post-test was administered to the students, they had been involved in learning activities for each lesson: studying the content and examples and doing exercises as many times as they wanted and at their own pace. In other words, the students acquired greater experience in learning. According to a behavioristic perspective, based on the drills and practices (Thronkike, 1991), it has been confirmed that students learn best and retain information longer when they have meaningful practice and repetition. This might have positively affected their post-test scores. Another reason might be that the skills and information to be learned were developed based on the cognitivist perspective in which learning was broken down into small steps that move from simple to complex building on prior schema. This makes the lessons easier to learn and remember (Cofer, 1971). Therefore, the students were able to learn and remember some of the skills and the information in the SAI Lessons more easily and this ultimately yielded higher reading achievement scores in the post-test.

One more reason why the post-test scores were significantly higher than the pre-test scores might be the potential of internet accessibility. With the potential of internet accessibility students were able to learn by themselves on a smart phone and they could search for information related to what they wanted to learn which might have helped them get more understanding about what they learned. This accords with the notion of the learner-centered approach proposed by Weimer (2012), namely, that the learner-

centered learning atmosphere is welcoming, encouraging, engaging and supportive. In this atmosphere, learning is about meeting needs and interests, and it is also flexible and responsive. Based on this view, students had more opportunities to learn and this increased their responsibility to identify their own learning needs, pinpoint learning resources, and construct their own knowledge based on those needs. This might have given the students more confidence in doing the post-test.

These findings are in line with the studies conducted by Lee et al. (2014), and Azabdaftari and Mozaheb (2011). Lee and his friends conducted a research study on the effects of implementing C&U-message through smartphones on English grammar learning for college students. The findings of the study reveal that the average grade of the post-test was higher than the pre-test. This indicates that the students' learning improved significantly. Lee explained that the reasons why the average grade of the post-test was higher than in the pre-test was because of the impact of mobile technology on the students' language learning, so they could complete the exercises whenever they could find the time, so the App helped them with time management for reviewing and refreshing their grammar in the lessons. Likewise, the research results of Azabdaftari and Mozaheb (2011) who conducted a study regarding a comparison of vocabulary learning of EFL learners by using two different strategies: mobile learning vs. flashcards, revealed that the mean score for the experimental group (65) was statistically higher than the mean score of the control group (45). This finding showed that the use of m-learning improves the level of the vocabulary learned by the students more than the use of flashcards for four reasons: (1) students can learn anytime or anywhere; (2) students can receive instant feedback when they submit their answers; (3) they can surf the internet and find different examples while encountering problems

and mistakes, and (4) m-learning can increase the interaction between learners, and between the learners and their teachers.

In conclusion, the results of the students' English reading proficiency showed a statistical improvement in their reading ability in the post-test. This finding confirms that the SAI Lessons helped students to learn how to read English more effectively.

4.2.4 Students' Opinions of the SAI Lessons

To investigate students' opinions regarding the SAI Lessons, a questionnaire and a semi-structured interview were administered to students immediately after the experiment. As a whole, the findings of the questionnaires and semi-structured interviews revealed that the students had positive opinions toward studying the SAI Lessons and they enjoyed studying how to read English through the use of the SAI Lessons. The reasons why the SAI lessons were satisfactory to the students are discussed as follows.

Firstly, students demonstrated that they preferred learning through the SAI Lessons because it was convenient for them to learn and access the lessons at any time or at any place. This is a result of the SAI Lessons being based on a mobile-learning perspective in which learning can occur at any time or in any place. This view accords with that of Kim and Kwon (2012) who reveal that the strengths of smartphone applications in language teaching and learning are that they provide a personal and learner-centered learning opportunity at any time or in any place which is easily accessible and which provides flexible resources and activity so learners can study more easily and promptly access language learning materials whenever or wherever they want to learn. These factors allowed students greater opportunity to practice and a greater understanding of what they learned. Moreover, Kaya (2013) and Norman

(2011) also stated that with the greater accessibility of the smartphone, students can access content instantly when needed without having to activate a desktop computer or a laptop. This feature is extremely convenient for language learning and makes learning through smartphones increasingly popular.

Secondly, students revealed that the immediate feedback which they received after performing the exercises or the tests in the lessons stimulated them and they enjoyed studying via the SAI lessons. This is because the lessons were designed and developed on the basis of a behaviorist perspective which is that learning takes place as the result of a response that follows on specific stimuli. As a result, the exercises and tests can be checked as soon as they are completed and immediate feedback is provided. As stated by Bitter (1989) and Phuakpong (2005), students are more likely to learn from immediate feedback. This is because the knowledge that they are doing well gives students a sense of achievement which motivates them to learn more (Ibid, 2005). Moreover, Yelkur (2005) also stated that immediate feedback allows for deeper learning and retention of the subject matter and captures students' attention and makes assessment more fun. For these reasons, students reported that they liked studying the SAI Lessons because the immediate feedback stimulated them and made the lessons more enjoyable for them.

Thirdly, students demonstrated that they enjoyed studying the SAI Lessons because they were allowed to learn independently. This might be because the SAI Lessons were also created on the basis of an individualized approach. By this approach, students will be inspired to read independently and encouraged to move at their own pace through self-selected reading materials with the assistance of the teacher when it is needed. As a result, students were content to study individually and this also allowed them to select and skip the reading content independently throughout the learning

process without being under the control of a teacher. This accords with Zhang, Song and Burston (2011) who noted that mobile phone technologies have the potential to increase learners' efficiency in self-regulated learning environments. Moreover, Koh, Loh and Hong (2013) also affirmed that "with the help of the smartphones, students took charge of their own learning." (p.110). According to Meyer (2008), students with independent learning are more motivated to learn, report more enjoyment of the material and are more actively involved in their learning than those who study in more restrictive environments.

In addition, students also revealed that the SAI Lessons helped improve their English language skills in regard to reading, vocabulary, and pronunciation. With regard to reading, this was because the contents and exercises in SAI Lessons were very interesting and the pictures and images related to the stories they were reading were very helpful and enabled the students to comprehend the texts more easily. As stated by Cooper et al. (2006), when a student is given the same material spread over more pages, with less text on each page and with some illustrations, the student is able to read the words and comprehend the text more easily. The students could understand what they read without difficulty and eventually their reading skills improved. As regards the improvement of vocabulary, this was due to the fact that the SAI Lessons were networked, so students could find the meaning of vocabulary and learn more new vocabulary by surfing other sources conveniently. This is confirmed by Cavus and Ibrahim (2009), who showed that the use of smartphones can help students to learn more new words. So, learning through SAI Lessons which were connected to the network might help expand students' vocabulary. Lastly, students mentioned that the SAI Lessons helped them improve their pronunciation. This is because, by using a

network connection while studying the SAI Lessons, students could practice their pronunciation by using an online dictionary. Online dictionaries are equipped with audio pronunciation which allows learners to imitate the pronunciation of native speakers and check their pronunciation compared with that of native speakers. According to Sedighi and Soyooof (2013), smartphone applications have eased the learning of sub-skills in second language learning, such as grammar, vocabulary, and pronunciation. Therefore, through the SAI Lessons students had a greater opportunity to practice the pronunciation of the words that they were not familiar with and they could check whether their pronunciation was correct or not. In this way, students' pronunciation gradually improved.

The results of the interviews showed that the students felt there were some weak points in studying via the SAI Lessons. Students complained that the small screen of a smartphone made the reading material look much more dense and difficult to read. This is consistent with a study by Chen, et al (2013) who found that the smartphones' small screen can make it difficult to view and properly display materials and as a result there is a high risk of reducing learning performance due to increased cognitive load. Also the findings of Kim & Kim (2012) in which a small screen was found to create cognitive disadvantages were also related to students' attention and visual perception. However, this might not be the main problem for students because students reported wanting to continue their study in other subjects through smartphone devices. As stated by Kukulska-Hulme (2009), the use of personal devices affords students' ownership of learning, which may lead to positive language learning experiences.

Moreover, students also commented that typing the answers into a smartphone was not convenient and time consuming. A study conducted by Bao et al (2011)

revealed that one of the significant barriers which limited the productivity of studying on a smartphone is the difficulty of using a smartphone compared with a computer for text input. It is said that the small form factor of smartphones is a problem because of the diminutive screens and clumsy input mechanisms. Learners cannot type a long essay using a smartphone, but they are still able to do many things on it like reviewing, finding articles, taking notes or even reading. These weak points of smartphone devices, however, might not have had much of an effect on learning through the SAI Lessons compared with the strong points which were the convenience and improvement of independent learning. Furthermore, if the lessons were used for only a short time, it might not cause serious problems.

In conclusion, students had positive opinions regarding the SAI Lessons and they enjoyed studying how to read English through the SAI Lessons because it was convenient for them to learn and to be able to access the lessons at any time or in any place. Moreover, the immediate feedback provided from the lessons stimulated them and made them wanted to learn more. In addition, the lessons helped the students to improve their English language skills. As a result, they were satisfied with the SAI Lessons and enjoyed studying them.

4.3 Summary

This chapter has presented and discussed the results on the findings of the development of the SAI Model, the efficiency of the SAI lessons, the students' reading achievements, and the students' opinions toward studying via SAI lessons. In the following chapter, the SAI Model will be described in more detail and examples of the SAI lessons will be illustrated as well.

CHAPTER 5

A SMARTPHONE-ASSISTED INSTRUCTIONAL MODEL (SAI MODEL) FOR THE TEACHING OF READING IN ENGLISH

The present study attempts to design and develop a Smartphone-Assisted Instructional Model (SAI Model) for reading in English for English major students at Roi Et Rajabhat University. This chapter consists of three main sections: design of the SAI Model, the components of the SAI Lessons and implementation of the SAI Model will be presented.

5.1 Design of the SAI Model for English Major Students

The Smartphone-Assisted Instructional Model (SAI Model) for reading in English is an integrated instructional model which aims to promote the ability of students majoring in teaching English to improve their reading skills in English at the College of Education College of Education at Roi Et Rajabhat University. To design and develop the SAI Model, the fundamental principles of Instructional System Design (ISD), which consists of the three learning theories of Behaviourism, Cognitivism, and Constructivism learning theory, the relevant instructional design models that provide the basis for the design of the SAI Model including the ADDIE Model, the Dick and Carey Model, the Kemp Model, the SREO Model and the OTIL

Model, a knowledge of smartphone technology, and the seven steps for a Model for research and development as proposed by Brahmawong & Vate-U-Lan, 2009 were carefully reviewed, analyzed and synthesized in Chapter 2. Based on the knowledge and the information gained from the literature review, the Smartphone-Assisted Instructional Model (SAI Model) for reading in English has been created and evaluated. In the next section the SAI Model for English Major students is explained and described in detail. This model consists of 8 major steps and 9 sub-steps as illustrated in Figure 5.1.



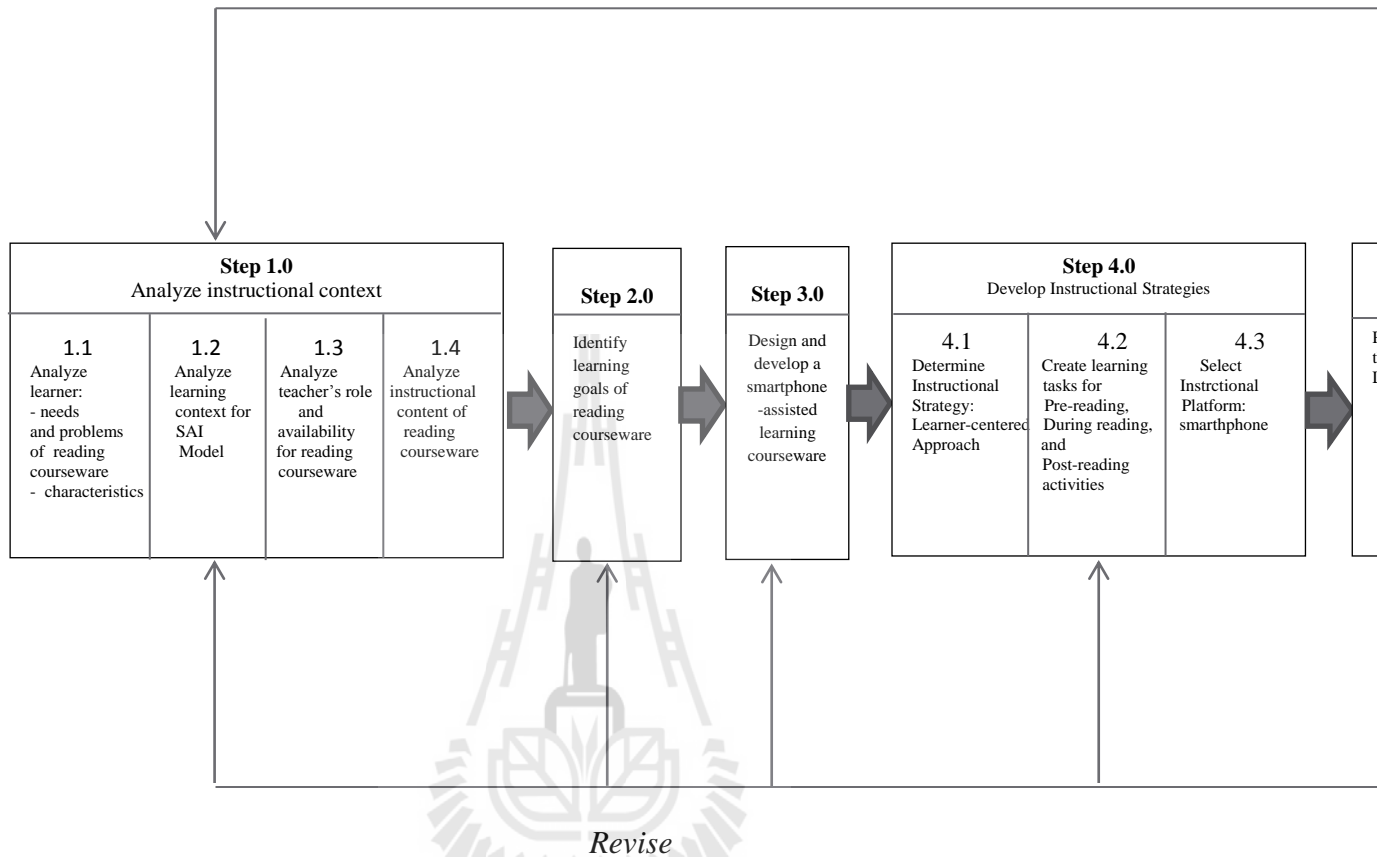
Revise

Figure 5.1 A Smartphone-Assisted Instructional Model (SAI Model) for reading in English

Each step will be briefly described as follows:

Step 1.0 : Analyze Instructional Context

Analysis is the first basic step in the design of the SAI Model. Before the instructional process is designed, the 4 different aspects were carefully analysed by the researcher: (1) analyse learners' needs and problems of first-year students majoring in English from the College of Education of Education at Roi Et Rajabhat University regarding learning how to read in English, and their characteristics; (2) analyse the learning context of Roi Et Rajabhat University; (3) analyse the teacher's roles and availability in using the smartphone-assisted learning courseware and, (4) analyse the instructional content of the reading I course used in Roi Et Rajabhat University. The information gained from this stage should contribute towards identifying the learning goals of the reading courseware in the second stage.

1.1 Analyse Learners

In this sub-step, the needs and problems of first- year students majoring in English from the College of Education at Roi Et Rajabhat University concerning how to learn to read in English and the students' characteristics were examined. The analysis emphasised their background knowledge and the learning problems they had encountered while they were studying how to read in English and their expectations of the programme.. It was possible to entertain this information from on-site visits using interviews and observation. The findings of this analysis can contribute towards identifying the learning goals and determining the instructional strategies which help learners to make connections between the new information and what they already know.

1.2 Analyse Learning Context for the SAI Model

The next thing we need to look at is the learning context. This is the setting in which actual learning will take place. If we understand the setting in which instruction will take place then it will be easier to plan activities that will make the best use of the instructional environment. In this sub-step, the learning setting of Roi Et Rajabhat University will be examined by on-site visits using interviewing with instructors as well as observing the site in use for obtaining the necessary information. The purpose of this sub-step is to identify the availability of smartphone devices for English instruction provided by the university and to investigate any limitations of the setting that might affect the design of the instruction.

1.3 Analyse the Teacher's Roles and Availability for the use of the Reading Courseware

A study of teachers' roles online and their competencies are important as they provide information about how teachers might be trained and supported online, as well as factors that might affect the design of online learning environments. There are several aspects of the teacher's role that can influence how e-learning environments are developed and delivered. Thus, this sub-step examines the lecturer's roles and availability and then specifies what that the teacher needs to do while teaching the smartphone-assisted learning course. For example, the teacher will need to serve as a facilitator and a consultant, and to be available all the time whilst teaching this course.

1.4 Analyse the Instructional Content of the Reading Courseware

One of the important factors which can affect how the instruction is designed and developed is the different types of content used, which will require a variety of strategies. The content analysis focuses on the analysis of both the domain (type) and the level (sequence) of the content.

Step 2.0: Identify Learning Goals of Reading Courseware

After the analysis, it was necessary to specify the learning goals of the reading courseware. The findings from step 1.0 can influence the goal statements. A clear statement of the instructional goals of the course will help determine the pathway to develop the smartphone-assisted learning courseware and reduce unsuitable or unnecessary elements during the development of the course. The learning goal is the backbone of a lesson, consequently whatever the instructors decide to do in the class will be considered in the light of the goals (See Appendix J).

Step 3.0: Design and Develop Smartphone-Assisted Learning Courseware

After identifying the learning goals of the reading courseware, the lessons, exercises and assessments which will be used for the instruction must be developed. To affirm that the lessons, exercises and assessments of the online instruction follow a holistic approach means that everything fits together in harmony.

Step 4.0: Develop Instructional Strategies

Based on the plan of the online reading courseware from step 3.0, the instructional strategies will be developed following 3 sub-steps: (1) determine the instructional strategies; (2) create the learning tasks and, (3) select an online instructional platform.

4.1 Determine Instructional Strategies: Learner-Centered Approach

It is well-known that what children learn depends not only on what they are taught but also on how they are taught (Instructional strategies online, 2013), accordingly, to achieve the learning goals of the reading course, appropriate instructional strategies must be carefully chosen to maximize learning effectiveness. Therefore the learner-centered approach was consequently selected as the main

instructional strategy in the smartphone-assisted reading in English instruction. The following areas will now be considered: Pre-reading activities; During- Reading, and Post-reading activities.

4.2 Create Learning Tasks for Pre-Reading Activity, During-Reading Activity, and Post-Reading Activity

After the instructional strategy is determined, the learning tasks which will affect the accomplishment of the instruction of the smartphone-assisted reading in English courseware must be considered and created. The design of appropriate tasks will possibly have a significant influence on the success of the reading instruction.

4.3 Select Instructional Platform: Smartphones

Based on the results of the previous steps, the selection of a suitable online instructional platform will have to be carefully considered. In an online environment, the platforms should be selected in order to expand accessibility to educational opportunities, make use of multimedia capabilities, and provide effective management of the teaching and learning experience. As the online reading instruction focuses on self-organized learning and social networking, smartphone devices can also provide a platform which can serve the notion of learning anytime or anywhere.

Step 5.0: Produce the SAI Lessons

Once the instructional platform has been selected, the actual reading courseware which will be used by teachers and students needs to be carefully developed. However, this step is somewhat time consuming because the proposed instructional material may possibly have to be changed or amended and new instructional material may have to be adopted or added to make the courseware more effective.

Step 6.0: Developmental Testing

To test the efficiency of the SAI Lessons, in this step the try-out and the trial run processes need to be carried out.

6.1 Try-Out

In this substep, to test the efficiency of the SAI Lessons, three steps of the try-out will be carried out: individual testing, small group testing and field testing.

6.1.1 Individual Testing

In this stage, three students will learn through the reading English lessons produced on the SAI Model. The time allotted for this step is ten weeks. The results of the try-out will be analyzed to find out the efficiency of the SAI Lessons based on the 80/80 efficiency criterion. Try-out data on the opinions of the students concerning the quality of the SAI Lessons will be utilized to improve the quality of the lessons.

6.1.2 Small Group Testing

In the small group testing, 6-12 students will be asked to study the SAI Lessons which will be modified and revised following the individual testing stage. Results of the try-out will be analyzed to find out the efficiency of the lessons based on the 80/80 efficiency criterion. The lessons will be further improved based on the students' opinions of their quality.

6.1.3 Field Testing

Similar to the individual and the small group test, in this stage thirty students will be asked to learn via the SAI Lessons. After that, students' achievement scores from both the exercises and the tests from the three stages will be determined for the effectiveness of the SAI Lessons based on the criteria of the 80/80 standard level (Brahmawong, 1978).

6.2 Trial Run

In this step, the learning context where the actual learning will take place is conducted. The reading courseware will be given to thirty students. Before and after studying the SAI Lessons, all of the learners will be asked to do the pre-test and post-test respectively. Results of the trial run will be analyzed to find out the efficiency of the lessons based on the 80/80 efficiency criterion. A comparison of the pre- and post achievement scores of the students who used the SAI Lessons will be investigated as well. Eventually, the lessons will be further improved based on the students' opinions of their quality.

Step 7.0: Implementation of SAI Lessons

Once the SAI Lessons have been approved as efficient and satisfactory, they will be implemented to ensure that maximum efficiency and positive results will be obtained from the lessons. The evaluation should also be designed in the implementation step.

Step 8.0: Conduct Evaluation

After the implementation step, the evaluation process is conducted in order to evaluate the learning processes and their outcomes. Accordingly, two types of instructional evaluation, namely, formative and summative evaluation will be conducted in this step. Formative evaluation is a method for judging the value of a program while the program activities are still in progress. Thus, formative evaluation focuses on the process. It provides the information needed to adjust the teaching and learning after they have been tried out. Summative evaluation is a method of judging the worth of a program at the end of the program activities. Thus, summative evaluation focuses on the outcome. The results of these evaluation enable course designers to decide whether a program should be adopted.

5.2 The Components of SAI Lessons

The SAI Lessons contain lessons which are analogous to the content of the Reading I course at RERU and they were designed to promote the reading ability of English major students at RERU. After the lessons were completely developed, they were uploaded to the website <http://ml-en.com>. The lessons consisted of five units parallel to those of the Reading I textbook course which was used in the normal classroom. The units were as follow:

Unit 1: Studying abroad

Unit 2: Family matters

Unit 3: Stars of music

Unit 4: Think positive!

Unit 5: A career fashion

Each unit of the lessons was comprised of eight main sections which included Focus, Vocabulary skills, Predicting, Reading fluently, Reading skills, Spotlight on grammar, talk about it, and Unit quiz, respectively. Each section was designed to improve students' ability in the diverse aspects related to reading skills. As a whole, it helped to improve the reading in English comprehension skills of English major students at RERU. In order to provide a clearer picture of the lessons, each section will be described in detail. (See Appendix K)

5.2.1 Focus

The first section in each unit was "Focus". In this section, some images and information including questions relating to the topic were provided in order to activate the learners' prior knowledge and to encourage them to predict what they were going to read.

This is a sample page of a focus section.

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Page : 1/14

Focus

Look at these pictures and read the information.





New York, Rome, Paris, London, Milan,
and Tokyo are
Considered to be some of the most
fashionable cities
in the world.

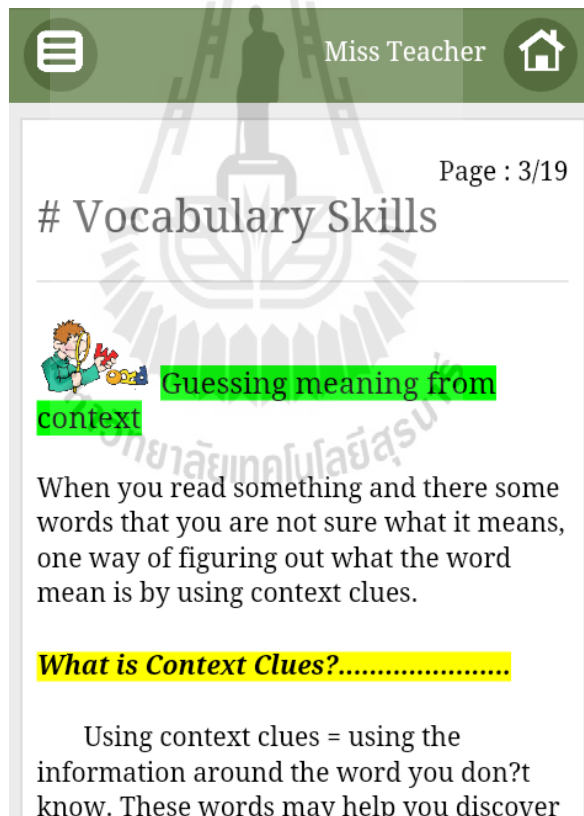
Did you know.....

On this page, students see pictures and read descriptions of the pictures. With the given information, the students were asked to predict what they were going to read by answering questions.

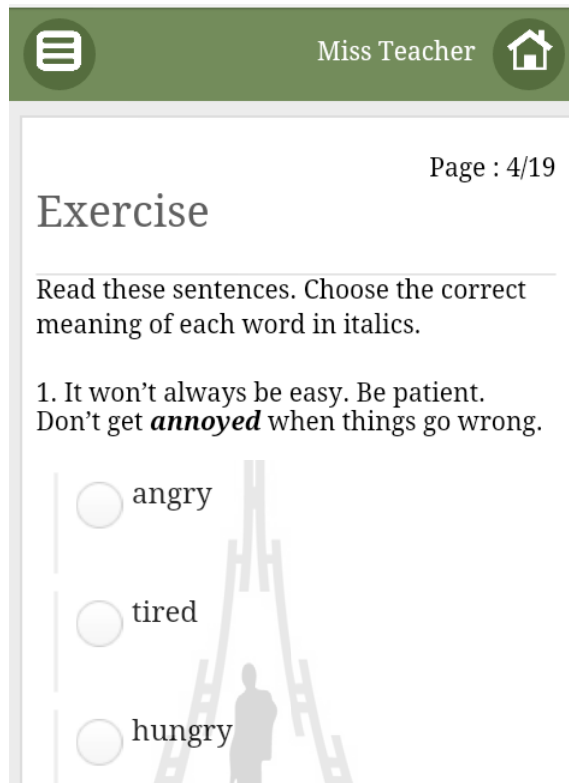
5.2.2 Vocabulary Skills

The second section in each unit was “Vocabulary skills”. The vocabulary skills consisted of two activities: vocabulary strategy study and vocabulary exercises. For vocabulary study, several effective vocabulary learning strategies, for example, guessing meaning using context clues, recognizing synonyms and antonyms, were explained in each unit to help students learn how to learn new vocabulary. To test whether the students had successfully acquired the vocabulary skills they had studied previously, there were vocabulary exercises at the end of the section.

This is a sample page of a vocabulary skills section.



The screenshot shows a mobile application interface. At the top, there is a green header bar with a menu icon on the left, the text "Miss Teacher" in the center, and a home icon on the right. Below the header, the page number "Page : 3/19" is displayed in the top right corner. The main title "# Vocabulary Skills" is centered. Below the title, there is a cartoon illustration of a boy with a book and a magnifying glass, next to the text "Guessing meaning from context" which is highlighted in green. A large, faint watermark of a university logo is visible in the background. Below the illustration, there is a paragraph of text: "When you read something and there some words that you are not sure what it means, one way of figuring out what the word mean is by using context clues." Below this paragraph, the text "What is Context Clues?....." is highlighted in yellow. At the bottom, there is a definition: "Using context clues = using the information around the word you don?t know. These words may help you discover".



Miss Teacher

Page : 4/19

Exercise

Read these sentences. Choose the correct meaning of each word in italics.

1. It won't always be easy. Be patient.
Don't get *annoyed* when things go wrong.

angry

tired

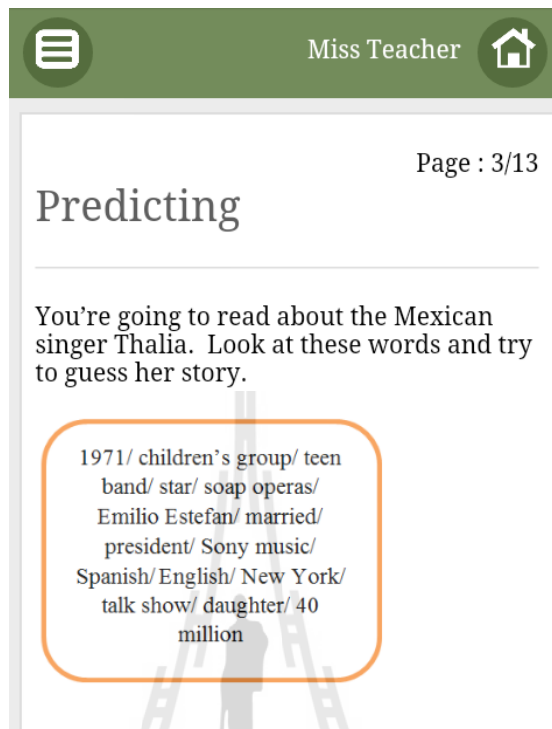
hungry

This page was a guessing the meaning the context clues lesson. The students had to read the given content and guess the unfamiliar vocabulary from the context and complete the exercises provided in order to check their understanding.

5.2.3 Predicting

One effective strategy for helping students become proficient readers is making predictions. In this section, before reading, a fragment of the text they are going to read was presented with questions to help students anticipate information and events in the text they are going to read. This activity aims to activate students' prior knowledge about the text and helps them make connections between what they already know and the new information..

This is a sample page of the section on predicting.



From this page, students read some words from a story about Thalia, the Mexican singer. With these words, students have to predict what the story of Thalia is about.

5.2.4 Reading Fluently

There were two activities in this section: read the assigned text and do a reading comprehension exercise. In the first sub-section, a story was shown to the students to read for text comprehension. After reading the story, students were encouraged to check their comprehension by doing the reading exercise. This section intended to encourage students to use the reading strategies they had learnt previously in order to improve their comprehension of the text.

This is a sample page from the section on reading fluently.


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Page : 4/13


Reading fluently

Read the text quickly. Then answer the questions

Thalia



Born in Mexico City on August 26, 1971, her full name is Ariadna Thalia Sodi Miranda, but the world knows her as Thalia. The youngest of five sisters, she wanted to be a singer and actress from an early age. She started singing



In 2000, she married 52-year-old Tommy Mottola, the former president of Sony Music, in a 3\$ million wedding. Several more albums followed. Her first album in English, *Thalia*, was released in 2003. It was also her first number one in the Top Latin albums chart, and it sold over four million copies. It was especially popular in Japan, Brazil, and the Philippines. Her next album in 2005, *El Sexto Sentido* (*The Sixth Sense*) contained songs in Spanish and English.

Thalia has also worked as a fashion designer, magazine editor, and model. She has her own clothing collection (the Thalia Sodi Collection), a range of candy (La Dulceria Thalia) with

Page : 5/13

Understanding the text

How old was Thalia when.....

1. She married Tommy Mottola?

32

29


24

On this page, students read the full story about Thalia, and compare what they had predicted with what they read. After reading the story, the students have to do the exercises to check their understanding of Thalia's story.

5.2.5 Reading Skills


“Reading skills” is one section which is provided in each unit of the lessons to help students increase their comprehension levels. It consists of two activities. At first, important reading skills such as skimming, scanning, reference, and finding the main idea are presented for learning and after that students are encouraged to perform the exercise on reading skills in order to check their ability.

This is a sample page of the reading skills section.

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Page : 9/14

Reading skill



Reference word

Every text has a structure. It is not just a random collection of sentences. The parts that make up the text are related in a meaningful way to each other. Recognizing the way in which a text has been organized will help you to understand it better. In order to understand the text, it is necessary to understand how the sentences are related. Words like "it", "this", "that", "here", "there" etc. refer to other parts of the text. You need to understand

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Look again at the e-zine article. Who or what do the words in *italics* refer to?



I want to be a fashion designer!

James Fowler
Chair, Fashion Design
The International Academy of Design,
Toronto

My initial advice to anyone saying this to me is always the same. First, decide if **this is** really what you want to do! Start by getting involved in this industry. Your local mall probably has someone who is responsible for

This page provides information concerning reference words which helps students to understand the relationships between different parts of a text, then students have to check their comprehension by doing the exercises.

5.2.6 Spotlight on Grammar

As grammar knowledge benefits reading comprehension, there is a section in each unit which focuses on important grammatical points, such as relative clauses, present and past participles, and the present perfect.. This section is divided into two parts: grammar study and grammar exercises. In grammar study, students learn about grammar and after that they check their understanding of the grammar they have learned, and then they are asked to do the exercises.

This a sample page of the spotlight on grammar section.



The screenshot shows a mobile application interface. At the top, there is a green header bar with a menu icon on the left, the text 'Miss Teacher' in the center, and a home icon on the right. Below the header, the page number 'Page : 15/19' is displayed. The main content area has a title '# Spotlight on grammar' followed by a horizontal line. Below the line, the section title '**Relative clauses**' is shown. Underneath this title is a small illustration of a person sitting at a desk. The text below the illustration reads: 'We use relative clauses to give additional information about something without starting another sentence. By combining sentences with a relative clause, your text becomes more fluent and you can avoid repeating certain words.' At the bottom of the page, the section title '**Relative Pronouns**' is visible.

Miss Teacher

Page : 16/19

Choose the best answer to complete each sentence.

1. The languageGavin chose to study was Spanish.

where

what

that

On this page, information about relative clauses is provided for students to learn and after studying them, they do the exercises to check their understanding of relative clauses.

5.2.7 Talk About It

“Talk about it” is a section which allows students to demonstrate their ideas and share them with other students. In this section, a question about the story they read was asked to elicit their opinions. Their answers are shown on the forum. Students are allowed to go to the forum to read other students’ opinions and also to make some comments. However, students have a choice because they can give their answers in two ways, either by selecting the correct multiple choice answer or writing their answer in a box which is provided.

This is a sample page from the talk about it section.

Page : 17/19

Talk about it

What is your opinion of studying abroad?

Check (✓) the statements you agree with. Compare your opinion with your friends.

Talk about it

- Studying abroad is not really “serious”. It’s just a vacation.
- I would like to study abroad, but I’m too shy.
- I don’t want to study abroad because I would lose my friends.

On this page, students are asked to show their ideas about studying abroad. By clicking on a possible item, they can share their ideas with their friends on the forum.

5.2.8 Unit Quiz

To assess students’ reading ability, the last section “ Unit quiz” is given at the end of each unit. In this section, a passage with a longer text and with a number of multiple choice questions is provided to check students’ comprehension of what they have read.

This is a sample page of the section on the unit quiz.

The image shows two screenshots of a mobile application. The top screenshot displays a reading passage titled "Unit 1 Quiz part 1" on page 18/19. The passage is about Christopher Columbus's early life and his quest to find a shortcut to the Indies. The bottom screenshot shows a quiz question: "1. Where was Christopher Columbus born?" with four radio button options: Spain, The New World, Portugal, and Italy. The application has a green header with a menu icon, the text "Miss Teacher", and a home icon.

Miss Teacher

Page : 18/19

Unit 1 Quiz part 1

Passage 1

Christopher Columbus was born in Genoa, Italy in 1451. While spending most of his early years at sea, Columbus began to believe that he could find a shortcut to the Indies by sailing west across the Atlantic Ocean. Unfortunately, the King of Portugal refused to finance such a trip, and Columbus was forced to present his idea to the King and Queen of Spain. In 1492, King Ferdinand and Queen Isabella agreed

Miss Teacher

1. Where was Christopher Columbus born?

- Spain
- The New World
- Portugal
- Italy

This page provides a quiz on the unit. Students are allowed to do the quiz whenever they are ready, however, they are only allowed to answer the quiz once.

5.3 Implementation of the SAI Model

To implement the SAI Model effectively in any educational institution, it is highly recommended that the following factors should be taken into consideration.

5.3.1 Administrative Commitment Policy

One factor that plays an important role in the effective use or adoption of the SAI Model is the administrative commitment policy which supports the mobile learning system. For educational institutions, a supportive policy for mobile learning should be generated. To support mobile learning systems, the institutions should invest in high quality infrastructures and facilities. Moreover, institutes should recruit experienced staff in the field of online learning and occasionally set up in-house training and workshops on instructional systems design and mobile learning to develop both the technical staff and instructional designers who will be capable of dealing with the needs of the SAI Model with regard to course planning, production, delivery, and evaluation.

5.3.2 Infrastructures and Facilities Needed before Implementation

Another factor that plays an important role in the effective use or adoption of the SAI Model concerns the quality of the infrastructures and the facilities provided by the institution. As the SAI Model requires the connection of smartphone technology to a wireless network through a deployed network platform or model, in order to employ the model effectively, it is imperative that the educational institution which is interested in implementing the SAI Model should be able to provide an internet connection with signal strength and availability and high-speed connections which students can log on to whenever they want to participate in the learning process at a convenient time or in any convenient place around the campus.

5.3.3 Conditions for Successful Implementation

Although the SAI Model is capable of offering an alternative way of learning which helps flexibility in delivering education by meeting learners' needs, and supporting learning activities without restrictions on physical locations or time, the successful implementation of the SAI Model might not be possible unless the following conditions are fulfilled: the first condition for the successful implementation of the SAI Model is an administrative commitment policy which supports mobile learning systems, the second condition for the successful implementation of the SAI Model is a high quality infrastructure and adequate facilities provided by the institution to support the use of a mobile learning system. Finally, the acceptance of mobile learning by students is one of the critical conditions that needs to be met for the successful implementation of the SAI Model. If the students believe that learning through a smartphone will enhance or improve their learning performance, this belief will create a positive attitude toward mobile learning, thus increasing the students' motivation to learn via a smartphone and then to continue to use it.

5.4 Summary

This chapter has demonstrated the processes in designing and developing the SAI Model and the SAI Lessons. The components of The SAI Model consist of 8 major steps and 9 sub-steps. Details of each step and sub-step of the model have been described in detail. Also, details of the SAI Lessons have been presented. Illustrated sample pages have been shown.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

The previous chapter described the findings and discussions of the study in detail. The purpose of this chapter is to draw conclusions from the study. In addition, a number of pedagogical implications of the study and recommendations for further research are presented.

6.1 Conclusion

The principal purposes of the study were to develop the SAI Model for English major students at RERU, to evaluate the efficiency of SAI Lessons based on the standard criterion set of 80/80, to examine significant differences in students' reading achievements before and after using the SAI Lessons, and to investigate students' opinions after they had used the SAI Lessons. To accomplish these goals it became necessary to track the following paths.

To develop the SAI Model, the related literature regarding the fundamental principles of Instructional System Design (ISD), five instructional models, learning theories and reading theories were analyzed and synthesized. When the model was designed and developed, it proved its efficiency. To verify the efficiency of the model, an evaluation form was drawn up by the researcher together with the prototype of the SAI Model and submitted to three experts for their evaluation and recommendations. Based on the responses from the experts, the model was revised and improved, and

consequently it was approved as appropriate in terms of its components and steps. Later on, the SAI Lessons were designed and developed on the basis of the approved model.

Once the SAI Lessons were developed, the efficiency of the lessons was tested on the basis of the standard criterion set of 80/80 (E_1/E_2) through two stages: the try-out, and the trial run with students majoring in English from the College of Education at RERU who were excluded from the experiment. In the first two steps of the try-out, individual testing and small group testing, it was found that the efficiency of all SAI Lessons did not meet the standard criterion set of 80/80 (E_1/E_2). For that reason, the lessons were later revised and improved according to the comments and the suggestions of the students. Later the revised lessons were retested in the field testing step. The results of E_1/E_2 in this step revealed that the efficiency of the process and product of all SAI Lessons met the standard criterion set of 80/80 (E_1/E_2). This indicated that the SAI Lessons were proven to be efficient and therefore ready to be implemented in the trial stage.

Then the try-out was conducted, the pre- and post-tests and the questionnaire were developed and piloted. For the reading test, a multiple-choice test was developed with four distractors for 80 items. To check the content validity of the test, it was sent to the three experts. The index of Item Objective Congruence (IOC) on each item was calculated and all the items showed over 0.5 of IOC which was valid. Later on, the test was piloted with 100 students majoring in the College of Education at RERU who had not participated in the try-out stage. The scores obtained from the pilot study were analyzed for the level of difficulty (p) and the discrimination index (r). Sixty items with statistically acceptable reliability at an appropriate level of difficulty and power of discrimination were selected as a pre-and post-test with 30 items in each. After the

questionnaire was developed, it was sent to the experts to check its validity. The index of Item Objective Congruence (IOC) of each item was calculated and the items showed over 0.5 of IOC which was valid and therefore ready to be incorporated into the trial stage.

In the trial stage, 30 students who had enrolled in reading I course at RERU in the semester 2/2014 were purposively selected to participate in the trial stage. Before the experiment, the students were pre-tested for their English reading comprehension ability and trained to use the program. After the experiment, a post-test which was parallel to the pre-reading test was given to the students to find out whether the samples' reading achievements before and after the experiment were significantly different. Immediately after the post-test, the questionnaires and a semi- structured interview were administered to investigate students' opinions towards the SAI Lessons.

The findings of the study were as follows:

1. The findings revealed that the SAI Model was developed in 8 major steps and 9 sub-steps. The main steps included; 1) Analyze instructional context; 2) Identify learning goals of reading courseware; 3) Design and develop smartphone learning courseware; 4) Develop instructional strategies; 5) Produce the SAI Lessons; 6) Conduct developmental testing; 7) Implement SAI Lessons; and 8) Conduct evaluation. The SAI Model was rated by the experts at a mean score of 4.54 (SD=0.000). This means that the SAI Model was approved as appropriate in terms of its components and steps for the teaching of reading in English.

2. The efficiency of the five lessons in the experimental stage was 81.29/80.89, 81.81/80.67, 81.97/80.90, 82.00/81.67, and 81.70/80.89 respectively, which met the standard criterion set of 80/80 (E_1/E_2). This indicated that the SAI Lessons were proven

to be efficient. Thus, it was confirmed that the SAI Lessons assisted students in learning how to read effectively in English effectively.

3. The pair scores of the pre-reading and post-reading tests of the experiment group showed that the average score of the pre-reading test was 17.93 (SD=2.80), whereas the average score of the post-reading test was 22.56 (SD=2.48). The statistics concerning the distribution of differences between the pair scores demonstrated that there was a significant difference between the pretest and the posttest scores of the experimental group at the level of .05 ($P=0.00$, $P \leq 0.05$). This means that the SAI Lessons helped students improve their English reading proficiency significantly.

4. The findings of the questionnaire and semi-structured interview with regard to the students' opinions towards the SAI Lessons revealed that the students had positive opinions towards learning the SAI Lessons and they also suggested that there should be SAI Lessons for other subjects.

6.2 Pedagogical Implications of the Study

Due to the findings of the present study, several pedagogical implications are presented for the teaching of English reading comprehension instruction at tertiary level. Firstly, the SAI Model which was developed for the present study was approved as appropriate for English reading instruction. Therefore, it can be used as a useful example or a guide to other instructors and instructional designers who are interested in the further development of the instructional model in which smartphone technology is integrated. Moreover, the findings of the study revealed that the SAI Model was effective in the teaching and learning of reading in English, future curriculum

development or syllabus design should be shifted towards the integration of technology into reading instruction.

Secondly, the SAI Lessons developed in the present study established a ubiquitous learning environment in which students can access lessons at all times and in all places. Therefore, the lessons can be used as a guideline to other instructors and instructional designers to design and develop online lessons similar to the SAI Lessons in other subjects.

Finally, the pre- and -posttests, the questionnaires and the semi-structured interviews used in the present study were verified by the experts and accepted as efficient. For that reason, all the research instruments used in this study can be adopted or adapted as a guideline to further research in similar areas.

6.3 Recommendations for Further Research

The present study has led to some useful results and conclusions on the use of smartphone technology in the teaching of reading in English, nonetheless it has also uncovered many areas that need additional study. Thus, this section aims to recommend the need for further research study.

Based on the findings of the present study, it was revealed that the developed SAI Model was approved as appropriate for instruction in reading in English. As previously mentioned, the model was s appropriate for instruction in reading in English, but this does not necessarily mean it would work equally well for other subjects. For example, Siemens (2002) and Ryder (2006) state that the application and value of instructional design models often depend on the instructional situation, problem or task.

Therefore further research should be conducted in order to design and develop the instructional model for other specific areas or other subjects.

Another finding of the present study revealed that the SAI Lessons were effectively used to enhance the English reading ability of students majoring in English from the College of Education and students expressed positive opinions of learning how to read English through the SAI Model. As it was suggested by the students that there should be SAI Lessons for other subjects such as phonetics, grammar, speaking, vocabulary and listening, further research should be also be conducted in the area of these subjects. Likewise, Lee et al (2014) suggest that the use of smartphone technology for efficient learning should be investigated in further research in language learning areas such as verbal communication, or speaking ability.

Finally, the SAI Lessons put more emphasis on a learner-centered approach which allows students to perform self-learning independently whenever and wherever they have an opportunity. Future research into smartphones as a language-learning tool should examine learners' interaction to investigate further whether such interaction can help foster successful learning in the target language. Little *et al* (1989, p 2) claim that, basically, language learning is fostered by contexts which are rich in opportunities for interaction in and with the target language. 'Interaction', as the formulation of the last sentence implies, has here both a social and a psychological sense.

In summary, this chapter has presented the conclusions of the study. Moreover, it has also demonstrated that the findings of the study can be used as a useful example or a guideline to other instructors and instructional designers who are interested in the development of the instruction or conducting the further research in which smartphone technology is integrated.

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APPENDIX A

Evaluation Form of the SAI Model

This evaluation form is provided for the experts in Instructional System Design and the English Language Teaching Field to give feedbacks about Smartphone-Assisted Instructional Model (SAI Model) in English Reading.

Instruction: Read each statement in the form and please mark the relevant boxes with an [X] to illustrate your opinion about each statement.

5 = very strongly agree

4 = strongly agree

2 = neutral

3 = slightly agree

1 = least agree

Statements		Rating Scales				
		5	4	3	2	1
1	The components of SAI Model are appropriate.					
2	The steps in SAI Model are clear and easy to implement.					
3	Each component in SAI Model has appropriate connection.					
4	The SAI Model is appropriate for use as a plan in a course for the teaching of reading.					
5	The SAI Model can offer activities with self-paced learning.					

6	The SAI Model can offer learning paths based on learners' needs.					
7	The SAI Model can facilitate students to learn anytime anywhere.					
8	The SAI Model is appropriate for current social conditions.					

Other ideas and comments:

Thank you for your cooperation

APPENDIX B

Needs Analysis

Table 1 Results of Students' General information

	Category	Frequency	Percentage
Gender	Male	8	7.5
	Female	99	92.5
Education levels	Second year	107	100
English grades in Study Skills course	A	34	31.8
	B+	21	19.6
	B	37	34.6
	C+	9	8.4
	C	5	4.7

Table 1 shows that a total of 107 students who responded to the needs analysis questionnaire were the second year students (100%) and most of them (92.5%) were female. Most students (34.6%) received grade B in English for Study Skills course (GEL1102).

Table 2 Results of Students' opinions toward English language

	Listening		Speaking		Reading		Writing	
	Freq	%	Freq	%	Freq	%	Freq	%
Essential	69	64.5	71	66.4	56	52.3	57	53.3
Very necessary	31	29.0	28	26.2	36	33.6	33	30.8
Fairly necessary	-	-	2	1.9	6	5.6	11	10.3
Necessary	3	2.8	2	1.9	5	4.7	2	1.9
Unnecessary	4	3.7	4	3.7	4	3.7	4	3.7

Table 2 demonstrates that among four skills of English language, most of students (64.5%) who responded to the analysis questionnaire agreed that listening skill is essential and 29.0% of them said it is very necessary. For speaking skill, most of the respondents (64%) agreed that it is essential and 26.2% of them thought it is very necessary. Most of the respondents (52.3%) said that reading skill is essential and 33.6% of them thought it is very necessary. For writing skill, most of the respondents (53.3%) agreed that this skill is essential and 30.8% of them said that writing skill is very necessary.

Table 3 Results of the difficulty of the following skills of the English language

	Listening		Speaking		Reading		Writing	
	Freq	%	Freq	%	Freq	%	Freq	%
Very difficult	26	24.3	25	23.4	5	4.7	23	21.5
difficult	31	29.0	32	29.9	31	29.0	38	35.5
Fairly difficult	30	28.0	26	24.3	32	29.9	23	21.5
Somewhat difficult	16	15	18	16.8	28	26.2	16	15.0
Not difficult	4	3.7	6	5.6	11	10.3	7	6.5

Table 3 shows that among four skills of English language, most of the respondents (29.0%) agreed that listening skill is difficult. 24.3% of them said that it is very difficult. For speaking skill, most of them (29.9%) stated that it is difficult. 24.3% of them said that it is fairly difficult. For reading skill, most of the respondents (29.9%) agreed that it is fairly difficult. 29.9% of them said that it is difficult. For the last skill, most of the respondents (35.5%) said that writing skill is difficult followed by 21.5% of them agreed that it is very difficult and other 21.5% said it is fairly difficult.

Table 4 Results of Students' Level of Reading Skills in English

	Reading (N=107)	
	Frequency	Percentage
Very weak	5	4.7
Weak	16	15.0
Average	76	71.0
Good	10	9.3
Excellent	0	0

Table 4 shows that most of students (71%) rated their level of reading skills in English as average. While, 16 students (15%) rated their level of English reading skills as weak, 10 students (9.3%) rated their level of English reading skills as good, 5 students (4.7%) rated their level of English reading skills as very weak and none of them (0%) rated themselves as excellent in English reading skills.

Table 5 Results of Problems of Reading English

	<i>understand the central ideas</i>		<i>skim for the gist</i>		<i>scan to extract specific Information</i>		<i>decode meaning</i>		<i>interpret texts</i>	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Strongly disagree	1	9	1	9	1	9	2	1.9	2	1.9
Disagree	12	11.2	16	15.0	16	15.0	10	9.3	13	12.1
Undecided	34	31.8	26	24.3	45	42.1	28	26.2	30	28.0
Agree	49	45.8	40	37.4	27	25.2	45	42.1	42	39.3
Strongly agree	11	10.3	24	22.4	18	16.8	22	20.6	20	18.7

Table 5 shows that most students agreed that understanding the central ideas (45.8%), skimming for the gist (37.4%), decoding meaning (42.1%), and interpreting (39.3%) of subject matter written in English are difficult for them. While, most students (42.1%) are not sure that whether or not scanning to extract specific information of subject matter written in English is difficult for them.

Table 6 Results of English learning on-line experience

	Category	Frequency	Percentage
Have one of the following electronic devices: Smartphone, Ipad, Ipod, Laptop/Notebook, PC/personal computer	Yes	103	96.3
	No	4	3.7
The electronic devices: Smartphone, Ipad, Ipod, Laptop/Notebook,	Yes	101	94.4
	No	1	0.9

PC/personal computer can be used as a tool for learning English reading skills	Not sure	5	4.7
Ever install any language learning Apps to do learning	Yes	90	84.1
	No	17	15.9
Usually access an internet	Yes	103	96.3
	No	4	3.7
how to get access to an internet	By personal computer	13	12.1
	By notebook/laptop	28	26.2
	By smartphones	38	35.6
	By smartphone/pc/laptop	28	26.1

Table 6 demonstrates that most students (96.3%) have one of the following electronic devices: Smartphone, Ipad, Ipod, Laptop/Notebook, PC/personal computer and 94.4% of the students thought that these electronic devices can be used as a tool for learning English reading skills. 84.1% of them ever install any language learning Apps to do learning and 96.3% usually access an internet and 35.6% of them access to an internet by smartphones.

Table 7 Results of purposes of using an internet

Purposes	frequency	Percentage
For study	8	7.5
For entertainment	40	37.4
For study and entertainment	59	55.1

Table 7 shows that most of students (55.1%) used an internet for study and entertainment. While 37.4% of them used the internet for entertainment and 7.5% used the internet for study only.

Table 8 Results of Students interested in learning English Reading course which developed incorporating smartphone technology for learning anywhere and anytime.

	Category	Frequency	Percentage
Interested in learning English Reading course incorporating smartphone technology for learning anywhere and anytime	Yes	97	90.7
	No	10	9.3

Table 8 demonstrates that most of students (90.7%) who responded to the needs analysis questionnaire were interested in learning English Reading course incorporating smartphone technology for learning anywhere and anytime.

APPENDIX C

Reading Test Specification

This table provides an overview of percentage by item in English Reading.

Number of items: 80

Available marks: 80

Test time: 2 hours

Test format: multiple choice, 4 alternatives

Skill(s) tested	Number of items	%	Number of items for			Contents
			Pre-test	Post-test		
Predicting	5	6.25	2	2	4	Unit 1 Studying abroad
Vocabulary skills	11	13.75	4	4	8	Unit 2 Family matters Unit 3 Stars of music
Reading strategies used for Understanding text	54	80	24	24	48	Unit 4 Think positive Unit 5 A career in fashion
Total	80	100	30	30	60	

APPENDIX D

Items Analysis

Based on the scores obtained from the pilot study, an item analysis was carried out. Each question (80 items) was analyzed for the level of difficulty (p) and discrimination index (r). The items analysis results were illustrated below.

Item	RH	RL	P	r	Pre-test	Post-test
1	18	11	0.41	0.20	✓	
2	15	3	0.26	0.34	✓	
3	21	10	0.44	0.31	✓	
4	22	13	0.50	0.26	✓	
5	18	10	0.40	0.23	✓	
6	30	21	0.73	0.26	✓	
7	6	7	0.19	-0.03		
8	13	6	0.27	0.20	✓	
9	30	21	0.73	0.26		
10	33	28	0.87	0.14		
11	33	20	0.76	0.37		✓
12	26	17	0.61	0.26		✓
13	24	13	0.53	0.31		✓
14	28	16	0.63	0.34		✓
15	24	14	0.54	0.29		✓
16	20	9	0.41	0.31		✓
17	28	11	0.56	0.49		✓
18	30	14	0.63	0.46		✓
19	21	13	0.49	0.23		✓
20	3	2	0.07	0.03		

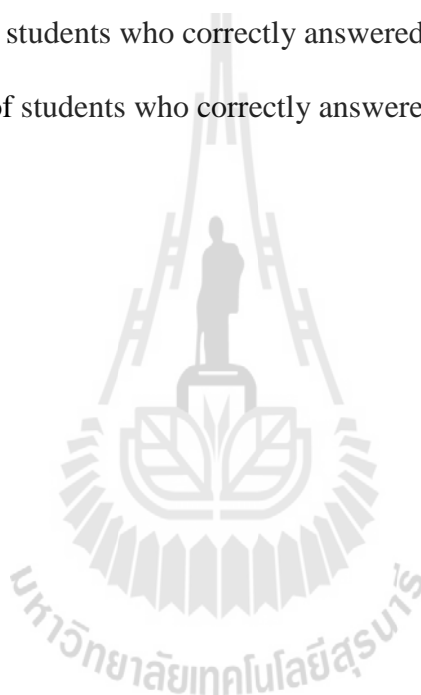
Item	RH	RL	P	r	Pre-test	Post-test
21	8	7	0.21	0.03		
22	15	6	0.30	0.26	✓	
23	22	12	0.49	0.29	✓	
24	16	4	0.29	0.34	✓	
25	15	6	0.30	0.26		✓
26	17	9	0.37	0.23		✓
27	21	12	0.47	0.26		✓
28	21	10	0.44	0.31	✓	
29	26	17	0.61	0.26	✓	
30	16	7	0.33	0.26	✓	
31	18	11	0.41	0.20	✓	
32	17	5	0.31	0.34	✓	
33	19	9	0.40	0.29	✓	
34	12	5	0.24	0.20	✓	
35	1	2	0.04	-0.03		
36	22	16	0.54	0.17		
37	21	11	0.46	0.29		✓
38	28	15	0.61	0.37		✓
39	25	18	0.61	0.20		✓
40	18	11	0.41	0.20		✓
41	7	7	0.20	0.00		
42	5	9	0.20	-0.11		
43	11	9	0.29	0.06		
44	18	7	0.36	0.31	✓	
45	22	13	0.50	0.26	✓	
46	7	5	0.17	0.06		
47	21	6	0.39	0.43	✓	
48	13	4	0.24	0.26	✓	

Item	RH	RL	P	r	Pre-test	Post-test
49	5	10	0.21	-0.14		
50	32	18	0.71	0.40	✓	
51	25	14	0.56	0.31	✓	
52	19	10	0.41	0.26	✓	
53	17	10	0.39	0.20	✓	
54	24	13	0.53	0.31	✓	
55	15	6	0.30	0.26	✓	
56	31	23	0.77	0.23	✓	
57	33	21	0.77	0.324	✓	
58	8	5	0.19	0.09		
59	20	9	0.41	0.31		✓
60	21	12	0.47	0.26		✓
61	16	5	0.30	0.31		✓
62	11	11	0.31	0.00		
63	22	11	0.47	0.31		✓
64	20	12	0.46	0.23		✓
65	26	12	0.54	0.40	✓	
66	8	7	0.21	0.03		
67	4	12	0.23	-0.23		
68	7	7	0.20	0.00		
69	18	12	0.43	0.17		
70	18	9	0.39	0.26		✓
71	20	11	0.44	0.26		✓
72	10	7	0.24	0.09		
73	20	11	0.44	0.26		✓
74	7	11	0.26	-0.11		
75	13	5	0.26	0.23		✓
76	18	8	0.37	0.29		✓

Item	RH	RL	P	r	Pre-test	Post-test
77	23	10	0.47	0.37		✓
78	17	10	0.39	0.20		✓
79	21	12	0.47	0.26		✓
80	18	11	0.41	0.20		✓
Reliability (KR=20)					0.757	0.753

Note: R_H = Number of students who correctly answered in the high group

R_L = Number of students who correctly answered in the low group



APPENDIX E

Pre-test and Post-test

Name _____

English Reading Proficiency

This booklet contains reading questions for you to answer. The questions in the Test Booklet are all multiple-choice. For each question, you will be given four answer choices—a, b, c, and d. You are to choose the correct answer from the four choices. Each question has only one right answer.

For questions 1-5, choose the answer (a, b, c or d) which you think fits best according to the article.

Rainbows are often seen when the sun comes out after or during a rainstorm.

Rainbows are caused when sunlight shines through drops of water in the sky at specific angles. When white sunlight enters a raindrop, it exits the raindrop a different color. When light exits lots of different raindrops at different angles, it produces the red, orange, yellow, green, blue, indigo, and violet that you see in a rainbow.

Together, these colors are known as the spectrum. These colors can sometimes be seen in waterfalls and fountains as well.

Did you know that there are double rainbows? In a double rainbow, light reflects twice inside water droplets and forms two arcs. In most double rainbows, the colors of the top arc are opposite from those in the bottom arc. In other words, the order of colors starts with purple on top and ends with the red on bottom. In addition, rainbows sometimes appear as white arcs at night. These rainbows are called moonbows and are

so rare that very few people will ever see one. Moonbows are caused by moonlight (rather than sunlight) shining through drops of water.

Retrieved from <http://mrnussbaum.com/>

1. Rainbows are produced when
 - a. light exits many raindrops at different angles.
 - b. the sun comes out after a storm.
 - c. the spectrum causes a rainstorm.
 - d. the sun causes a rainstorm.
2. What would be a good title for this passage?
 - a. The basics about rainbows
 - b. Moonbows!
 - c. Differences between normal rainbows and double rainbows
 - d. The history of rainbows
3. Which of the following is NOT true?
 - a. Spectrum colors sometimes appear in fountains and waterfalls.
 - b. Rainbows are usually seen after or during a storm.
 - c. Double rainbows are two rainbows that are exactly the same.
 - d. Moonbows are caused by moonlight.
4. What color is a moonbow?
 - a. Yellow
 - b. White
 - c. Green
 - d. Not mentioned
5. What question is answered in the last paragraph?
 - a. Why do waterfalls produce rainbow-like spectrums?
 - b. What colors appear in a rainbow?
 - c. How long do rainbows last?
 - d. How do double rainbows form?

For questions 6-7, choose the answer (a, b, c or d) which you think fits best according to the following announcement.

Student Volunteers Needed!

On Saturday, December 12th, from 10 A.M. until 4 P.M., Carverton Middle School will be holding a music festival in the school gymnasium. The special event will feature a variety of professional musicians and singers.

Task	Time	Date
Make posters	1 P.M.–4 P.M.	December 5th
Set up gym	11 A.M.–4 P.M.	December 11th
Help performers	9 A.M.–4 P.M.	December 12th
Welcome guests	10 A.M.–2 P.M.	December 12th
Clean up gym	4 P.M.–7 P.M.	December 12th

Interested students should speak with Ms. Braxton, the music teacher. Students who would like to help at the festival must have written permission from a parent or guardian.

Retrieved from http://www.ets.org/toefl_junior/

6. What time will the festival begin?

- a. 10 A.M. b. 11 A.M. c. 9 A.M. d. 7 A.M.

7. What job will be done the day before the festival begins?

- a. Making posters b. Setting up the gym
c. Cleaning up the gym d. Helping the performers

For questions 8–10, choose the answer (a, b, c or d) which you think fits best according to the advertisement.

**FREE
SUNGLASSES
AND CASE**



Purchase a 12 month subscription to *Vacation the Nation* today and receive a free pair of Sunnies Sunglasses with your very own soft leather case.* To get your free Sunnies follow these 3 easy steps.

1. Purchase a copy of *Vacation the Nation*, New York's #1 Travel magazine.
2. Fill out the application card (found in the center of the magazine)
3. Mail the card and \$21. 95 US to the address provided

*This is a limited time offer only. Application and funds must be received no later than Dec 1st 2004. Canadian residents should add \$3 US for shipping. Offer not available for residents outside of North America.

8. What is the purpose of this advertisement?
 - a. To offer a copy of traveling magazine.
 - b. To offer a 12 month subscription to *Vacation the Nation*.
 - c. To offer a special deal.
 - d. To offer an application card.
9. How much does it cost for magazine subscription?

a. It is free.	b. It costs \$ 3 US.
c. It costs \$3 Canadian.	d. It costs \$21. 95 US.
10. Who cannot benefit from this advertisement?

a. Canadians.	b. UK residents.
c. Mexicans.	d. US residents.

For questions 11–17, choose the answer (a, b, c or d) which you think fits best according to the following story.

Line

"Did you see that?" Joe said to his friend Bill. "You're a great shooter!"
Bill caught the basketball and bounced it before throwing it again. The ball flew into the net.

"Bill, you never miss!" Joe said admiringly.

5 "Unless I'm in a real game," Bill complained. "Then I miss all the time."
Joe knew that Bill was right. Bill performed much better when he was having fun with Joe in the school yard than he did when he was playing for the school team in front of a large crowd.

"Maybe you just need to practice more," Joe suggested.

10 "But I practice all the time with you!" Bill objected. He shook his head. "I just can't play well when people are watching me."
"You play well when I'm watching," Joe pointed out.
"That's because I've known you since we were five years old," Bill said with a smile. "I'm just not comfortable playing when other people are around."

15 Joe nodded and understood, but he also had an idea.
The next day Joe and Bill met in the school yard again to practice. After a few minutes, Joe excused himself.

"Practice without me," Joe said to his friend. "I'll be back in a minute."

Joe hurried through the school building, gathering together whomever he could find—two

20 students, a math teacher, two secretaries, and a janitor.

When Joe explained why he needed them, everyone was happy to help.

Joe reminded the group to stay quiet as they all went toward the school's basketball court. As Joe

25 had hoped, Bill was still practicing basketball. He made five baskets in a row without noticing the silent people standing behind him.

"Hey, Bill!" Joe called out finally.

Bill turned. A look of surprise came over his

30 face.
"I just wanted to show you that you could play well with people watching you," Joe said. "Now you'll have nothing to worry about for the next game!"



11. What would be the best title for the story?
- a. Good Friends
 - b. Practice Makes Perfect
 - c. Bill's Nervousness
 - d. Bill's Basketball Problem
12. In line 6, the word performed is closest in meaning to
- a. acted
 - b. played
 - c. moved
 - d. changed
13. Why is Bill upset?
- a. He plays better in practice than he does during games.
 - b. The school yard is not a good place to practice.
 - c. He cannot play well when people are watching him.
 - d. He practices without his friend, Joe.
14. Why does Bill play well when Joe is watching him?
- a. He is comfortable with Joe.
 - b. Joe tells him how to play better.
 - c. He does not know that Joe is there.
 - d. He wants to prove to Joe that he is a good player.
15. Why does Joe decide to gather a group of people?
- a. Because he wants more players for his team
 - b. Because he wants to help Bill feel less nervous
 - c. Because he wants to show them his talent
 - d. Because he wants more people to see what the next game
16. At the end of the story, how many people watch Bill practice?
- a. Four
 - b. Five
 - c. Six
 - d. Seven
17. Why does the group have to be quiet when they go to the basketball court?
- a. Because they want Bill to focus on playing basketball.
 - b. Because they do not want Bill to know they were there
 - c. Because Bill likes to practice alone
 - d. Because the group needs to listen to Joe's instructions

For questions 18–21, choose the answer (a, b, c or d) which you think fits best according to the following passage.

Line

When another old cave is discovered in the south of France, it is not usually news. Rather, it

is an ordinary event. Such discoveries are so frequent these days that hardly anybody pays heed to them. However, when the Lascaux cave complex was discovered in 1940,

5 the world was amazed. Painted directly on its walls were hundreds of scenes showing how people lived thousands of years ago. The scenes show people hunting animals, such as bison or wild cats. Other images depict birds and, most noticeably, horses, which appear in more than

10 300 wall images, by far outnumbering all other animals. Early artists drawing these animals accomplished a monumental and difficult task. They did not limit themselves to the easily accessible walls but carried their painting materials to spaces that required climbing

15 steep walls or crawling into narrow passages in the Lascaux complex. Unfortunately, the paintings have been exposed to the destructive action of water and temperature changes, which easily wear the images away. Because the Lascaux caves have

20 many entrances, air movement has also damaged the images inside. Although they are not out in the open air, where natural light would have

destroyed them long ago, many of the images have deteriorated and are barely recognizable. To prevent further damage, the site was closed to tourists in 1963, 23 years after it was discovered.

Retrieved from http://www.ets.org/toefl_junior/

18. According to the passage, which animals appear most often on the cave walls?

- a. Birds b. Bisons c. Horses d. Wild cats

19. In line 8, the word depict is closest in meaning to

- a. show b. hunt c. count d. draw

20. In line 12, the word They refers to

- a. walls b. artists c. animals d. materials

21. According to the passage, all of the following have caused damage to the paintings EXCEPT.....

- | | |
|------------------------|-----------------|
| a. temperature changes | b. air movement |
| c. water | d. light |

For questions 22–25, choose the answer (a, b, c or d) which you think fits best according to the following passage.

BERKELEY, Calif. – Mandi Rodriguez won the all-around to lead the No. 5 Oregon State gymnastics team to a 196.375-190.100 Pacific-10 Conference win over the University of California at Haas Pavilion on Sunday afternoon.

The Oregon State University Beavers (8-0, 3-0) took at least the top four scores on each event. Two slip-ups on beam kept OSU from an even higher score.

Rodriguez scored a 39.375 to take the all-around title. She tied with teammate Makayla Stambaugh for the floor title with a 9.950 and took first on the beam with a 9.850. Rodriguez was the No. 10 all-arounder in the country entering the meet and Stambaugh, who finished second, was No. 9.

Becky Colvin hit for a 9.925 to win vault and Stambaugh won bars with a 9.900. The biggest boost came on floor. The Beavers rolled up a season-best 49.475 with Rodriguez and Stambaugh's 9.950s leading the way. Melanie Jones, a freshman from Australia, scored a 9.900. It was her first time in the floor lineup for the Beavers this season. The Beavers return home to Corvallis to take on Arizona on Friday.

Retrieved from <http://etienganh.info/toEIC-reading-test-12/>

22. What sport is this article about?

- | | | | |
|-------------|-----------|--------------|---------------|
| a. Baseball | b. Tennis | c. Wrestling | d. Gymnastics |
|-------------|-----------|--------------|---------------|

23. What is the name of the athlete who won the all-around competition?

- | | |
|--------------------|----------------------|
| a. Mandi Rodriguez | b. Makayla Stambaugh |
| c. Melanie Jones | d. Melanie Rodriguez |

24. What two colleges are mentioned in the article?

- | |
|---|
| a. University of California and University of Oregon |
| b. Oregon State University and University of Oregon |
| c. Oregon State University and University of California |

- d. University of California and Oklahoma State University
25. What can be inferred from the article about **Corvallis**?
- a. It is the name of a coach. b. It is a city in Oregon.
b. It is a gymnastics event. d. It is a name of gymnastics team.

For questions 26-29 choose the answer (a, b, c or d) which you think fits best according to the following letter.

To: Carlag@hotmail.com
From: s_hot@commcorp.com
Subject: apology

Dear Carla Gerber,

Please accept our apology for having shipped merchandise in excess of your purchase order. We have made an adjustment in your account to reflect this error and have arranged for UPS to pick up the excess merchandise on Tuesday, August 4. In addition, please find attached a coupon good for \$10 off your next transaction with UPS.

We are sorry for the inconvenience this has caused you and are most appreciative of your cooperation and understanding in this matter.

Thank you for your recent order.

Sincerely,

Soren Hotstetter

Commercial Corp.

26. Why has Carla Gerber received this letter?
- a. As a request for payment of merchandise.
b. As an apology for an over shipment of merchandise.
c. As a notification of an adjustment in her account.
d. As a thank you for her years of service to the company.
27. What will Commercial Corp. do?
- a. Allow Gerber to keep the extra merchandise
b. Send Gerber a refund
c. Lower the charge on Gerber's account
d. Send Gerber a bill for the excess merchandise
28. What shipping company is Commercial Corp. using to pick up the excess merchandise?
- a. Federal Express b. UPS c. US Post Office d. DHL
29. On what date is the excess merchandise to be picked up?
- a. January 15 b. August 4 c. June 4 d. July 15

For question 30, choose the answer (a, b, c or d) which you think fits best according to the following passage.

A credit card can be useful, as we will see. But credit cards can be poison because it is very easy to continue to use **them** even when we do not have the money to pay for what we buy. There is one other reason the cards are dangerous. The companies that issue them also charge the user to use the card. For any money that the user does not pay each month (the user's debt), the company charges a percentage of that amount in interest. If you owe the company \$500 and do not pay it that month, the company adds from \$6 to \$8.50 to the \$500. Then you owe from \$506 to \$ 508.50. The interest is added every month, so a bill that is not paid gets bigger and bigger.

30. In this passage, the word **them** in line 2 refers to.....

- a. money b. credit cards c. the companies d. the interest

Name _____

English Reading Proficiency Post-test

This booklet contains reading questions for you to answer. The questions in the Test Booklet are all multiple-choice. For each question, you will be given four answer choices—a, b, c, and d. You are to choose the correct answer from the four choices. Each question has only one right answer.

For questions 1-9, choose the answer (a, b, c or d) which you think fits best according to the article.

Britain's royal family released the first official photos of Prince George on Sunday. The photos are a little different because a royal photographer didn't take them. The photos came from the private family album of the Duke and Duchess of Cambridge (William and Kate). George's grandfather Michael Middleton took the pictures. One photo shows one-month-old George with his happy parents. They are all standing under a tree. Another snap includes the family dog. Portraits of royal babies have always been

taken in royal palaces by professional photographers. The photographer makes a special studio and background. Prince George's photos break this tradition.

Prince George is third in line to the British throne. This means he will be king after his grandfather (Prince Charles) and his father die. Prince William said he is enjoying every minute of being a father, but is looking forward to when his son sleeps all night. He even joked that he wanted to go back to work so he could get some sleep. William told reporters he is a hands-on father. He changed George's very first nappy (diaper) but said his wife did most of the work in the middle of the night. William said his son reminded him of himself when he was a baby. He said of his son: "He wriggles around quite a lot, and he doesn't want to go to sleep that much, which is a little bit of a problem."

1. When could George be king?
 - a. When he is 21
 - b. When Britain's prime minister decides
 - c. After his father and grandfather die
 - d. Next week
2. What is different about the photos of Prince George?
 - a. They were taken in the royal palace.
 - b. Prince William didn't take the pictures.
 - c. They are in black and white.
 - d. A royal photographer didn't take them.
3. What is Prince William enjoying?
 - a. Not working
 - b. Not sleeping
 - c. Changing nappies (diapers)
 - d. Being a dad
4. Who took the photos?
 - a. George's grandfather
 - b. The Queen's photographer
 - c. The paparazzi
 - d. Prince William
5. Why does William want to return to work?
 - a. To sleep
 - b. To see his colleagues
 - c. To get more money
 - d. To get away from nappies (diapers)
6. Where was one photo of Prince George taken?
 - a. In a royal palace
 - b. In Paris
 - c. Under a tree
 - d. In front of William's car

7. Who changed Prince George's very first diaper (nappy)?
- a. His father
 - b. His mother
 - c. George's grandfather
 - d. His father and mother
8. Where are royal baby photos usually taken?
- a. In Scotland
 - b. In royal palaces
 - c. In the Queen's castle
 - d. In photo studios
9. What doesn't Prince George want to do much?
- a. Wriggle
 - b. Sleep
 - c. Work
 - d. Cry

For questions 10 – 12, choose the answer (a, b, c or d) which you think fits best according to the advertisement

The new Futura 320 Laser Printer is here! It has a high-speed processor for quick processing of documents with complex visuals. It delivers 30 clear, crisp copies per minute. It is compatible with both Windows and Apple operating systems. It comes with a 700-sheet paper tray, and can take three more trays for a maximum paper capacity of 2,300 sheets for much faster paper reloading. The new Futura 320 Laser Printer—for speedy, high-quality printing you can always trust!

10. What does the advertisement emphasize?
- a. The capacity
 - b. The visuals.
 - c. The compatibility.
 - d. The rapidity.
11. Up to how many sheets of paper can the printer tray hold?
- a. Approximately 700
 - b. Less than 320
 - c. At most 2,300
 - d. More than 2,300
12. Which of the following printing jobs would best fit the machine's capabilities?
- a. A book containing text entirely.
 - b. A company's financial statement.
 - c. Handwritten letters for reproduction.
 - d. A stack of paperwork with heavy visuals.

For question 13, choose the answer (a, b, c or d) which you think fits best according to the announcement.

“How We Become What We Are”

A Seminar on Human Genetics

The seminar will be held on Tuesday, November 24, 2009, 9:00-12:00 noon, at the Conference Hall of the Carl Hogan Science Building, 202 University Road, Stanford, Northern California. Our guest speaker will be Dr. Amelia Lockhart from the Department of Biological Sciences, Massachusetts Institute of Technology, Cambridge, MA. For reservations, call the Administration Office of Stanford University at 465-27-29 before November 19. There is no registration fee but reservation is a must. Snacks will be served. Check our website at www.geneticsseminar@suadmin.org.

13. Where will the seminar take place?
- a. Massachusetts Institute of Technology b. Cambridge University.
c. Cornell University. d. Stanford University.

For questions 14 – 16, choose the answer (a, b, c or d) which you think fits best according to the announcement.

Get ready for our team-building exercise!

On Thursday, December 3, 2009, the company will hold a whole-day team-building exercise at the Claremont Beach Resort in San Diego.

The activities in the morning will be done in the following order: bounty-hunting, tug-of-war, boat-building, and team relay. After lunch, we will do puzzle-solving exercises in separate groupings.

We are doing these exercises to promote the following skills in the organization: creativity, innovation, flexibility, and teamwork. The full participation of everyone is encouraged.

Assembly will be at the campus cafeteria. We will have breakfast there at 6:30 a.m. and the company bus will leave at exactly 8:00 a.m. Casual dress and sports get-ups are musts. We will have lunch and snacks at the beach resort.

14. What is the first activity of the day?
a. Boat-building. b. Tug-of-war. c. Team relay. d. Bounty-hunting.
15. Which activity will be done in the afternoon?
a. Having snacks. b. Puzzle-solving. c. Team relay. d. Crossword puzzles.
16. What is the purpose of the activity?
a. To improve employee health. b. To encourage employee doing the activities.
c. To foster company loyalty. d. To improve company teamwork.

For questions 17 – 21, choose the answer (a, b, c or d) which you think fits best according to the following passage.

Throughout history, many people have worn clothing more for decoration than for covering the body. Even in cold climates, some people seem more interested in decorating their bodies than protecting them. In the 1830's for example, the famous British biologist Charles R. Darwin travelled to the islands of Tierra del Fuego, off the southern tip of South America. There he saw people who wore only a small cloak of animal skin and a little paint in spite of the cold rain and sleet. Darwin gave the people scarlet cloth, which they *wrapped* around their necks. Even in the cold weather, they wore clothes more for decoration than for protection.

No one knows exactly why or when men first wore clothes. But they probably began to wear clothing more than 10,000 years ago, and probably for many of the same reasons we wear clothes today. Early men may have wanted to protect themselves, to improve their *appearance*, and to tell other people something about themselves. A cave man may have worn the skin of a bear or a reindeer for warmth. He also could have worn the skin to show his neighbors that he was a great hunter.

Reading for Comprehension, Ramkhamhaeng University, p 116

17. In this passage, the word **wrapped** means.....
- a. pack in b. roll up c. put on d. cover up
18. In this passage, the word **appearance** means.....
- a. the act of appearing b. the outward looks
c. the body decoration c. nationalities
19. The main idea of this passage is that.....
- a. in cold climate, people wore only a small cloak of animal skin.
b. people have worn clothes more for decorating than protecting.
c. people wore clothes to protect themselves and improve appearance.
d. People wore the skin of a bear to show that they were a great hunter.
20. People started wearing clothes.....
- a. recently b. ten centuries ago
b. a very long time ago d. from the beginning of the time

21. Because the cave man wanted to show his neighbors that he was a great hunter, he had to.....

- a. hunt a bear or a reindeer
- b. show themselves to the neighbors
- b. ride a reindeer
- d. wear the skin of a bear or a reindeer

For questions 22 – 24, choose the answer (a, b, c or d) which you think fits best according to the following passage.

Spiders are not insects! They are actually arachnids - invertebrates (animals without backbones) that have eight legs and which inject venom. Spiders are found on every continent except Antarctica. There are over 44,000 known kinds of spiders. Spiders are found in every kind of habitat and are often found in homes!

Spiders are *unique* among animals in that many spin webs out of silk. The webs trap insects and other prey to be eaten later. Larger spiders, such as wolf spiders, huntsman, and tarantulas attack prey rather than spin webs.

One spider that was recently discovered even flings itself at prey like a slingshot! Most spiders eat insects, but tarantulas and larger spiders will eat small lizards and mammals as well. Many people fear spiders. In fact, a fear of spiders has its own name: Arachnophobia! Most spiders, however, are totally harmless to humans and are actually beneficial because they eat insect pests. Even the largest tarantula in existence, the Goliath Bird-eating Tarantula is harmless to humans. A tarantula bite is said to be about as painful as a bee sting. Some spiders, however, such as the Black Widow Spider, are dangerous to humans. Bites from these spiders usually require immediate medical attention.

Retrieved from <http://mrnussbaum.com/spiders-reading-comprehension/>

22. What are spiders?

- a. mammals
- b. insects
- c. tarantulas
- d. arachnids

23. Which of the following statements best describe spiders?

- a. None are harmful to humans.
- b. Most are not harmful to humans.
- c. Most are harmful to humans.
- d. All are harmful to humans

24. In paragraph 2, the word "*unique*" means.....

- a. old
- b. different
- c. similar to
- d. fun

For questions 25 – 30, choose the answer (a, b, c or d) which you think fits best according to the following passage.

As infants and caregivers respond to one another in the first year, the infant begins to form an attachment—a deep, affectionate, close, and enduring relationship—to these important figures. John Bowlby, a British psychoanalyst, drew attention to the importance of attachment when he observed the **dire** effects of separation from parents on children who had been orphaned during World War II. These children’s depression and other emotional scars led Bowlby to **propose** a theory about the importance of developing a strong attachment to one’s primary caregivers—a tie that normally keeps infants close to those caregivers and, therefore, safe. Soon after Bowlby described his theory, researchers in the United States began to investigate how such attachments are formed and what happens when they are not formed, or when they are broken by loss or separation. Perhaps the most dramatic of these studies was conducted with monkeys by Harry Harlow.

Retrieved from <http://college.cengage.com/>

25. In this passage, the word **dire** means.....
- a. long-lasting b. very serious c. affectionate d. very safe
26. This passage is generally about
- a. John Bowlby b. separation c. attachment d. infancy
27. Bowlby observed children who were separated from their parents because of
- a. war b. poverty c. neglect d. illness
28. According to the passage, the function of attachment is to
- a. ensure that adults will care for an infants
- b. make sure infants are not depressed
- c. keep infants healthy
- d. keep infants safe
29. In this passage, **to propose** means to
- a. suggest b. write c. guess d. separate
30. What is the NEXT topic the author is likely to discuss?
- a. How Bowlby developed his theory b. Harlow’s work with monkeys
- b. The effects of war on infants d. National differences in attachment

APPENDIX F

List of Experts

Name	Position	Instrument Examined
Prof. Dr. Chaiyong Brahmawong	Chief Technology Officer in the College of Internet Distance Education Assumption University, Bangkok	SAI Model
Dr. Peerasak Siriyothin	A lecturer at Suranaree University of Technology, Nakhon Ratchasima	SAI Model
Dr. Suksan Suppatseree	A lecturer at Suranaree University of Technology, Nakhon Ratchasima	SAI Model Questionnaire Tests SAI Lessons
Dr. Thanaporn Pantawee	A lecturer at Roi Et rajabhat University, Roi Et	Questionnaire Tests SAI Lessons
Ms. Maneenoot Chawewong	A lecturer at Roi Et rajabhat University, Roi Et	Questionnaire Tests SAI Lessons

APPENDIX G

A Questionnaire of Learners' Opinions toward Smartphone-Assisted Instructional Lessons in English Reading

1. (English Version)

The following questionnaire is a part of a Doctoral dissertation in English Studies at Suranaree University of Technology. The questionnaire aims to find out your feelings and views towards the Smartphone-Assisted Instructional Lessons in English reading (SAI Lessons). Your responses will be strongly kept confidential.

The questionnaire is divided into two parts.

Part I- General information

Part II- Students' opinions toward the Smartphone-Assisted Instructional Lessons (SAI Lessons) in English reading

Part I- General information

Instruction: Please complete these questionnaire with regard to your information

1. Name/Last Name: _____

2. Gender: Male Female

3. Age: _____ years

4. Major: _____

5. Have you admitted to Roi Et Rajabhat University by passing the Rajabhat University entrance exam? Yes No

6. Have you already taken English1 and 2 courses? Yes No

7. Have you ever used smartphone device as a tool for learning English?

Yes

No

Part II- Students' opinions toward the SAI Lessons in English reading

Instruction: Please circle the number that best represents your opinions or feelings towards each of the statements you will find below.

1	2	3	4	5
Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Example

Survey Items	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1.I like this program.	1	2	③	4	5

Survey Items	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Content for the Smartphone-Assisted Instructional Lessons in English reading					
1. The SAI Lessons are well design.	1	2	3	4	5
2. The reading materials used in the application are appropriate for students' English reading proficiency levels.	1	2	3	4	5
3. The reading materials used in the application satisfied the students' English reading needs.	1	2	3	4	5
4. The exercises used in the application helped students review the reading skills taught in the reading application.	1	2	3	4	5
Practical Use of Smartphone Technology					
5. The application allowed students to study English reading wherever there is Internet access.	1	2	3	4	5
6. The application is an adequate tool to help students' with learning how to read English.	1	2	3	4	5

Survey Items	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Students Satisfaction with Learning Achievements					
7. I feel satisfied that I can figure out some reading strategies.	1	2	3	4	5
8. I am satisfied that I have more understanding about reading in English.	1	2	3	4	5
9. I am satisfied with my reading learning achievement.	1	2	3	4	5
10. In comparison with the pre-test, I achieved a greater comprehension in answering the questions.	1	2	3	4	5
The Students' Language Learning Attitudes through Smartphone Devices					
11. I am willing to accept learning English reading by using a smartphone device.	1	2	3	4	5
12. For efficient time management, I am willing to learn English reading with a smartphone device.	1	2	3	4	5
13. For forced study, I am willing to learn English reading with a smartphone device.	1	2	3	4	5
14. To improve my learning achievement, I am willing to learn English reading with a smartphone device.	1	2	3	4	5
Students' Attitudes to Utilize English Reading Learning Application					
15. I think reading application is suitable as a device for learning how to read English.	1	2	3	4	5
16. I think I can learn English reading by using a reading application at any time or anywhere.	1	2	3	4	5
17. I think it is convenient to use a touch screen to type when they use the reading application to learn English reading.	1	2	3	4	5

Survey Items	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
18. I think using the reading application as a learning device can motivate me to learn English reading.	1	2	3	4	5
19. I think I can use scrappy time more effectively to learn English reading by using a reading application.	1	2	3	4	5
20. Overall, I think the reading application as a learning device can benefit my reading.	1	2	3	4	4

THANK YOU VERY MUCH



2. (Thai Version)

แบบสอบถามความคิดเห็นของผู้เรียนที่มีต่อบทเรียนการอ่านภาษาอังกฤษ โดยใช้สมาร์ทโฟน

แบบสอบถามนี้เป็นส่วนหนึ่งของการศึกษาในหลักสูตรปรัชญาดุษฎีบัณฑิตสาขาวิชาภาษาอังกฤษ
ศึกษา มหาวิทยาลัยเทคโนโลยีสุรนารี มีวัตถุประสงค์เพื่อสำรวจทัศนคติ และมุมมองของผู้เรียนที่มีต่อ
บทเรียนการอ่านภาษาอังกฤษโดยใช้สมาร์ทโฟน ทั้งนี้คำตอบของท่านจะถือเป็นความลับเพื่อการ
ประมวลผลในการวิจัยนี้เท่านั้น

แบบสอบถามฉบับนี้แบ่งเป็น 2 ส่วนดังนี้

ส่วนที่ 1 ข้อมูลทั่วไปของผู้ตอบแบบสอบถาม

ส่วนที่ 2 ความคิดเห็นของผู้ตอบแบบสอบถามต่อบทเรียนการอ่านภาษาอังกฤษโดยใช้
สมาร์ทโฟน

ส่วนที่ 1 ข้อมูลทั่วไป

คำชี้แจง กรุณาตอบคำถามต่อไปนี้โดยใช้ข้อมูลที่เป็นจริงของตนเอง

1. เพศ : ชาย หญิง

2. อายุ : _____ ปี

3. ท่านเข้ามาศึกษาที่มหาวิทยาลัยราชภัฏร้อยเอ็ดโดยผ่านกระบวนการสอบคัดเลือกของมหาวิทยาลัย
ราชภัฏใช่หรือไม่

ใช่

ไม่ใช่

4. ท่านได้ผ่านการเรียนในรายวิชา ภาษาอังกฤษเพื่อการเรียน และ ภาษาอังกฤษเพื่อการสื่อสาร
มาแล้วใช่หรือไม่

ใช่

ไม่ใช่

5. ท่านเคยใช้สมาร์ทโฟนเป็นอุปกรณ์ในการเรียนภาษาอังกฤษมาแล้วใช่หรือไม่

ใช่

ไม่ใช่

**ส่วนที่ 2 ความคิดเห็นของนักศึกษาต่อบทเรียนการอ่านภาษาอังกฤษโดยใช้สมาร์ทโฟนช่วยสอน
ภาษาอังกฤษ**

คำชี้แจง : โปรดระบุความคิดเห็นของท่านที่มีต่อหัวข้อต่อไปนี้ โดยวงกลมที่ตัวเลข 1-5 ที่กำหนด ตามความเป็นจริงที่สุด

1	2	3	4	5
ไม่เห็นด้วยอย่างยิ่ง	ไม่เห็นด้วย	ไม่แน่ใจ	เห็นด้วย	เห็นด้วยอย่างยิ่ง

ตัวอย่าง

ข้อความ	ไม่เห็นด้วย อย่างยิ่ง	ไม่เห็นด้วย	ไม่แน่ใจ	เห็นด้วย	เห็นด้วย อย่างยิ่ง
1.ฉันชอบโปรแกรมนี้	1	2	③	4	5

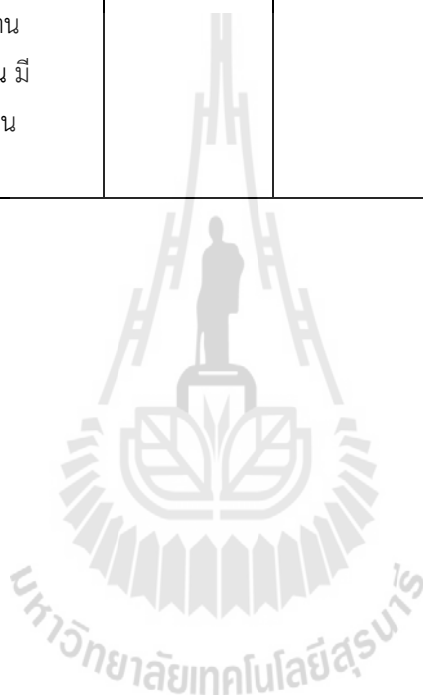
ข้อความ	ไม่เห็นด้วย อย่างยิ่ง	ไม่เห็นด้วย	ไม่แน่ใจ	เห็นด้วย	เห็นด้วย อย่างยิ่ง
เนื้อหาบทเรียนการอ่านภาษาอังกฤษโดยใช้สมาร์ทโฟนช่วยสอน					
1. บทเรียนการอ่านภาษาอังกฤษโดยใช้สมาร์ทโฟนมีการออกแบบกิจกรรมการเรียนการสอนที่เป็นระบบและเหมาะสมกับผู้เรียนดี	1	2	3	4	5
2. สื่อการอ่านที่นำมาใช้ในแอปพลิเคชันเหมาะกับระดับความสามารถในการอ่านภาษาอังกฤษของข้าพเจ้า	1	2	3	4	5
3. สื่อการอ่านที่นำมาใช้ในแอปพลิเคชัน ตรงกับความต้องการในการอ่านภาษาอังกฤษของข้าพเจ้า	1	2	3	4	5
4. แบบฝึกหัดที่นำมาใช้ในแอปพลิเคชัน สามารถช่วยให้ข้าพเจ้าทบทวนทักษะการอ่านที่สอนในแอปพลิเคชัน	1	2	3	4	5

ข้อความ	ไม่เห็นด้วย อย่างยิ่ง	ไม่เห็นด้วย	ไม่แน่ใจ	เห็นด้วย	เห็นด้วย อย่างยิ่ง
การใช้งานจริงของแอปพลิเคชันการอ่านภาษาอังกฤษ					
5. แอปพลิเคชันการอ่านภาษาอังกฤษ ทำให้ข้าพเจ้าสามารถเรียนการอ่าน ภาษาอังกฤษได้ทุกที่ที่สามารถเข้าถึง อินเทอร์เน็ต	1	2	3	4	5
6. แอปพลิเคชันการอ่านภาษาอังกฤษ สามารถช่วยเหลือข้าพเจ้าในการ เรียนรู้ การอ่านภาษาอังกฤษ ได้อย่าง เพียงพอ	1	2	3	4	5
ความพึงพอใจของผู้ใช้กับผลสัมฤทธิ์ทางการเรียน					
7. ข้าพเจ้ารู้สึกพอใจเมื่อข้าพเจ้า สามารถเข้าใจกลวิธีการอ่านบางวิธีได้	1	2	3	4	5
8. ข้าพเจ้ารู้สึกพอใจเมื่อข้าพเจ้ามี ความเข้าใจเกี่ยวกับการอ่าน ภาษาอังกฤษมากขึ้น	1	2	3	4	5
9. ข้าพเจ้ารู้สึกพอใจ กับผลสัมฤทธิ์ ทางการเรียนการอ่านของข้าพเจ้า	1	2	3	4	5
10. เมื่อเปรียบเทียบความเข้าใจใน การอ่านภาษาอังกฤษ ในการทำ แบบทดสอบก่อนเรียน และหลังเรียน ข้าพเจ้าสามารถเข้าใจมากขึ้นและ ตอบคำถามได้ดีขึ้นเมื่อทำ แบบทดสอบหลังเรียน	1	2	3	4	5
ทัศนคติการเรียนภาษาของนักศึกษาที่มีต่ออุปกรณ์สมาร์ตโฟน					
11. ข้าพเจ้าเห็นด้วยในการใช้อุปกรณ์ สมาร์ตโฟนเพื่อช่วยในการเรียนการ อ่านภาษาอังกฤษ	1	2	3	4	5

ข้อความ	ไม่เห็นด้วย อย่างยิ่ง	ไม่เห็นด้วย	ไม่แน่ใจ	เห็นด้วย	เห็นด้วย อย่างยิ่ง
12. ข้าพเจ้าเห็นด้วยกับการเรียนการอ่านภาษาอังกฤษโดยใช้ อุปกรณ์สมาร์ตโฟน เนื่องจากการเรียนโดยวิธีนี้ช่วยให้ข้าพเจ้า จัดการเวลาได้อย่างมีประสิทธิภาพ	1	2	3	4	5
13. ถึงแม้ไม่มีการบังคับเรียนการอ่านภาษาอังกฤษโดยใช้อุปกรณ์สมาร์ตโฟน ข้าพเจ้าก็ยินดีที่จะเรียน	1	2	3	4	5
14. เพื่อพัฒนาผลสัมฤทธิ์ทางการเรียน ข้าพเจ้าเห็นด้วยกับการเรียนการอ่านภาษาอังกฤษโดยใช้อุปกรณ์สมาร์ตโฟน	1	2	3	4	5
ทัศนคติของผู้เรียนในการใช้แอปพลิเคชันการเรียนการอ่านภาษาอังกฤษ					
15. ข้าพเจ้าเห็นว่าแอปพลิเคชันการเรียนการอ่านภาษาอังกฤษมีความเหมาะสมที่จะใช้เป็นอุปกรณ์ในการเรียนการอ่านภาษาอังกฤษ	1	2	3	4	5
16. ข้าพเจ้าคิดว่า ข้าพเจ้าสามารถเรียนการอ่านภาษาอังกฤษได้ทุกที่ทุกเวลาโดยการใช้แอปพลิเคชันการเรียนการอ่าน	1	2	3	4	5
17. ข้าพเจ้าคิดว่าขนาดของสมาร์ต-โฟนมีความเหมาะสมกับการใช้จอสัมผัสเพื่อพิมพ์ข้อความเมื่อเรียนการอ่านภาษาอังกฤษ	1	2	3	4	5
18. ข้าพเจ้าคิดว่าการใช้แอปพลิเคชันการเรียนการอ่านเป็นอุปกรณ์ในการเรียนสามารถกระตุ้นให้ข้าพเจ้าอยากเรียนการอ่านภาษาอังกฤษ	1	2	3	4	5

ข้อความ	ไม่เห็นด้วย อย่างยิ่ง	ไม่เห็นด้วย	ไม่แน่ใจ	เห็นด้วย	เห็นด้วย อย่างยิ่ง
19. ข้าพเจ้าคิดว่าข้าพเจ้าสามารถใช้ ใช้ช่วงเวลาสั้นๆที่มีเพื่อการเรียนการ อ่านภาษาอังกฤษโดยการใช้ แอปพลิเคชันการเรียนการอ่าน ได้อย่างมีประสิทธิภาพ	1	2	3	4	5
20. โดยภาพรวมแล้ว ข้าพเจ้าคิดว่า แอปพลิเคชันการเรียนการอ่าน ในสถานะของอุปกรณ์การเรียน มี ประโยชน์กับการเรียนการอ่าน ภาษาอังกฤษ	1	2	3	4	4

ขอขอบคุณเป็นอย่างสูง



APPENDIX H

Semi-structured Interview Questions

1. (English Version)

1. Do you like learning English reading 1 course through the SAI Lessons?

Why/Why not?

2. What do you like most when you study English reading 1 course through the SAI Lessons? Why?

3. What do you like the least when you study English reading 1 course through the SAI Lessons? Why?

4. Do you think that the reading activities provided in the SAI Lessons can help improve your English ability? How?

5. Would you like to continue your English study through the SAI Lessons? If so, what contents or subjects would you like to study?

2. (Thai Version)

คำถามในการสัมภาษณ์ถึงโครงสร้าง

1. ท่านชอบเรียนวิชาการอ่านภาษาอังกฤษโดยใช้รูปแบบการเรียนการสอนโดยใช้สมาร์ทโฟนหรือไม่ ทำไมถึงชอบ ทำไมถึงไม่ชอบ
2. ท่านชอบอะไรมากที่สุดเมื่อเรียนวิชาการอ่านภาษาอังกฤษโดยใช้รูปแบบการเรียนการสอนโดยใช้สมาร์ทโฟน เพราะอะไร
3. ท่านชอบอะไรน้อยที่สุดเมื่อเรียนวิชาการอ่านภาษาอังกฤษโดยใช้รูปแบบการเรียนการสอนโดยใช้สมาร์ทโฟน เพราะอะไร
4. ท่านคิดว่ากิจกรรมการอ่านในรูปแบบสมาร์ทโฟนสามารถช่วยปรับปรุงความสามารถทางด้านภาษาอังกฤษของท่านได้หรือไม่ อย่างไร
5. ท่านต้องการที่จะเรียนภาษาอังกฤษโดยใช้สมาร์ทโฟนต่อไปหรือไม่ ถ้าต้องการ ท่านต้องการเรียนวิชาอะไร

APPENDIX I

Results of Semi-Structured Interview

1. Do you like learning English reading 1 course through SAI Lessons?

Why/ Why not?

S1) I like it because it is convenient to search for the information anywhere. Additionally, we can easily do the exercises online without paperwork. This can reduce the cost of the paperwork. Next, it makes learning and teaching become more attractive and interesting because it is a new exotic style of learning which can be accessed effortlessly.

S2) Yes I do. Learning English reading via smartphone is convenient. Students can proceed to study in self-study at their own pace without constraints. Even outside school students can proceed to study as well.

S3) It depend on internet connection if the internet is accessed we can learn but if not we can't. If the internet connection is good, it will be fine. In case of we meet an unknown word, we can look it up in online dictionary easily.

S4) I rather like it because as everyone knows that smartphone presently becomes as an important part of our life. Normally, most students don't pay attention to textbook or sometimes it gets lost but smartphone are always around with them so they can learn instantaneously whenever and wherever they want to learn.

S5) I like it because it is convenient and easy to access the lessons. We can learn anytime at any place when we have a free time. We can use it anytime anywhere the internet is accessed so we can study by ourselves outside classroom.

S6) I like it because we can access the lessons, study, and do the exercises anytime anyplace and patterns of teaching more interesting and outlandish. We do not feel bored as when we do them in the classroom.

S7) I like studying English reading through this model because as the world is modernized so the way we learn should be changed. This learning style is updated and allows us to learn conveniently.

S8) I like it because learning English reading through the lessons is challenging and reachable easily.

S9) I like it because learning through this model is comfortable we can go to the lessons easily. This makes it more interesting than learning in the classroom.

S10) I like it because it is in self-learning style so we can learn at anyplace anytime we want to learn and the internet is accessible. Through this model, it is convenient for learner to access to the lessons. Learning may not be limited only in the classroom.

2. What do you like most when you study English reading 1 course through these lessons? Why?

S1) What I like most when I study through SAER lessons is that without the teacher I can still study or review the lessons wherever I want by myself. I can come to the lessons straightforwardly. I can conduct web search while I am doing the exercises online. Moreover, the sequence content within each unit also makes the logical learning so it is easy to learn.

S2) I like doing reading test online because right after the test is done I can check answers quickly. Without any conditions, students can do the test without anxiety. Do not be afraid of teacher' carping. Besides, learning through smartphones can make students to response to themselves.

S3) What I like most is that it is exciting to know scores right after I do the exercises. It is also comfortable to proceed self-study. By this way, I can study without teacher and I can study wherever and whenever I am ready to learn.

S4) What I like most is that the given stories with some pictures are looks pleasant and interesting. They help me to get more understanding for what I read. Besides, according to smartphone potential I also can learn how to pronounce the word correctly. Moreover, it is exciting to know scores right after I do the exercises.

S5) I think it is exciting when I do the exercises and the test and right after I done the answers will come quickly. Further, the design of reading course seems interesting and motivates me to learn reading than the previous printed material.

S6) I like doing the exercise because I can know the score immediately after I finished doing the exercise. This make me feel excited while I am waiting for my score.

S7) I like doing exercises because I can know scores immediately after I do the exercise so I can check that how much I understand the story I read.

S8) I like it because it looks contemporary and challenging this influences me to learn willingly. By learning through this method, in case of some problems in regard to my

study I can surf the internet to find the related information or look up difficult vocabulary conveniently without the teacher.

S9) What I like most is that through smartphone, I can look unknown vocabulary up easier and faster by myself than look up in the dictionary book.

S10) I like the convenience of this way of learning. Through these lessons, I can learn whenever I want to learn by myself without teacher.

3. What do you like the least when you study English reading 1 course through these lessons? Why?

S1) I think the small screen of smartphone makes the reading texts in the lessons are pretty long. I don't like reading a long text. It's boring and time consuming.

S2) For me, the screen size which is small sometimes can reduce speed of studying the lessons or doing exercises. Moreover, the limitation of times of doing exercises and there are not answers provided after doing exercises are things I don't like. Further, I don't like using smartphones to study because I think the light from smartphone can cause sight problems.

S3) The screen of smartphone make the reading passage in each lesson is too long and difficult to understand.

S4) The screen size which is too small and too much content makes it difficult for me to read from the small screen. It is easy to get dizzy because when I study I have to slide the screen top and down and back and forth all the time.

S5) What I don't like is the screen size of the phone. It is narrow. It make the story we read is always on the top and the questions are lower so when we do the exercise or the test we have to slide the page top and down all the time. I think it waste the time and it makes me feel shaky.

S6) I don't like to give answer by typing. There should be only multiple choice questions for more convenient.

S7) What I don't like most is long reading passages provided in the exercises and the tests, they sometimes make me bored.

S8) I don't like the open-ended question type which enforces me to type the answer in the given spaces which is time consuming.

S9) I don't like the type of questions which require students give answer by typing because it is a waste of time when typing the answer on a smartphone. It should be a multiple choice question type that I can tick to give an answer because there are already long reading passages and are many activities.

S10) I don't like to type on a smartphone because it is not convenient and take long time to answer the questions in each lesson.

4. Do you think that the reading activities provided in the SAER lessons can help improve your reading ability? How?

S1) I think I can improve my reading ability by using the SAER lessons because the contents and exercises are very interesting particularly the relevance pictures of the story are very helpful and make me comprehend the reading easily.

S2) The SAER lessons provide many unknown vocabulary that I can find meanings from online dictionary. Besides, I also can learn how to pronounce the words correctly.

S3) Yes I do. Due to the various contents provided in the lessons, they enforce me to read a lot and learn more new words.

S4) Through the SAER lessons, I gain more vocabulary which encouraged me to read more and practice the pronunciation with online dictionary.

S5) I think my reading ability is increased. Each lesson provides with reading strategies such as find words meaning using the context clue, the synonym, antonym, and inferences.

S6) There are variety of reading activities in each lessons, to complete the exercises I have to read a lot so that I can improve my reading ability gradually.

S7) The lessons help to improve my reading ability because there are many reading activities with various vocabulary. In addition, I can gain some knowledge to complete the exercises such as using synonym, antonym, inferences and the context clue.

S8) Yes, I think the lessons can improve my reading ability. I can learn from many exercises which I enjoy them very much.

S9) Yes, it can help improve my reading ability because not only learning reading silently, I also learning reading verbally as often as I want to learn.

S9) I feel my reading ability is improved particularly I can read faster and know more vocabulary which possibly due to each activity in the lesson required lot of readings.

S10) Yes, the lessons are very useful and improve my reading ability. The lessons are interesting and are not too difficult to understand. I think they are appropriate to my English proficiency level.

5. Would you like to continue your English study through the SAER lessons? If so, what contents or subjects would you like to study?

S1) If there are another courses designed on the smartphone, I want to learn English grammar because it will be more interesting with many examples.

S2) I want to learn Phonetics because the smart phone lessons can help pronounce the sound clearly and conveniently.

S3) I think the smartphone lessons are also suitable for learning phonetics because I can follow how to make correct pronunciation.

S4) Phonetics might be suitable that I can learn and review the lessons outside of the regular classroom because Phonetics is a difficult subject for me so that making use of the smartphone applications might facilitate how to produce sounds accurately.

S5) Yes I do. I think the online lesson designed on a smartphone that I want to learn is listening and speaking. I feel that the smartphone's applications are suitable for practice listening and speaking skills.

S6) English grammar is another course I want to learn if the lessons are designed on a smartphone. It will be more interesting if the lessons are more colorful, and not too many contents but précises of what want to be focused.

S7) Yes I want to study the course relating to pronunciation because through smart phone lessons I can hear a variety of accents which is very interesting.

S8) I want to learn vocabulary through smartphone. I think it will be more interesting if the vocabulary lessons are created in a game that helps me practice my vocabulary and play with my friends.

S9) Apart from English reading, I think English grammar is another language skills can be learned through smartphone. It is more interesting with various examples.

S10) I want to learn about pronunciation. I think the applications of the smart phone are suitable for listening skills.

APPENDIX J

Reading Objectives

Contents

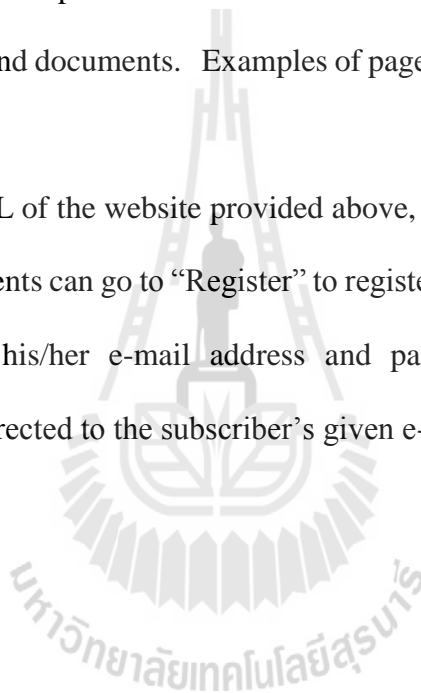
Unit	Title	Text type	Objectives
1	Studying abroad	Internet message	<ol style="list-style-type: none">1. Students will be able to understand the text.2. Students will be able to identify text organization.3. Students will be able to guess meaning from context.
2	Family matters	Short story	<ol style="list-style-type: none">1. Students will be able to recognize antonym2. Students will be able to understand the text.3. Students will be able to infer meaning from the text.
3	Stars of music	Magazine article	<ol style="list-style-type: none">1. Students will be able to recognize words with different meanings.2. Students will be able to understand the text.3. Students will be able to scan the text for specific information.
4	Think positive	Newspaper article	<ol style="list-style-type: none">1. Students will be able to guess meaning from context.2. Students will be able to understand the text.3. Students will be able to understand the main idea.
5	A career in fashion	E-zine article	<ol style="list-style-type: none">1. Students will be able to recognize synonyms.2. Students will be able to understand the text.3. Students will be able to identify reference words.

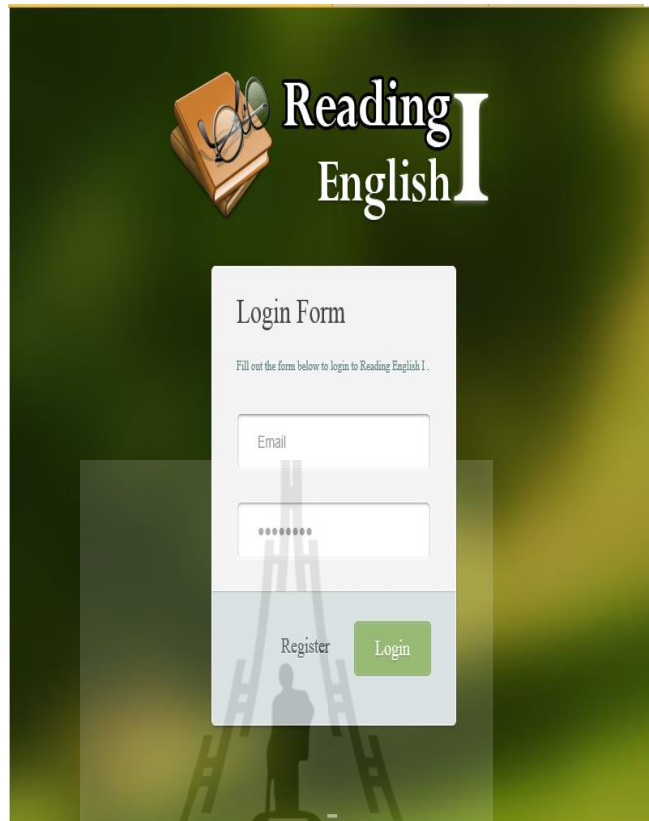
APPENDIX K

Overview of SAI Lessons

This section provides overview information about the SAI courseware. The URL of the website is <http://ml-en.com> SAI Lessons included log-in information, topics, access to files and documents. Examples of pages of SAI Lessons are presented as follows:

1) By entering the URL of the website provided above, the home page of SAI Lessons is displayed. The students can go to “Register” to register to the system. The subscriber is required to enter his/her e-mail address and password. Notification of the subscription will be directed to the subscriber’s given e-mail.





2) After logging in, the homepage of SAI Lessons is shown. At this page, students can choose the unit they want to learn in the list of unit section. This is the homepage of SAI Lessons.



3) This is the example of the SAI Lessons “Unit 2”. After selecting Unit 2 , the list of content of Unit 2 appears. At this page, students can choose the topic they want to learn or they can learn follow from the first topic until the last one step by step.

Unit 2 Family matters

Focus

Vocabulary Skills

Predicting

Reading fluently

Reading skill: Inferring meaning

Read this text

Spotlight on grammar

Talk about it

Unit 2 Quiz

Instruction: Read the following passage then answer the questions

มหาวิทยาลัยเทคโนโลยีสุรนารี

4) If students click on “focus”, the following content appears. At this page, the images and information were placed to activate students’ prior knowledge and to encourage them to predict what they are going to learn about. Accordingly, students had to answer the questions provided at the end of the page.

Miss Teacher

Page : 1/16

Focus

Look at these pictures

Completed 1 0/1

1. What are the pictures about?

- Family matters
- Parents with children
- Friends' relationship

มหาวิทยาลัยเทคโนโลยีสุรนารี

☰
Miss Teacher

Page : 2/16

What does this lullaby tell you about family customs in Africa?

Please read this lullaby.



*Mother carry me,
 I will care for you one day.
 It's not good to be alone in this world.
 Mother carry me,
 I will carry you one day.
 The way a crocodile carries her young on her back.*

Moya Moya, African lullaby

What does this lullaby tell you about family customs in Africa?

Forum

In your family, who do you go to when you need help or advice? Check (✓) your answers.

mother

father

มหาวิทยาลัยเทคโนโลยีสุรนารี

brother

sister

grandparent


grandparent

Tell your friends that how “family” is important to you.



Forum

Submit




5) If they choose “vocabulary skill”, the following content would be illustrated. At this page, to review about vocabulary skills students had to do exercises involved recognizing antonym.

☰
Miss Teacher
🏠

Page : 3/16

Vocabulary Skills



Recognize Antonym

An antonym is a word that is the opposite meaning of another.

Examples:

Fat and skinny
 Young and old
 Happy and sad

Exercises

Put the number of each word on the left with its antonym on the right.

1 despair	2 quickly
3 energetic	4 hated
5 innocence	6 leisure
7 carelessly	8 well

1. a. Work

2. b. Loved

3. c. Hope

4. d. Guilt

5. e. Slowly

6. f. Carefully

7. g. Sick

8. h. Tired

Submit



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Latasha's new baby



I remember when I lived in Africa, and a friend of mine, Latasha, had a baby. I was surprised because her family wouldn't let me see her or her baby immediately. They said that when a baby is born, for the first seventh day, only family members can visit the mother. On the evening of the seventh day, they invited me to a big party. All the neighbors and friends were there to celebrate. At the party, the family asked their ancestors to protect the child. They told me that the birth of a Latasha's neighbor live with her and help for a few months. it's their custom. I wish it were the same in my country.

1. a. Different

2. b. Forget

3. d. Morning


4. e. evening

5. f. Many

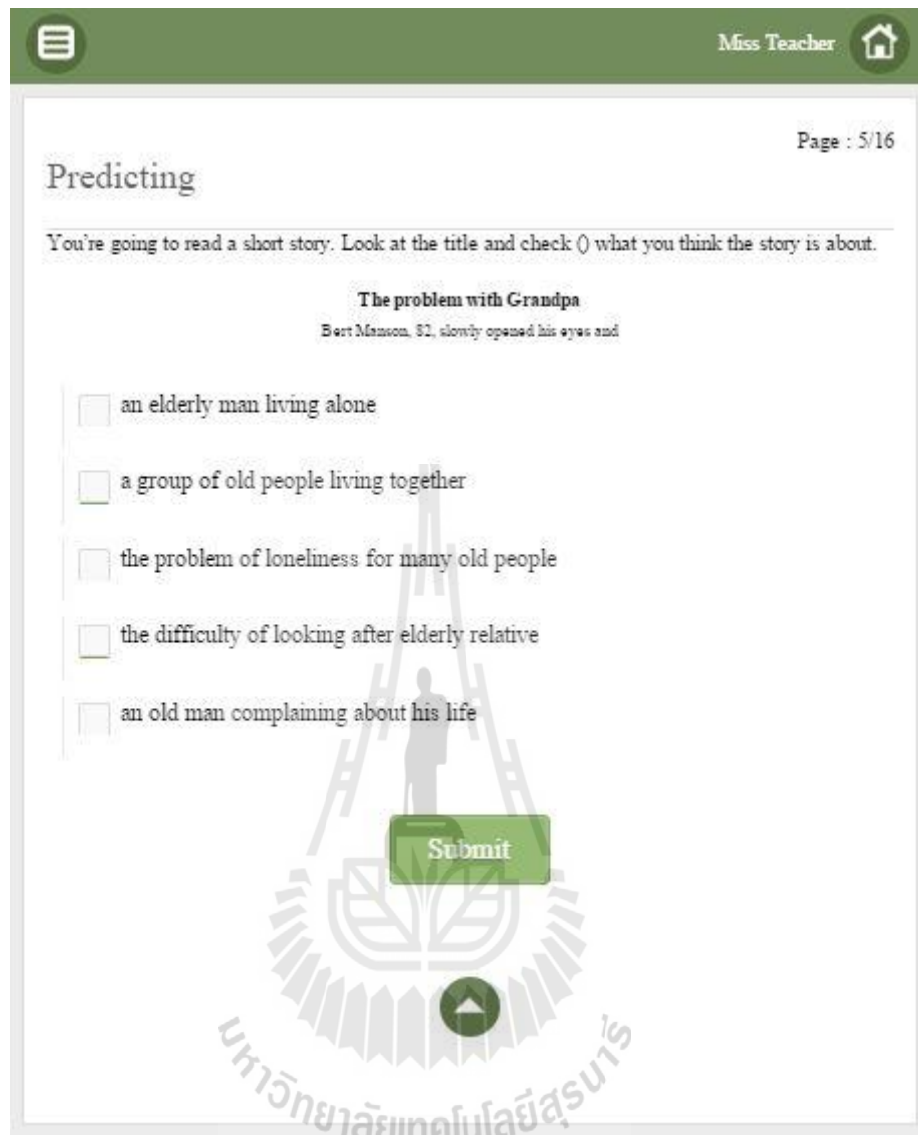
6. g. Last

7. i. Insignificant

Submit



6) When students click on “predicting”, the following content would be shown. At this page, students would read the title of the story after that they were asked to guess for what they would read about.



The screenshot shows a digital interface for a reading activity. At the top, there is a green header bar with a menu icon on the left, the text "Miss Teacher" in the center, and a home icon on the right. Below the header, the page is titled "Predicting" and indicates "Page : 5/16". The main instruction reads: "You're going to read a short story. Look at the title and check () what you think the story is about." The story title is "The problem with Grandpa" and the first sentence is "Bert Manson, 82, slowly opened his eyes and". There are five multiple-choice options, each with an unchecked checkbox:

- an elderly man living alone
- a group of old people living together
- the problem of loneliness for many old people
- the difficulty of looking after elderly relative
- an old man complaining about his life

At the bottom of the options, there is a green "Submit" button and a circular arrow icon. A large, faint watermark of a university logo and the Thai text "มหาวิทยาลัยเทคโนโลยีสุรนารี" is visible in the background.

7) When “reading fluently” was clicked, the following story would be demonstrated for students to read.

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Page : 6/16

Reading fluently

Read the text quickly. Then answer the questions

The problem with Grandpa



Bert Manson, 82, slowly opened his eyes and turned to face the clock on the bedside table. It was 8:23 a.m. He sighed. The time was insignificant. He had nothing to do all day. He had nothing to do any day. He lay on the bed, listening to the cars on the highway and the shouts of the children running to school.


After a while, Bert carefully got out of bed and asked himself the same question as he did very morning: Would he fall today? If so, would he be near a telephone? What if no one came? How long would he wait? Would he die? He looked out of the window into the street below. "And who would care?" he muttered.


After Bert's wife died a year ago, his son and daughter said they would visit once a week. But the last time was months ago. On the phone, they always had a reason: too busy at work; the children are sick; bad weather; no time. Nobody seems to have any time.....apart from Bert. He missed his granddaughters. He loved it when Mandy and Ruth came to visit. They brought him candy and hope.


Painfully, he walked to a chair near the bedroom door. He rested for a moment before continuing in small steps to the bathroom.





"Hello, Sue? It's me," said John.

 "Oh, hi." Sue sounded tired. She was washing the dishes while Mandy watched TV in the den. Ken was still at work. He wouldn't be home until 9:00 p.m.

 "Listen, Sue. We should go visit Dad, you know. The last time was almost four months ago."

 "I know, I know," said Sue, her voice full of guilt. "I called him last night".


 "How is he?" asked John.

 "Oh, the same as always. Complaining about his health. Complaining we never go to see him. The usual".


 "Well, I can't go next weekend. It's Ruth's birthday," said John.


 "Neither can I. Mandy has a piano recital. And Ken's working".


 "So, when, then? We can't leave it forever".


 "Oh, I don't know. I keep telling him he should go to a nursing home. He can get all the help he needs, and we won't have to worry about him".


 "Yes, and he might make some friends, as well," agreed John.

 "But of course he doesn't want to do that," said Sue. "You know he wants to live with one of us".

 "Yeah, I know," John replied.

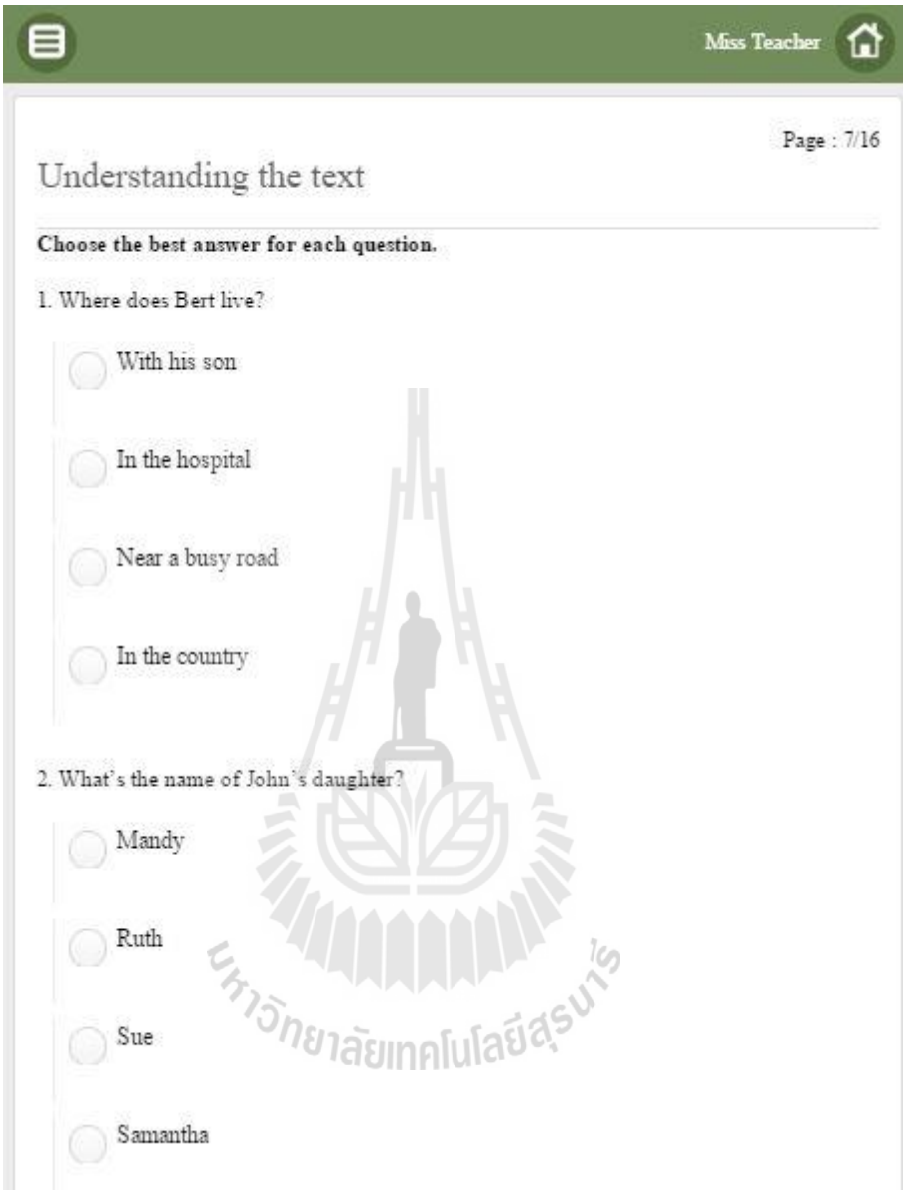
 "Well, we don't have any space here for him. This place is much too small. You know that. Why can't he stay with you?"

 "Because he argues with Samantha all the time. I told you that before".

 "Well, what are we going to do?"



After reading, students had to do exercises concerning the story they read.



The screenshot shows a mobile application interface with a green header bar. On the left of the header is a menu icon (three horizontal lines), and on the right is the text "Miss Teacher" next to a home icon (a house). Below the header, the page number "Page : 7/16" is displayed in the top right corner. The main content area is titled "Understanding the text" and contains the instruction "Choose the best answer for each question." followed by two multiple-choice questions. A large, semi-transparent watermark of a university logo is overlaid on the right side of the page. The logo features a central figure standing on a pedestal, flanked by two stylized figures, all within a circular emblem with Thai text around the bottom: "มหาวิทยาลัยเทคโนโลยีสุรนารี".

Page : 7/16

Understanding the text

Choose the best answer for each question.

1. Where does Bert live?

- With his son
- In the hospital
- Near a busy road
- In the country

2. What's the name of John's daughter?

- Mandy
- Ruth
- Sue
- Samantha

3. Who is Ken?

- John's brother
- John's friend
- Bert's son
- Sue's husband

4. Why can't Bert stay with John and his family?

- It's too far
- John goes away on business too often
- Bert argues with John's wife
- John's house is too small

5. Why does Sue want Bert to go to nursing home?

- It's more convenient to visit

It's cheaper than living alone

He can see his grandchildren

He will be taken care of

Submit



มหาวิทยาลัยเทคโนโลยีสุรนารี

Miss Teacher

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True or False

1. Berth has two granddaughters, Mandy and Beth.

False

True

2. His wife died a year ago.


False

True

3. Ruth's birthday is tomorrow.

False

True



มหาวิทยาลัยเทคโนโลยีสุรนารี

4. Mandy has a piano lesson next weekend

False

True

Submit

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According to the text you read, what do these phrases refer to?

What do these phrases refer to?

Every morning

Once a week

9:00 p.m

Four months ago

มหาวิทยาลัยเทคโนโลยีสุรนารี

Last night

Submit

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Page : 10/16

Find ??.

a. Four reasons why Bert's children can't visit often.

1.....

2.....

3.....

4.....

b. Three reasons they want him to go into a nursing home.

1.....

1.....

2.....

3.....

4.....

b. Three reasons they want him to go into a nursing home.

1.....

2.....

3.....

Submit



8) If students click on “reading skill”, they would practice about inferring meaning.

The content of this page was as follow.

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Reading skill: Inferring meaning

Look again at the story. Writing up the phrases that tell you.....

a. Bert is worried about his legs

b. He's worried about being alone if he falls


c. He feel miserable

d. He would like to see Mandy and Ruth more often

e. His legs hurt

Submit

▲

Miss Teacher 

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According to the text you read, which people in the story these adjectives might describe.

1. Argumentative

John

Ken

Bert

2. Caring


Mandy

Bert

John

3. Depressed

Mandy



Ken

Bert

4. Selfish

Bert and Samantha

Ken

John and Sue

5. Hard-working

Ken

Sue

John

6. Musical



Ruth

Mandy

Bert

7. Stubborn

Bert and Samantha

Bert and Ken

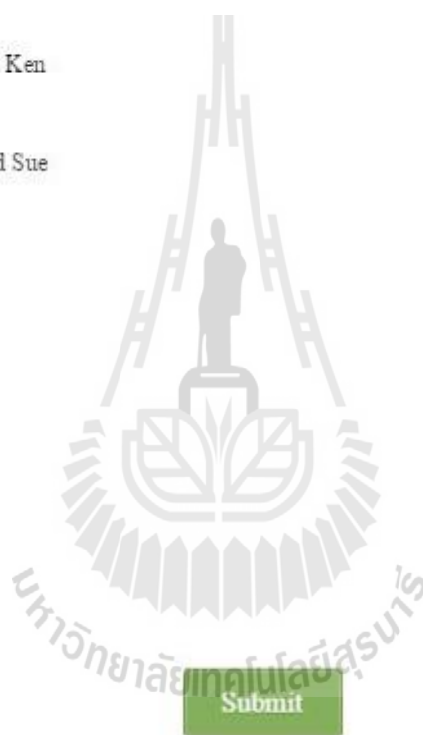
John and Sue

8. Guilty

John

Sue

Ken





Read this text.

Then check (✓) which statement you can infer.

Family



In many parts of the world, families are traditionally very large. Many generations can share the same house. Parents, young children, grandparents, aunts, and uncles all live together. This is called an **extended family**. Everyone share responsibility for taking care of the children, sick family members, and elderly relatives.



Other countries have a **nuclear family** system. Here, the parents and their children live together, and other relatives live separately. In this system, elderly relatives usually live on their own until they are too old to take care of themselves. Then, if no family members are able to care for them, they usually go to a nursing home. Here, they receive the care they need, and their family visits them from time to time.

1. In a nuclear family system, sick relatives must go to a nursing home.

No

Yes

2. Old people are much happier in extended family.

No

Yes

3. Extended family members feel responsible for their elderly relatives.

No

Yes

4. Parents do not normally live with their children in the nuclear family system.

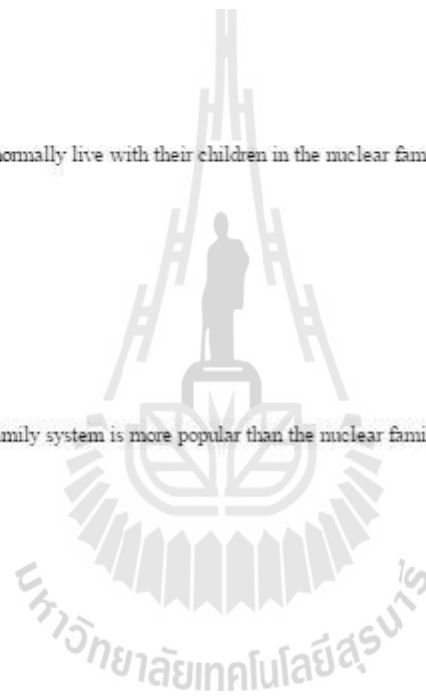
No

Yes

5. The extended family system is more popular than the nuclear family system.

Yes

No



Submit



9) If student click on “spotlight on grammar”, students would study about dependent prepositions and after studying, students had to do the exercise. The content of this page was as follow.

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Spotlight on grammar

Dependent prepositions (with verbs, adjectives and nouns)

Certain verbs, adjectives and nouns naturally take certain prepositions when placed in a sentence – these are called dependent prepositions.

For example, you can *object to* (something), *participate in* (something), *complain about* (something).

Dependent prepositions example 1:

He is *angry with* us. (angry with 'someone')

He is *angry about* the problem. (angry about 'a situation')

Dependent prepositions example 2:

He is *good at* football (meaning he has skill / ability in something – he *is good at (playing) football*).

She is *good with* children (meaning she has a positive relationship with / has an affinity with...).

A teacher for example, might be *good at* teaching English and may be *good with* their students.

Learn more: <https://voirenglishlessons.files.wordpress.com/2010/03/dependent-prepositions.pdf>


Exercise

1. Bert is sick, and he often complainshis health.

- to
- for
- about
- over

2. He is scaredfalling and hurting.

- at
- for
- of
- to

3. He doesn't have a very good relationship his family.

- for



from

of

with

4. He often argueshis daughter- in- law..

for

about

with

after

5. His children feel guilty, but they don't want to take carehim.

about

for



with

of

6. Bert isn't interestedliving in a nursing house.

to

in

about

at

7. He depends.....his neighbors and friends to do the shopping.

on

in

at

for



8. Do you think anyone in his family will take responsibility.....him.


for

in


by

at

Submit



10) When students click on “talk about it”, they had to express their ideas on the given question. The content of this page was as follow.

Miss Teacher 

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Talk about it

Read these statements. Check (✓) your opinions and you can give some more reasons to explain your answer.

I will live with my parents until I get married.

Yes

No

Maybe

I would give money to help a member of my family.

Yes

No


Maybe


I want to take care of my parents when they are old.


Yes

No

Maybe







11) When students click on “unit quiz”, the set of reading test was provided to test their reading comprehension. The following was the example of the test provided in unit 2.

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Unit 2 Quiz

Peru's Inca Indians first grew potatoes in the Andes in about 200 B.C. Spanish conquistadors brought potatoes to Europe, and colonists brought them to America. Potatoes are fourth on the list of the world's food staples – after wheat, corn and rice. Today, Americans consume about 140 pounds of potatoes per person every year while Europeans eat twice as many.

One of our favorite ways to eat potatoes is in the form of potato chips. While Benjamin Franklin was the US ambassador to France, he went to a banquet where potatoes were prepared in 20 different ways. Thomas Jefferson, who succeeded Franklin as our French ambassador, brought the recipe for thick-cut, French-fried potatoes to America. He served French fries to guests at the White House in 1802 and at his home, Monticello.

On August 24, 1853, at Moon Lake Lodge in Saratoga, New York, a native-American chef named George Crum created the first potato chips. He became angry when a diner complained that his French fries were too thick, so he sliced the potatoes as thinly as possible making them too thin and crisp to eat with a fork. The diner loved them, and potato chips were born. In 1860 Chef Crum opened his own restaurant and offered a basket of potato chips on every table.

In the 1950s, in Ireland, Joe "Spud" Murphy and Seamus Burke, produced the world's first seasoned crisps, Cheese & Onion and Salt & Vinegar. In the United Kingdom and Ireland crisps are what we in the United States call potato chips while chips refer to our French fries. Ketchup flavored chips are popular in the Mid-East and Canada. Seaweed is popular in the Asia, and Mexicans like chicken flavored chips. Other flavors from around the world include: paprika, pickled onion, béarnaise, meat pie, Chili Crab, Salmon Teriyaki, Borscht, Caesar Salad, Roasted Sausage, Firecracker Lobster, Roast Ox, Haggis and Black Pepper, Olive, and Spaghetti.

About 27 pounds of potato chips are produced from 100 pounds of potatoes. Americans consume 2-4 billion pounds of potato chips every year, and spend more than \$7 billion a year on them.

1. Which happened last?

- Conquistadors brought potatoes to Europe.
- Thomas Jefferson served potato chips at Monticello.
- Europeans brought potatoes to America.
- Benjamin Franklin saw how potatoes were served in different ways while in France.

2. The first potato chips were made in...

- New York
- France
- China
- Europe

3. What does the word "consume" mean in the following statement? Today, Americans consume about 140 pounds of potatoes per person every year ...

- store



play with

eat

buy

4. Based on the passage, it can be inferred that potatoes are _____ foods in the world.

unimportant

fun

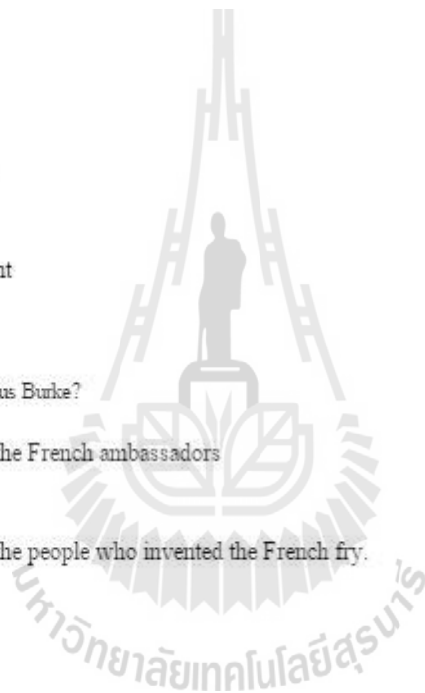
average

important

5. Who was Seamus Burke?

One of the French ambassadors

One of the people who invented the French fry.



- The customer who made George Crum angry.
- One of the people who invented seasoned potato chip.

6. Europeans eat _____ potatoes than Americans.

- the passage doesn't say
- less
- more
- about the same amount

7. What happened in 1950?

- The world's first seasoned French Fries were produced.
- The world's first potato chips were produced.
- The world's first french fries were produced.

The world's first seasoned potato chips were produced

8. What question is answered in the second paragraph?

Who invented the potato chip?

When were salt and vinegar chips invented?

How many pounds of potatoes are eaten per person in America each year?

Who served French fries in the White House?

9. Which of the following is a true?

Different flavored Potato Chips are popular in different parts of the world.

Ketchup flavored Potato Chips are most popular in America.

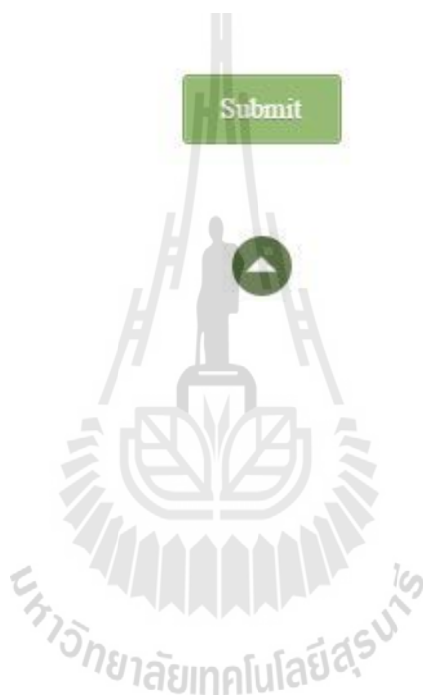
Potato Chips are only popular in America.

Potato Chips are not really eaten very much in Asia.

10. Potato Chips are called _____ in the United Kingdom.

- crisps
- fries
- chips
- potatoes

Submit



CURRICULUM VITAE

Ms. Poonsuk Jantasin was born in Maha sarakham on May 22, 1970. She received B.A. (English) from Khonkaen University, Thailand in 2000, 1994 and Master of Education in English from Maha saraham University, Thailand, in 2002. Since 2010, she has joined the doctoral program in English studies offered by Suranaree University of Technology (SUT). His research interests include smartphone technology enhance EFL reading and instructional model.

