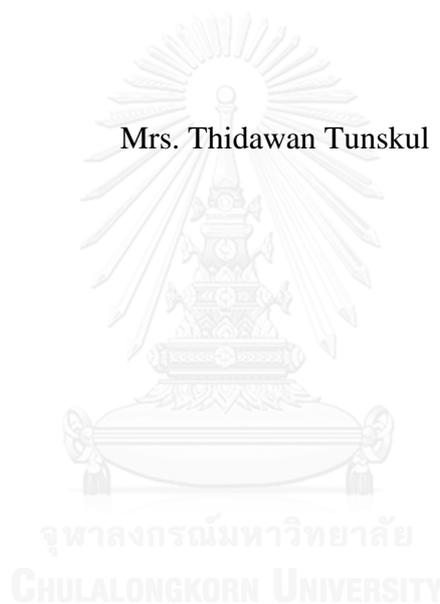


CONSTRUCT AND CRITERION OF THE ENGLISH ORAL READING  
FLUENCY TEST FOR THAI UNDERGRADUATE STUDENTS

Mrs. Thidawan Tunskul



บทคัดย่อและแฟ้มข้อมูลฉบับเต็มของวิทยานิพนธ์ตั้งแต่ปีการศึกษา 2554 ที่ให้บริการในคลังปัญญาจุฬาฯ (CUIR)  
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โครงสร้างแบบทดสอบและเกณฑ์วัดผลการอ่านคล่องแบบออกเสียงในภาษาอังกฤษของนักศึกษา  
ไทยระดับปริญญาตรี



วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาศิลปศาสตรดุษฎีบัณฑิต

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By Mrs. Thidawan Tunskul

Field of Study English as an International Language

Thesis Advisor Chatraporn Piamsai, Ph.D.

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Accepted by the Graduate School, Chulalongkorn University in Partial Fulfillment of the Requirements for the  
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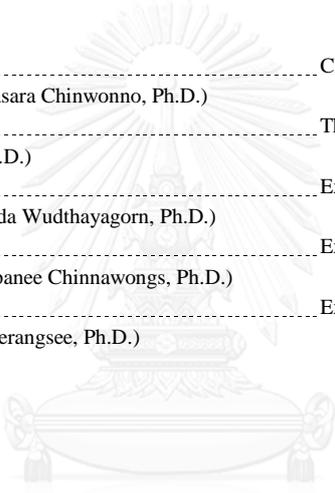
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จิตาวรรณ คัมภีร์สกุล : โครงสร้างแบบทดสอบและเกณฑ์วัดผลการอ่านคล่องแบบออกเสียงในภาษาอังกฤษของนักศึกษาไทยระดับปริญญาตรี (CONSTRUCT AND CRITERION OF THE ENGLISH ORAL READING FLUENCY TEST FOR THAI UNDERGRADUATE STUDENTS) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: ดร. จัตุราพร เปี่ยมใส, 169 หน้า.

งานวิจัยนี้มีวัตถุประสงค์เพื่อพัฒนาโครงสร้างและเกณฑ์วัดผลการอ่านคล่องแบบออกเสียงในภาษาอังกฤษเพื่อวัดเครื่องวัดทักษะการอ่านคล่องแบบออกเสียงในภาษาอังกฤษซึ่งได้แก่ ความเร็ว, ความแม่นยำและการแบ่งวรรคมีส่วนช่วยสนับสนุนต่อการอ่านเพื่อความเข้าใจมากขึ้นเพียงใด และเพื่อสำรวจทัศนคติของผู้ทำแบบทดสอบทักษะการอ่านคล่องนี้

กลุ่มตัวอย่างในการวิจัยครั้งนี้คือนิสิตคณะรัฐศาสตร์จุฬาลงกรณ์มหาวิทยาลัยจำนวน 54 คนซึ่งถูกเลือกจากการคัดเลือกกลุ่มตัวอย่างแบบเจาะจงจากคะแนนสอบการทดสอบวัดความสามารถในภาษาอังกฤษเพื่อการศึกษา (CU-TEP) เครื่องมือวิจัยประกอบด้วยแบบทดสอบการอ่านคล่องในภาษาอังกฤษและคำถามความเข้าใจในการอ่าน 3 ชุด และแบบทดสอบวัดทัศนคติของผู้ทำแบบทดสอบการอ่านคล่อง ในการเก็บข้อมูลนิสิตอาสาสมัครเข้าร่วมในงานวิจัยวัดเสียงการอ่านออกเสียงโดยใช้โปรแกรมคอมพิวเตอร์จากนั้นจึงทำแบบทดสอบการอ่านเพื่อความเข้าใจแล้วจึงทำแบบทดสอบวัดทัศนคติ งานวิจัยนี้ใช้สถิติแบบถดถอยในการวิเคราะห์ข้อมูลเปรียบเทียบตัวแปรคะแนน อัตราเร็ว, ความแม่นยำ และการแบ่งวรรคมีส่วนช่วยสนับสนุนต่อการอ่านเพื่อความเข้าใจมากขึ้นเพียงใด และสถิติที่ใช้ในการวิเคราะห์ความสัมพันธ์ระหว่างตัวแปรเหล่านี้คือค่าสัมประสิทธิ์สหสัมพันธ์แบบเพียร์สัน สถิติที่ใช้ในการวิเคราะห์ทัศนคติของผู้ทำแบบทดสอบก็อ่านคล่องคือสถิติเชิงพรรณนาโดยวิเคราะห์ 4 ส่วนประกอบด้วยทัศนคติต่อภาษาอังกฤษ ความกังวล ทัศนคติต่อแบบทดสอบการอ่านคล่องแบบออกเสียง และความคิดเห็น

ผลการวิจัยพบว่าความแม่นยำมีส่วนสนับสนุนการอ่านเพื่อความเข้าใจอย่างมีนัยสำคัญในแบบทดสอบที่ 2 ผลค่าสัมประสิทธิ์สหสัมพันธ์แบบเพียร์สันแสดงให้เห็นว่าความแม่นยำกับการอ่านเพื่อความเข้าใจมีความสัมพันธ์อย่างมีนัยสำคัญระดับปานกลางสม่ำเสมอทั้ง 3 แบบทดสอบจึงสรุปได้ว่าความแม่นยำมีความสำคัญต่อการอ่านเพื่อความเข้าใจ ในส่วนของตัวแปรความเร็วพบว่าไม่มีความสัมพันธ์อย่างมีนัยสำคัญในแบบทดสอบที่ 2 และ 3 จึงอาจสรุปได้ว่าในขณะที่ความสัมพันธ์ระหว่างความเร็วกับการอ่านเพื่อความเข้าใจมีระดับสูงในบริบทการใช้ภาษาอังกฤษเป็นภาษาที่หนึ่งแต่ความสัมพันธ์มีระดับต่ำในบริบทการใช้ภาษาอังกฤษเป็นภาษาต่างประเทศ ตัวแปรสุดท้ายการแบ่งวรรคกับการอ่านเพื่อความเข้าใจมีความสัมพันธ์อย่างมีนัยสำคัญระดับปานกลางทั้ง 3 แบบทดสอบซึ่งทำให้สรุปได้ว่าการแบ่งวรรคมีความเกี่ยวข้องกับการอ่านเพื่อความเข้าใจ นอกจากนี้ผลจากแบบทดสอบทัศนคติพบว่านิสิตที่ทำแบบทดสอบส่วนมากมีทัศนคติเชิงบวกต่อการเรียนภาษาอังกฤษ นิสิตบางส่วนแสดงความกังวลบางรูปแบบเมื่อทำแบบทดสอบ แต่นิสิตส่วนใหญ่ไม่ได้มีความกังวลและยังมีทัศนคติและความคิดเห็นเชิงบวกต่อแบบทดสอบทักษะการอ่านคล่องแบบออกเสียงในภาษาอังกฤษนี้

# # 5387779320 : MAJOR ENGLISH AS AN INTERNATIONAL LANGUAGE

KEYWORDS: ENGLISH ORAL READING FLUENCY TEST, READING FLUENCY, ORAL READING FLUENCY AND COMPREHENSION

THIDAWAN TUNSKUL: CONSTRUCT AND CRITERION OF THE ENGLISH ORAL READING FLUENCY TEST FOR THAI UNDERGRADUATE STUDENTS. ADVISOR: CHATRAPORN PIAMSAI, Ph.D., 169 pp.

The objectives of this study were to develop construct and criterion of the English Oral Reading Fluency test to investigate to what extent different oral reading fluency measures, rate, accuracy and prosody, contribute to comprehension, and to investigate students' attitudes toward an oral reading fluency test.

The subjects were 54 first year students from the Faculty of Political Science, Chulalongkorn University who were selected by using the purposive sampling technique based on the Chulalongkorn University Test of English Proficiency (CU-TEP) scores. Three English Oral Reading Fluency (EORF) tests and three sets of comprehension questions were devised. Then, the scores of rate, accuracy and prosody were compared to investigate to what extent different oral reading fluency measures contributed to comprehension by using multiple regression analysis. Pearson product-moment coefficients were also used to analyze the correlations among the variables. To investigate the students' attitudes toward the test, an attitude questionnaire was used. The attitudes questionnaire consisted of four parts including students' attitudes toward learning English, EORF test anxiety, students' attitudes toward the EORF Test and student opinion scale items. Then, descriptive statistics were used to analyze the students' attitudes.

The results revealed that in all the three tests, only accuracy made a statistically significant unique contribution to comprehension (Test II). In all the three tests, the correlations between accuracy and comprehension were very consistent as it had significant positive moderate relationships with comprehension. Thus, it can be concluded that accuracy is necessary for comprehension. Regarding rate, as it had no significant relationships with comprehension in test II and test III, it is possible that while the relationship between rate and comprehension is rather strong in L1 contexts, it is weak in EFL contexts. The last variable, prosody had significant positive moderate relationships with comprehension in all the three tests, which can be concluded that the connection between prosody and comprehension exists. Regarding students' attitudes toward the test, the findings indicated that even though some students had exhibited certain signs of anxiety from taking the EORF test, those who experienced no anxiety outnumbered them, and the majority of the test takers had positive attitudes and opinions toward the EORF test.

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CHULALONGKORN UNIVERSITY

Field of Study: English as an International Language  
Academic Year: 2015

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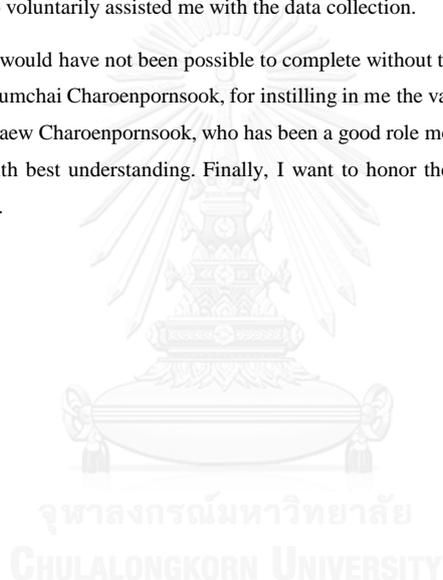
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## CHAPTER I

### INTRODUCTION

In the words of M. Wolf (2007, p. 3), “we were never born to read”. Indeed, reading was invented only a few thousand years ago. Although humans are not born with reading skills, we are born with the capability to learn to read. Following one of the greatest interventions in history, we have rearranged the extraordinary organization of our brains which has expanded the ways of our thinking capabilities and altered the intellectual evolution of our species (M. Wolf, 2007). In modern societies, we, as fluent readers, read different types of texts throughout the day, such as the newspapers, flyers, ads, signs, e-mails and text-messages all around us, and in one way or another, we are often engaged in reading that is possibly rather demanding in educational, professional and occupational settings (Grabe, 2009). Thus, it is undeniable that reading is a necessary skill for one to master.

Even though reading skills do not guarantee that one will be successful in life, yet success comes much harder without a presence of skillful reading; thus, to be successful in modern societies, one should be a good reader (Grabe, 2009). Mastering the reading skills in one language seems compulsory, yet is it enough to be successful in our competitive world? Grabe (2009) reports that a very large percentage of the world populations learn to read in a second language, typically as students in formal settings, and even those who study L2 as a subject in school use their L2 reading skills for many purposes e.g. to engage in advanced studies, to get a good job, to travel or to communicate with others. In addition, he notes that the rise of English as a

global language makes it the second language that schools in many countries around the world require their students to learn so that they will be able to access information and to compete economically and professionally. In Thailand, English has been one of the compulsory subjects set by the Ministry of Education of Thailand. And because Thailand is now part of the ASEAN Economic Community, its significance has been seriously emphasized much more than in the past. And for the reason that English is now the center of attention, students are expected to master their English skills including reading.

As it is obvious that reading is definitely a necessary skill for one to learn, it is important to note that even though the majority students are able to read fluently in their first language, many of them are not able to transfer the ability or apply their strategies to master their second language reading. Grabe (2009) indicates that L1 readers start reading with good comprehension as they are priorly familiar with the language engaging in their listening and speaking but they lack decoding skills. For L2 readers, patterns of the relationships between decoding and comprehension are more complex as they rarely achieve word-recognition fluency levels. Mastering word-recognition fluency is the obvious ability of good L1 readers. Besides, more often, weak readers are not those who do not engage in high level processing but those who cannot achieve lower-level processing in an easy and fluent way. Hence, it is necessary to ensure that students, especially as L2 readers, achieve low-level reading skills which are word recognition, word integration and semantic proposition encoding because these skills are important elements of reading fluency.

Making sure that the students surpass low-level processing in order to master reading in English is definitely one of the responsibilities of an English teacher. However, this responsibility is quite difficult to achieve due to large class sizes and time constraints. According to Shanker and Ekwall (2003), the main reason why students often fail to learn to read is large class sizes which come together with multiple demands during the class sessions, making it difficult or nearly impossible for teachers to give concentrated instruction that students need. Additionally, many teachers also do not have adequate knowledge and experience to assist struggling students (Shanker & Ekwall, 2003).

Regarding the education in Thailand, large class sizes, time constraints and inadequate knowledge of Thai teachers are the serious issues that students are facing. Although English is one of the compulsory subjects in schools, the students in regular programs of public schools study English only around 3 hours a week. The majority of the students have little exposure to English outside classroom. Most classrooms in Thailand are large-sized classrooms with more than 30 students in each class. Besides, many Thai teachers lack sufficient knowledge and experience in teaching especially reading fluency skills. Thus, many Thai students are unable to read English fluently as they lack fluency skills. Even though the term, reading fluency, may not sound familiar to Thai educators, it has been widely recognized among those who are interested in reading abroad especially in the United States. This is because reading fluency has been reported to be significant for developing students' reading abilities.

As cited by Reutzel and Cooter (2003), many researchers have asserted reading fluency as a significant goal in becoming a proficient strategic reader. Fluent

reading is indicative of a confident and accurate reader (Konza, 2006). Moreover, fluent readers are more likely able to deal with harder tasks such as answering comprehension questions because their word reading is more strongly connected to the text at the very outset (Daly III, Chafouleas, & Skinner, 2005). Hence, it is critically significant to develop fluid, effortless and confident reading (Konza, 2006).

On the other hand, without reading fluency, students may face reading difficulties. Firstly, the lack of the fast and accurate word recognition skills and reading fluency does not only make good reading ability impossible (Taguchi, Takayasu-Mass, & Gorsuch, 2004) but also causes the comprehension difficulty (Gunning, 2002). Moreover, students may have less motivation read. Skinner, Robinson, Morse, O'Neal, and Jackson (1998), cited by Daly III et al. (2005), report that those who read accurately but slowly may be less likely to choose to read than those who read fluently. The assumption relates to this issue is that if a reader has not yet developed reading fluency skills, the process of decoding texts drains attention leaving insufficient attention for constructing the meaning from texts (Cappello & Moss, 2009). Finally, slow readers may not read rapidly enough to catch the nuances to be able to appreciate the well written work (Daly III et al., 2005). Thus, reading fluency is a necessary skill for students.

As efficient ways of improving fluency must be developed (Taguchi et al., 2004), not only the effective reading fluency instruction but also assessments that can identify students' strengths and weaknesses are necessary. Undoubtedly, to deliver smart and sensible fluency instruction, assessing fluency is a necessary step as interpreting readers' performances on any given assessment measure leads us to be in

a better position to design appropriate instruction (Opitz, 2007). By using fluency assessments that provide specific information about accuracy, automaticity, and prosody levels, educators are able to identify where failures occur and to guide intervention strategies (e.g. the modeling of fluent reading) to learners (Penner-Wilger, 2008). It has been reported that reading fluency assessments can be used to measure reading comprehension. According to Fuchs, Fuchs, Hosp, and Jenkins (2001), oral reading fluency was a better assessment to predict comprehension than direct measurement which are question answering, the recall, and cloze. Valencia et al. (2010) conclude that designed assessments which include multiple indicators of oral reading fluency provide a finer-grained understanding of oral reading fluency and fluency assessment, and a stronger predictor of general comprehension. Hence, a designed oral reading fluency test is beneficial to teachers as it not only serves as a tool for teachers to assess fluency of their students but it can also be used to ensure students' comprehension performance as it was found to be a strong predictor of comprehension.

Although reading fluency can be assessed silently or orally, oral reading allows teachers to easily identify and provide instant feedback at the exact point where a student encounters a problem. Gibson (2008) mentions that oral reading or reading aloud can be used as a diagnostic tool which allows teachers to identify more persistent problems such as pronunciation and graphemic-phonemic connections and which is often used with the aim of comprehension. Also, reading aloud can help students practice and improve pronunciation (Gibson, 2008). Fundamentally, reading fluency refers to “the ability to read rapidly with ease and accuracy, and to read with appropriate expression and phrasing” (Grabe, 2009, p. 291). However, reading

fluency may still not be a common phenomenon in Thailand as reading fluency is predominantly associated with first language reading; only accuracy in reading aloud in various genres, i.e. news, advertisements and poems, is set as the achievement of the foreign language goal for grade 12 graduates by the Ministry of Education (2008). Accuracy alone, however, does not seem enough to characterize a proficient reader as other factors of oral reading such as reading rate and phrasing are also important (Reutzel & Cooter, 2003). Thus, the focus should rather be on reading fluency since its key components are accuracy, automaticity and prosody (Penner-Wilger, 2008).

Assessing fluency is a crucial step for smart and sensible fluency instruction (Opitz, 2007). However, oral reading has rarely been tested formally in classrooms in Thailand as its process is considered time consuming leading to doubts as to whether these graduates have in reality achieved the goal set by the Ministry of Education prior to entering into a university. However, this is not the only issue. The research regarding the assessment of oral reading fluency in L2 contexts remains very little (Fujita & Yamashita, 2014; Grabe, 2009), and such research has never been conducted in the Thai context. Thus, to bridge the gap, the current study compared various measures used to assess oral reading fluency skills in relation to reading comprehension. The author also examined students' attitudes toward the EORF test as the EORF test has never been used before.

### **1.1 Objectives of the Study**

The purposes of the current study are 1) to investigate to what extent different oral reading fluency measures contribute to comprehension, and 2) to investigate students' attitudes toward an oral reading fluency test.

## **1.2 Research Questions**

1. What are the relative contributions of different oral reading fluency measures: rate, accuracy and prosody in predicting reading comprehension?

1A: What is the contribution of rate to reading comprehension?

1B: What is the contribution of accuracy to reading comprehension?

1C: What is the contribution of prosody to reading comprehension?

2. What are students' attitudes toward an oral reading fluency test?

## **1.3 Scope of the Study**

This study focused on the components of oral reading fluency in order to come up with the measures of English oral reading fluency for Thai university students. The measures were then used with the sample, first year students from the Faculty of Political Science at Chulalongkorn University in the second semester of academic year 2013, to examine the relationships of these measures to comprehension.

## **1.4 Limitation of the study**

Since the participants were the students from the Faculty of Political Science, Chulalongkorn University, the findings of this research study might not be able to be generalized to other situations.

### 1.5 Definition of terms

*Construct* refers to specific definitions of the abilities to be measured. The English Oral Reading Fluency Test constructs are the abilities to read the text orally with appropriate speed (rate), read the words in the text orally with accuracy (accuracy) and read the text orally with appropriate phrasing (prosody).

Comprehension constructs are the abilities to comprehend the text from oral reading, for example, recognizing words, and decoding and understanding the texts, to recall the main idea and important details of the story and to answer comprehension questions.

*Criterion* or criterion for correctness is what constitutes a successful completion. Designing a test comes together with choosing a scoring method. Scoring students involves specifying criteria for correctness or criteria for judging the quality of the response (Bachman & Palmer, 1996). In this study, scoring was done by using four measures, three measures of oral reading fluency and a measure of comprehension.

- Rate (Speed) was measured as the number of the words students read per minute, disregarded for errors.
- Accuracy was measured as the percentage correct words of the total words read per minute. Mispronunciations, omissions, repetitions and substitutions were counted as errors.
  - Mispronunciations were misread words.
  - Omissions were words skipped or unread.
  - Repetitions were words nonexistent in the text.

- Substitutions were words replaced for other meaningful words.
- Prosody was measured by using the 4-point scale rubric focusing on four aspects (phrasing, stress, intonation and pauses). For comprehension, 0 indicated an incorrect response and 1 indicated a correct response.

*English oral reading fluency* refers to a smooth and accurate oral reading with correct prosody; where decoding is relatively effortless which allows attention to be allocated to comprehension (adapted from M. Wolf and Katzir-Cohen (2001)).

According to this definition, oral reading fluency consists of 3 components, rate accuracy and prosody, which are linked to comprehension.

Rate (Speed) refers to the speed of oral reading. Automaticity theory of Laberge and Samuels (1974) is widely accepted to be one foundation component of reading fluency. According to their definition, automaticity refers to the ability to rapidly perform a complex task. Regarding reading, they have focused on reading rate as a product of automaticity, which later has been used to measure reading fluency in many research studies e.g. (Cucchiarini, Strik, & Boves, 2000; Fuchs et al., 2001; Penner-Wilger, 2008; Samuels, 1979; Valencia et al., 2010).

Accuracy refers to the correctness of utterance at word level. Grabe (2009) mentions that accuracy is strongly connected with word recognition in the way that fluent word recognition must be rapid, automatic, complete and accurate at the same time. Regarding oral reading fluency, Daane, Campbell, Grigg, Goodman, and Oranje (2005) refers to accuracy as the degree to which a student's oral reading conforms to the letter-sound conventions of printed English. In addition, Penner-Wilger (2008) defines accuracy as the ability to correctly generate a phonological representation of

each word. Thus, accuracy in oral reading fluency focuses on the ability to correctly pronounce the words in a text.

Prosody refers to the appropriate phrasing of oral reading. Levasseur, Macaruso, Palumbo, and Shankweiler (2006) claimed that the ability above and beyond word recognition contributing to naturalness in reading aloud is the ability to supply the appropriate prosody. Penner-Wilger (2008) defines prosody as naturalness of reading including appropriate phrasing, expression, volume, stress and pitch. However, many research studies, cited in T. V. Rasinski (2004), define prosody as the appropriate use of phrasing and expression. Thus, it is undeniable that prosody is concerned with phrasing.

Comprehension refers to reading comprehension of a student's oral reading. Even though it is controversial whether students can comprehend a reading text while performing oral reading or not, as the selected definition is stated and the findings that oral reading fluency is a strong predictor of comprehension (Fuchs et al., 2001; Valencia et al., 2010).

*English Oral Reading Fluency Test* refers to a specific test designed to test the students' English oral reading fluency performances in 3 constructs i.e., rate, accuracy and prosody.

*Undergraduate students* refer to 54 first year students from the faculty of Political Science at Chulalongkorn University.

## 1.6 Significance of the Study

The study will greatly benefit Thai EFL students.

- As learned from the literature that oral reading fluency is significant and beneficial to L1 and ESL learners, this study purported to investigate if it is also beneficial to Thai students as EFL readers.
- Oral reading fluency assessment was reported to be a strong indicator of comprehension. Accordingly, it was interesting to examine the strength of the link between oral reading fluency and comprehension as it can ensure students' success.
- As oral reading is believed to help students in practicing and improving pronunciation because it focuses on segments and the accuracy in producing particular sounds (Gibson, 2008), it possibly as well benefits speaking skills as far as pronunciation is concerned.

In addition, the study contributes to EFL pedagogy.

- According to Chappuis, Commodore, and Stiggins (2010), we can improve learning if assessment information is used beyond figuring grades. Not only does the oral reading fluency test allows teachers to work on their students' oral output but understanding the relationship between different oral reading fluency measures and reading comprehension also helps educators to be able to provide more specific instruction regarding their students' needs.

- Furthermore, the research may provoke awareness of Thai EFL teachers regarding the significance of oral reading fluency and encourage them to integrate the oral reading fluency practices in their routines.

The Study also makes a contribution to the area of assessment and evaluations.

- Since the oral reading fluency measures were designed to assess students' oral reading fluency skills, Thai EFL teachers may be able to use these measures to assess their students' strengths and weaknesses in reading.
- As most Thai students are not familiar with an English oral reading fluency test, the test takers' attitudes toward the test were investigated which can be used to develop the test in the future.
- This study adds a new perspective on a growing body of research concerning the oral reading fluency assessments in terms of the use of English Oral Reading Fluency test and measures in EFL context.

## CHAPTER II

### A REVIEW OF THE LITERATURE

This chapter covers the literature related to oral reading fluency, target users, tests and measures.

#### 2.1 Reading fluency: Past, Present and Future

In the early 1900s, a shift in emphasis was away from proficient oral reading and geared toward silent reading resulting in the loss of the goal in developing fluent oral readers from the reading curriculum of American education (T.V. Rasinski, 2009; Reutzel & Cooter, 2003). Long afterwards, it is mentioned by NICHD (2000) that as a consequence of the negligence, reading fluency has been “reconceptualized” by researchers and theorists, and empirical studies have examined the efficacy of specific approaches to teaching fluency. Obviously, a lot has changed between the early 1900s and 2000. To embrace the spinning world, teaching methods, curriculum, policy, etc. may be changed back and forth in world education but what never changes is our effort to evolve students’ learning.

According to Reutzel and Cooter (2003) investigation and school visits, they report that the reading textbooks and teachers’ manuals provide little guidance for developing fluency as an essential part of comprehensive reading instruction programs and most basal reading programs paid little attention to reading fluency in daily instruction. No matter what has been changed in the world education, the intention of the changes on a regular basis is for the better. Without the recognition of

its significance, the return of reading fluency should not be possible. Recently, reading fluency has been focused due to the beliefs in its significance mentioned in many research studies. For instance, reading fluency is a basic necessary skill in reading (Balogh, Bernstein, Cheng, & Townshend, 2007; Blevins, 2002), and there is a connection between reading fluency and reading comprehension (Blevins, 2002; Cappello & Moss, 2009; Daly III et al., 2005; Gunning, 2002; T. V. Rasinski, 2004). Presently, fluency is receiving much deserved attention even though it has been neglected in the past (T. V. Rasinski, Blachowicz, & Lems, 2012). In fact, the increasing number of research studies concerning reading fluency can be a valid proof that reading fluency has received more and more attention.

In the classrooms in the United States, reading fluency instruction and test are part of the curriculum and have been used with native English-speakers and ESL children. While the number of the related research studies of reading fluency has constantly increased, most of them were done in the first language and the second language contexts, the number of the research in the context of English as a Foreign Language (EFL) is still small. And reading fluency has not yet been introduced into the curriculum for Thai students. As oral reading fluency test is necessary for assessing English reading proficiency of Thai students and such test has never been developed to suit the needs of Thai students who are EFL learners, it is significant to investigate the constructs of reading fluency to develop the test and measures that can be used to identify strengths and weaknesses of Thai students' reading fluency skills.

## 2.2 Reading

Even without its clear definition stated, we, as readers, all have a sense of what reading is as we do it on a regular basis. Nevertheless, considering the different purposes of reading and the different processes involved, Grabe (2009) believes that the definition of reading shouldn't be put in a single statement, yet it should characterize the reading of fluent readers and respond to such questions as these: "What do fluent readers do when they read? What processes are used by fluent readers? How do these processes work together to build a general notion of reading?" (Grabe, 2009, p. 14). He, then, proposed ten processes that define reading which are listed as follows:

### 2.2.1 Ten processes that define reading, (Grabe, 2009)

1. A rapid process: Fluent reading is definitely a rapid process in the sense that the normal reading rate is about 250-300 words per minute (wpm).
2. An efficient process: Reading is efficient in terms of the overall reading rate and the smooth operation of various processing skills.
3. A comprehending process: Reading is a comprehending process. We read to understand the intention the writer conveys in the writing and more. Reading assumes comprehension according to two reasons which are 1) all cognitive process engaged in reading is related to comprehension and 2) reading and comprehension are not equal because reading is not just the comprehending process.

4. An interactive process: Reading is an interactive process for the reason that it is not only an interaction between the reader and the writer but it also combines various cognitive processes working together at a time.

5. A strategic process: Reading is a strategic process as it requires a reader to use a number of skills and processes in making efforts to interact with texts in many ways, e.g., text information anticipation, key information selection, etc.

6. A flexible process: The efforts on these various ways require reading to be a flexible process, and the flexibility is demonstrated when fluent readers align the processes and purposes.

7. A purposeful process: The alignment between processes and purposes also shows that reading is in fact a purposeful process.

8. An evaluative process: Reading is an evaluative process as we evaluate how we read and decide how we should respond to a text.

9. A learning process: Reading is a learning process because of the ongoing evaluations.

10. A linguistic Process: Reading is a linguistic process as it is not possible to read in the absent of graphemic-phonemic connection, words and the structural phrases recognition, and reasonable store of linguistic knowledge of the language of the text.

Instead of simply defining reading as a single skill or unit, embracing its detailed processes is like we put the small pieces together to solve a jigsaw puzzle

which not only gives us a better sense of reading but also helps us, as educators, to work on our students' reading. As reading never occurs without the presence of something to read, yet the act of reading without purpose does not exist (Baker & Luke, 1991). Then, the purposes of reading will be summed up with the focus on comprehension as it is the most common purpose in reading.

### 2.2.2 Reading Comprehension

According to Grabe (2009), our daily encounter with texts combined with our needs to read in different ways in both educational and professional settings requires us to read differently. This depends on the contexts and our goals, and as we read for various purposes, we are engaged in many types of reading. To sum up, he states six major types of reading according to the purposes of reading which are reading 1) for information search, 2) for quick understanding, 3) for learning, 4) for information integration, 5) for information evaluation and critique, and 6) for general comprehension.

Only reading for general comprehension will be discussed further as it is fundamental to reading according to the fact that its processes provide a foundation for other purposes of reading and it is frequently perceived as easy reading although it is actually not easy because it involves complex processes when performed by fluent readers (Grabe, 2009). Also, he mentions that reading for general comprehension develops over time for L1 readers to become effortless as the extraordinary number of hours is needed to encompass the low-level processes and comprehension under very intense time constraints. And owing to this fluency under the intense time constraints,

reading for general comprehension is difficult for L2 readers whose exposure to L2 print is generally minimal (Grabe, 2009).

Knowing just the processes that define reading and types of reading are not quite enough to be able to work efficiently with our students. Grabe (2009) suggests that to have a clearer understanding of reading, we need to know how we read which includes understanding the cognitive processes of reading. Although the operation of the cognitive processes in reading is complex, Grabe (2009) indicates that it can possibly be explained by the combination of low-level processes (i.e., automatic word recognition, word integration, semantic-proposition encoding) and high-level processes (i.e., text-model formation, situation-model building, inferencing, executive-control processing and strategic processing).

Focusing on comprehension, Grabe (2009) states that without the smooth operation of low-level processes, comprehension is not able to occur. Thus, low-level processes do not only play the important role in reading fluency but also in reading comprehension. Since this research study focuses on reading fluency and its connection to comprehension, only low-level processes and “working memory” will be briefly discussed further because the low-level processes are carried out as part of “working memory” where the integration of cognitive processing and knowledge resources takes place for comprehension.

### 2.2.3 Low-Level Processes and Working Memory

To understand the fluent reading processes, recognizing the role-play of low level processes is essential (Grabe, 2009). Accordingly, the low-level processes will be explained in brief as follows.

1. **Word Recognition:** It is one of the most important processes that contribute to reading comprehension. Fluent word recognition occurs when a reader recognizes word forms and morphological affixation rapidly and automatically, activates orthographic-phonological link and semantic and syntactic resources, and accesses his/her mental lexicon.

2. **Word Integration (Syntactic Parsing):** It is significant to comprehension as in reading does not only depend on nouns and verbs but also the cueing systems (e.g., prepositions, tenses, articles, etc.) which we have to use our grammar knowledge to sort out the meaning. In other words, grammatical information is involved in comprehension.

3. **Meaning Proposition Encoding:** It is like a network of small pieces of information which are linked together in a meaning unit. The small meaningful pieces and the linkages are activated because of the input which is reading words and structures.

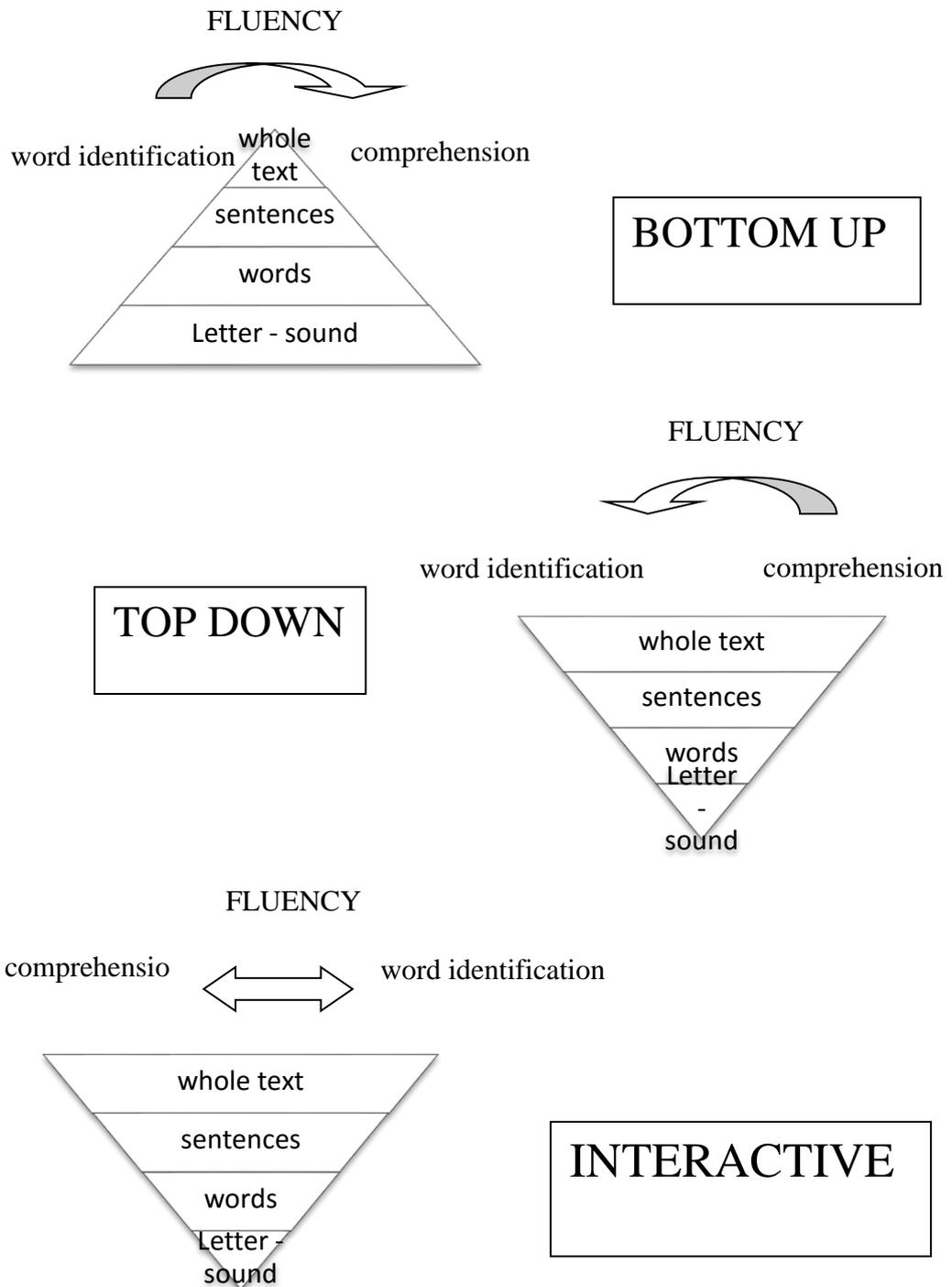
4. **Working Memory:** Memory is divided into long-term memory and short-term memory or working memory. Working memory refers to temporal mental storage for information to be kept actively and can be rehearsed before it is used for some mental process. Concerning reading, long-term memory is a major resource

while working memory is the key memory concept for comprehension. For building text comprehension, working memory stores the relevant information, carries out syntactic and semantic processing at the clause level, and supports phonological, orthographic and morphological processing for word recognition.

### **2.3 Models of Reading**

Opitz (2007) concisely explains three models of reading as follows: 1) the bottom-up view of reading emphasizes that readers have to go through specific stages to become competent readers. For this reader-based view, readers process lower levels (e.g., letter identification) and gradually progress to higher levels such as comprehension. 2) the top-down view of reading is opposed to the bottom-up view. Readers priorly focus on higher processes to better acquire the lower processes. The heart of this view is the belief that readers carry a large amount of background knowledge (i.e., knowledge of topics, texts, vocabulary, and letter-sound correspondences) to a text which allows them to make predictions and move easily through the text, e.g., proper speed, accuracy and prosody (fluency). And 3) the interactive view of reading highlights that readers use both high- and low-level processes simultaneously to comprehend a text.

Figure 1. Three Models of Reading (Opitz, 2007: p. 15)



From Figure 1, we can clearly see regardless of which model best portrays your personal belief, fluency is the bridge to connect between the high-level and the low-level processes. For the first view, the bottom-up model, fluency is the bridge from word identification to comprehension. Conversely, for the second view, the top-down model, fluency is the bridge from comprehension to word identification. Lastly, for the interactive view, fluency is the bridge from comprehension to word identification in order to return to comprehension.

## **2.4 What Is Reading Fluency?**

### **2.4.1 Notions of Reading fluency**

Literally, fluency means “flowing” and it consists of several components (Wolfe & Nevills, 2004). In the reading context, it refers to the ability to read text accurately with speed and proper expression (NICHD, 2000). (Grabe, 2009) defines reading fluency as the ability to read rapidly and accurately with ease and appropriate expression and phrasing. Besides focusing on its components, reading fluency has also been defined from different perspectives. Daly III et al. (2005), for example, define reading fluency as the number of correct words derived when a reader reads aloud a passage of connected text for one minute.

Looking closely at the process of reading, McGill- Franzen and Allington (2011) claim that the definition of reading fluency begins when the visual analysis system is triggered by seeing the written word; then the information is sent to the visual input lexicon. Once recognized as a word, it travels to the semantic system, continues to the phonological output lexicon to the phonemic level buffer, and finally comes out as speech. Since meaning is attached to the word or sentence, this route includes the

semantic system. In relation to this meaning, the main feature of reading fluency is the ability to do at least two tasks: encoding and decoding (McGill- Franzen & Allington, 2011).

M. Wolf and Katzir-Cohen (2001) define oral reading fluency in terms of readers' development. For beginning readers, reading fluency is the product of the initial development of accuracy and the consequent development of automaticity in the underlying sublexical processes, lexical processes, and their integration in single word reading and connected texts. Accordingly, these processes include perceptual, phonological, orthographic, and morphological processes at the letter, letter-pattern, and word-level, as well as semantic and syntactic processes at the word-level and connected text-level. After reading fluency is fully developed, it refers to a level of accuracy and rate where decoding is relatively effortless, where oral reading is smooth and accurate with correct prosody, and where attention can be allocated to comprehension (M. Wolf & Katzir-Cohen, 2001). This definition was then adopted to define oral reading fluency in the current study as the sample were college students who assumedly developed certain degree of fluency.

Although reading fluency has been defined differently, Kuhn and Stahl (2003) state that there is a consensus on the key components of reading fluency which comprise: "(a) accuracy in decoding, (b) automaticity in word recognition, and (c) the appropriate use of prosodic features such as stress, pitch, and appropriate text phrasing" (p.5).

#### 2.4.2 Theoretical Background and Key Components of Reading Fluency

T. V. Rasinski (2004) places emphasis on three dimensions of reading fluency which stress three elements. Each dimension stresses each element including the significance of accuracy in word decoding, quick and automatic recognition of words in connected text, and expressive and meaningful interpretation of text. Also, he indicates that fluent readers decode words automatically and accurately with minimal or no use of their limited attention or conscious cognitive resources. While automaticity is a significant component of fluency, accuracy seems to be the top priority component in decoding because a reader has to be able to decode words accurately to a certain degree so as to comprehend a reading text. Besides automaticity and accuracy, prosody is believed to be one of the key components of oral reading fluency as mentioned in many research studies e.g., (Daane et al., 2005; Fuchs et al., 2001; Grabe, 2009; Kuhn & Stahl, 2003; Penner-Wilger, 2008; T. V. Rasinski, 2004; Valencia et al., 2010).

Regarding automaticity, Laberge and Samuels' (1974) automaticity model is possibly the most utilized as a conceptualized framework for oral reading fluency (Fuchs et al., 2001). Laberge and Samuels (1974) refer to automaticity, or Automatic Information Processing, as the ability to rapidly perform a complex task without conscious effort. In their bottom-up serial-stage model of reading, the higher level processes require the completion of the lower level processes. Their Automatic Information Processing model of reading shows the brain has a limited capacity available for multi-tasking. Attention must be shifted from one job to another, and if a job (decoding) requires a large portion of the available attention capacity, attention

left for another job (comprehending) is limited. The assumption is that if a reader can read automatically with little attention on the decoding process, the result is the improvement of his/her comprehension. As a result, they consider reading rate as a product of automaticity, which, regardless of the way it is calculated, has later been used to measure reading fluency in many research studies e.g. (Cucchiarini et al., 2000; Fuchs et al., 2001; Penner-Wilger, 2008; Samuels, 1979; Valencia et al., 2010).

Penner-Wilger (2008) defines accuracy as the ability to correctly generate a phonological representation of each word, either because it is part of the reader's sight-word vocabulary or it comes from reader's use of effortful decoding strategy such as sounding out the word. Grabe (2009) indicates that accuracy is strongly associated with word recognition as fluent word recognition must be rapid, automatic, complete and accurate at the same time. Regarding L2 readers, he claims that although the accuracy and completion of word retrieval cannot be expected, the absence of accuracy results in the degradation of comprehension. Also, he specifies that completely specified lexical entries and accuracy are necessary for fluency and advanced comprehension. Regarding assessing oral reading fluency, Daane et al. (2005) refers to accuracy as the degree to which a student's oral reading conforms to the letter-sound conventions of printed English.

The evidence of active interpretation and meaning construction can be found when readers embed appropriate elements in oral expression such as volume, tone, emphasis and phrasing (T. V. Rasinski, 2004). Levasseur et al. (2006) indicate that to read a text with comprehension, one needs to process both individual words and to analyze their phrasal groupings. They claim that the ability above and beyond word

recognition contributing to naturalness in reading aloud is the ability to supply the appropriate prosody. They define prosody as including the suprasegmental aspects of speech such as sentence pitch contours, stress rhythms and pauses at major syntactic breaks. Similarly, Penner-Wilger (2008) defines prosody as naturalness of reading including appropriate phrasing, expression, volume, stress and pitch. Consequently, one may be considered a dysfluent reader if one hesitates, stumbles and occasionally makes errors in identifying words, as well as has problems in phrasing, emphasis and intonation while reading (Levasseur et al., 2006).

T. V. Rasinski et al. (2012) mention that fluency builds on a foundation of oral language skills, phonemic awareness, familiarity with letter forms and efficient decoding skills. To be able to read the text aloud successfully, a reader has to recognize the words quickly and easily enough to be accurate, and be able to make sufficient sense of the meaning of the message to make it sound like language (T. V. Rasinski et al., 2012). Hence, English language learners who are able to read aloud fluently are those who can recognize words automatically (quickly and easily) and decode words accurately with appropriate prosody. Consequently, to assess oral reading fluency, these three elements, rate, accuracy and prosody would be assessed in the current study.

## **2.5 Oral Reading (Reading Aloud) VS Silent Reading**

There has long been a debate on which one is more significant between oral and silent reading as if there should be only one in the spotlight and the other one should be left in the shadow. Actually, we read both aloud and silently depending on places and times preferably for our choice, and there are moments and times, we are

compared in our reading no matter silently or aloud, e.g., in school (Baker & Luke, 1991). Even though many researchers concluded that oral reading fluency is significant for learners, the arguments which are up against oral reading or reading aloud in L2 classrooms have been addressed. Singh (2006) indicates that reading aloud is not the best practice for thinking and integrating the subject matter. Gibson (2008) gathers the arguments against oral reading and some of them are that reading is generally a silent activity, and reading aloud is a skill needed only by public speakers and broadcasters not for majority people and it can be demotivating for students as it is a difficult thing to do well, yet for native speakers.

Even though some may think that silent reading should take on a more important role as students move up grades, oral reading is also important as it leads to better silent reading because many basic processes, such as the identification of letters, the mapping of letters into sound, the recognition of words and syntax, are required for one to be successful in reading (Van den Broek & Kremer, 2000).

According to Applegate, Quinn, and Applegate (2008), silent reading allows the children to have the opportunity to focus more of their attention on comprehension because they don't need to demonstrate their skill to pronounce aloud the words in the text. Focusing on comprehension, Beech and Singleton (1997) claim that measures of silent reading comprehension are much more important because silent reading comprehension is fundamental that can make students pursue formal education and most occupations. According to their concern that the process of dealing with correct pronunciation and expression in oral reading can interfere with comprehension, they

think that if one particular aspect has to be chosen to predict success in an occupation, that one should be silent reading comprehension.

Reading aloud, however, can help students practice and improve pronunciation (Gibson, 2008). Oral reading allows teachers to easily identify and provide an instant feedback right at the point where a student encounters a problem. Gibson (2008) mentions that oral reading or reading aloud can be used as a diagnostic tool which allows teachers to identify more persistent problems such as pronunciation and graphemic-phonemic connections and it is often used with the aim of comprehension. She also claims that reading aloud forces readers to make and practice connection between graphemes and phonemes unlike silent reading that readers may skip this process resulting in the incapability to make semantic propositions effectively. Related to this assumption, oral reading allows a teacher to obviously track students' performance while it is virtually impossible to observe the cognitive function of the students during their silent reading practice.

Besides, oral reading in terms of oral reading fluency was found to be a stronger predictor of reading comprehension. Fuchs et al. (2001) compare the correlations between oral reading fluency scores and the silent reading fluency scores to reading comprehension. 365 fourth-grade students were asked to read a reading passage aloud for two minutes and answer the questions. Then, the process was repeated, but this time the students read the different reading passage silently. It was found that oral reading fluency scores provide statistically significantly higher correlations to reading comprehension than the silent reading fluency scores, which can be inferred that oral reading fluency is the stronger predictor for comprehension

than silent reading fluency. Furthermore, many research studies have noted the significance of oral reading in terms of oral reading fluency and some of which will be brought up in the next topic.

In EFL context where the exposure of English is limited, EFL learners usually face with English sound difficulty. Many times, they cannot communicate intelligibly because they are unfamiliar with English sounds. Oral reading fluency not only allows EFL students to practice and become familiar with English sounds but also can be a tool for teachers to assess their students' pronunciation at the same time. In this case, an effective oral reading fluency test that can also identify their pronunciation problems may be even more necessary for EFL learners than native or ESL learners.

## **2.6 Significance of Reading Fluency**

Fluent reading is a major goal of reading instruction (Blevins, 2002). Also, a reading curriculum should include reading fluency. According to Grabe (2009), the ability to recognize word automatically is not only a major implication for L2 instruction, but a critical component of fluent reading; thus, a range of fluency practices should be regarded in any reading curriculum to enhance automaticity skills. Accordingly, he proposes the key components of a reading curriculum for L2 which are 1) build word recognition skills, 2) construct a large recognition vocabulary, 3) practice comprehension skills by combining awareness of grammar, main idea identification, and comprehension strategies, 4) build awareness of discourse structure, 5) extend strategic reading, 6) practice reading fluency: build reading rate, construct text-passage reading fluency, read and reread at home or tape or self, 7)

promote extensive reading, 8) develop motivation, 9) integrate both reading and content learning expertise.

Why should reading fluency be included in a reading curriculum? Fluency is viewed as a critical component of reading programs for the reason that it is associated with reading outcomes, including comprehension (Penner-Wilger, 2008). Fluency is not only essential for good comprehension and enjoyable reading (Blevins, 2002), but reading fluency also establishes a connection from decoding skills to comprehension (T. V. Rasinski, 2004). In addition, the lack of basic skills or reading fluency is one of the causes of comprehension difficulty (Gunning, 2002). The lack of reading fluency makes comprehension harder; on the contrary, its presence makes reading tasks easier. According to Daly III et al. (2005), fluent readers are more likely to simplify to harder tasks such as answering comprehension questions because their word reading is more strongly connected to the text at the very outset. NICHD (2000) indicates that fluency not only frees cognitive resources for interpretation to make reading comprehension possible, but it also involves in the process of comprehension since it includes prefatory interpretive steps. Similarly, Cohen and Cowen (2008) state that fluency is the bridge between word identification and comprehension since readers do not have to pay a lot of attention on decoding words and they can concentrate on the meaning of the text.

Reading fluency is not only mentioned to be significant to comprehension, but it is also perceived as an essential ability for skilled readers. As cited by Reutzel and Cooter (2003), many researchers assert reading fluency as a significant goal in becoming a proficient strategic reader. Fluent reading is indicative of a confident and

accurate reader (Konza, 2006). On the other hand, without fast and accurate word recognition skills and reading fluency, a good reading ability is nearly impossible (Taguchi et al., 2004). For L2 readers, Grabe (2009) indicates that fluency allows them to experience a much larger amount of L2 input in various functions and contexts, i.e., both inside and outside classrooms, which also allows L2 college students to read the huge amounts of material that are sometimes assigned weekly. Unavoidably, we are always judged by our performance, and in some extent, we all need to be able to portray as an efficient reader in many occasions e.g., competing for a job. Failing to perform basic skills, such as the ability to read fluently, possibly leads to the perception of being uneducated. Thus, learners should be pushed and assisted to develop fluency in reading (I.S.P. Nation, 2009).

Indubitably, reading fluency is seen as the significant component of advanced readers. On the other hand, the struggling readers who have no reading fluency skills may have less motivation to read because if a reader has not yet developed reading fluency, the process of decoding texts drains attention leaving insufficient attention for constructing the meaning form texts (Cappello & Moss, 2009). Also, slow readers may not read rapidly enough to catch the nuances to be able to appreciate the well written work like the strong readers do (Daly III et al., 2005). Thus, it is critically significant to develop fluid, effortless and confident reading (Konza, 2006).

As efficient ways of improving fluency must be developed (Taguchi et al., 2004), the effective reading fluency assessments are necessary as they enable educators to identify where failures occur and to guide intervention strategies to

learners by using fluency assessments that provide specific information about accuracy, automaticity, and prosody levels (Penner-Wilger, 2008).

## **2.7 Research studies on Reading Fluency and Reading Comprehension**

To understand fluent reading process, recognizing the role played by low-level processes, i.e. “word recognition, syntactic parsing and semantic-proposition encoding”, is very essential as comprehension cannot occur if the smooth operation of these processes is absent (Grabe, 2009). Fluency is necessary for comprehension. Also, reading fluency is an indicator of comprehension as it is mentioned that reading fluency assessments can be used to measure reading comprehension.

Fuchs et al.’s (2001) exploration has been cited in many research studies. In their study, they investigated many research studies concerning oral reading fluency as an indicator of overall reading competence. Then, they summarized several substantial studies and provided historical analysis regarding the incorporation of oral reading fluency into measurement approaches during the past century. In their research study, they gathered research studies including their own previous research study in which the Reading Comprehension subtest of the Stanford Achievement Test was used as the criterion measure to find the correlation with four other alternative measures: 1) question answering, 2) recall, 3) cloze (which are direct measures of reading comprehension) and 4) oral reading fluency. Participants were middle and junior high school-disabled students. Words read correctly per minute (wcpm: the number of the total words read minus the errors, i.e. omissions, repetitions, substitutions, and mispronunciations) was used to score student’s oral reading fluency. The students read two of the 400-word passages aloud for 2 minutes each. As

the results showed the correlations from the four alternative measures to be .82, .70, .72 and .91 respectively, they concluded that oral reading fluency (.91) was a better means of assessment to predict comprehension than the direct measurements of question answering, recall, and cloze.

Valencia et al. (2010) compared multiple models including a measure of wcpm at 1 and 3 minutes, and measures of individual and combined reading fluency indicators, i.e., rate, prosody, accuracy and comprehension to assess the oral reading fluency of students in grades 2, 4 and 6. They used three models of oral reading fluency measures to predict students' reading comprehension performance from the reading comprehension section of the Iowa Test of Basic Skills Battery (ITBS). The three models of oral reading fluency measures are: 1) wcpm at 1 and 3 minutes, 2) wcpm and prosody at 1 and 3 minutes and 3) rate, accuracy and prosody. After analyzing oral reading data and standardized comprehension test scores, they found that the designed assessments including multiple indicators of oral reading fluency provided a finer-grained understanding of oral reading fluency and fluency assessment, a stronger predictor of general comprehension. Moreover, they found that prosody provided a strong correlation to comprehension at all grades of 2, 4 and 6. Thus, they concluded that when students become more skilled readers, comprehension is possibly concerned less with rate and accuracy but more with other indicators of oral reading fluency, namely prosody.

In L2 contexts, Lems (2006) examined the relationship between reading comprehension and reading rate. The participants were 232 adult English language learners at a university in the United States. They read a passage orally for one minute.

Then, reading rate was calculated as the number of words correctly read per minute (wcpm). Reading comprehension scores were derived from the standardized reading achievement tests. The results indicated that there was a significant positive weak correlation between reading rate and comprehension ( $r = .256, p < .001$ ).

Fujita and Yamashita (2014) examined the relationship between the reading comprehension and reading rate of 148 Japanese high school EFL learners. Two types of tests were used to collect data: reading comprehension tests and reading rate tests. For reading comprehension tests, each test comprised five multiple choice questions. The participants were asked to read a total of six reading passages and answer the questions. Concerning the reading rate tests, the participants were asked to silently read two reading passages. Each time, they recorded their time. Then, they answered five multiple choice questions without rereading the passage. Reading rate scores were calculated as the average of the number of words read per minute (wpm) of the two passages. It was found that reading rate has a weak significant correlation with reading comprehension ( $r = .24, p < .01, N = 127$ ).

Pey, Min, and Wah (2014) determined the relationship between oral reading fluency in terms of reading rate (wcpm), accuracy and prosody, and the reading comprehension. The study was carried out with 67 ESL secondary school students. After the participants completed a reading comprehension test, they read aloud the texts used in the test. The results from the bivariate correlation analysis revealed that rate, accuracy and prosody were strongly correlated with reading comprehension. As they found that reading fluency is closely associated with reading comprehension in an ESL

context, they concluded that their findings conform to the research findings in L1 contexts.

According to Fujita and Yamashita's (2014) literature review, to measure reading rate, words read correctly per minute (wcpm) is normally used, and up until now, only a small number of empirical studies have investigated the relationship between reading rate and comprehension. Studies concerning the relationships between comprehension and accuracy or prosody and comprehension, however, are far fewer.

One of a few studies relating to accuracy and comprehension was done by Protopapas, Sideridis, Mouzaki, and Simos (2007) with 534 Greek students in grades 2, 3 and 4, where word accuracy was consistently found to have significant moderate correlations with comprehension for all three grade levels ( $r = .39, .30$  and  $.34$  respectively).

## **2.8 Reading in a Different Language**

The English Development of Second Language learners (ESL & EFL)

Without much direct instruction in decoding the letters, many English Language Learners (ELLs) subconsciously and autonomously learn the relationship between letters and sounds and are able to generalize this information successfully to apply to new words they encounter with (Birch, 2002). Yet, not all ESL and EFL learners seem to catch on to this relationship. Some of them seem to be stuck in the early reading stage development and are incapable of extending their knowledge to the words they are not familiar with (Birch, 2002).

Comparing to L1, Birch (2002) points out two important differences can be found in the language proficiency and experiences of the L2 students. Firstly, language proficiency, the second language learners may be in the process of acquiring oral language while also developing literacy skills in English. In addition, he indicates that ESL learners have knowledge of speech and listening in their first language which means they can understand and use typical sounds, words and sentences in their first language speech. However, their English speech and listening skills may vary in completeness and fluency because L2 learners may not recognize all of the sound they hear and produce them correctly in speech. They may be deficient in vocabulary knowledge, may be not familiar with English grammatical structures, and may lack the culture and world knowledge necessary for comprehension (Birch, 2002). In addition to a lack of English sounds, vocabulary and grammar, they may face interference from existing L1 knowledge and processing strategies. Thus, it seems clear that second language reading is learning to read with languages not just learning to read in another language (Grabe, 2009). On account of the interference from their first language, learning to read in English may be harder for second language learners than for English L1 pre-readers.

Birch (2002) specifies that the second language readers may not read English in the most efficient way as they may not develop the low-level processing strategies, i.e. “letter recognition, word identification, assessing word meaning and chunking into phrases”, just as native English speakers develop; as a result, they may not be capable of progressing from the early developmental stages to more advanced stages according to the assumption that language proficiency is possibly developed best in chronological order with the presence of low-level strategies. Thus, direct instruction

in the low level processing strategies may be necessary not only for those who do not read English in the most efficient way but the advanced ESL/ EFL readers may also benefit from the remediation of such instruction in making their low-level strategies and decision-making ability happen to be automatic and fast (Birch, 2002).

For successful L2 readers, both vocabulary and syntactic knowledge are raised to a higher level metalinguistic awareness as word and syntax difficulties directly confront the second language readers on regular basis (Grabe, 2009). One of the problems of less successful L2 readers is that they may not have the prerequisite metalinguistic awareness or they are incapable of using this knowledge to support L2 comprehension. Furthermore, L2 reading involves a range of unique supporting resources that match to the L2 situation which include cognate-bilingual dictionaries, learner-based grammar textbook, word glosses and text translations (Grabe, 2009).

### 2.8.1 ESL and EFL

According to Brown (2000), ESL refers to English within a culture where it is spoken natively whereas EFL is English in one's own culture where the opportunities to use the language in the environment of that culture are very few.

English is not the language of both ESL and EFL learners' native tongue. Also, there are important differences worth noting. While all classes of ESL are taught in English, in most EFL countries, for example, Thailand, the classes in typical public schools are taught in the native language except English which may or may not be taught in English. Camenson (2007) specifies that EFL learners spend fewer hours per week studying English than ESL learners. In addition, outside classrooms, EFL

learners have little exposure to English which means they have less opportunity to practice their English skills. Lastly, in the classroom, EFL learners share the same native-language background but ESL classes usually consist of students from various backgrounds (Camenson, 2007).

Regardless of the exposure amount to their second language, we can see that ESL and EFL learners share a lot in common of their second language learning development and experiences. Second language learners, either ESL or EFL, lack the same basic knowledge such as English vocabulary, sound and grammar (Birch, 2002). Thus, it seems clear that EFL learners face with similar second language difficulties as ESL learners. As a result, we may be able to assume that what is found necessary to second language development of ESL learners will also be necessary for EFL learners. Considering the amount of language exposure, curriculum and standard achievement between ESL and EFL, language proficiency of ESL and EFL students cannot be assumed to be equivalent by their ages or grade-levels, yet it is obvious that it will be much harder for EFL students to develop their second language proficiency. Also, they may have less motivation in learning English because the need of the use of English for them is lesser. Thus, concerning Grabe's (2009) statement, unique supporting resources matching the EFL situation should be developed and integrated in their reading development.

## 2.9 Reading Fluency Strategies

### 2.9.1 Repeated Reading

According to Daly III et al. (2005), repeated reading is the intervention that will enhance reading fluency and work with the largest number of students. Repeated Reading is one of the most frequent strategies that comes up in the research studies (Daly III et al., 2005; Grabe, 2009; NICHD, 2000; T. V. Rasinski, 2004). NICHD (2000) infers that guided repeated oral reading procedures are effective in improving reading fluency and overall reading achievement. The process of repeated reading is simply as the students read and reread a text orally again and again. Regarding to its process, the major concern of repeated reading is that it possibly makes students bored, but it can have the opposite effect (Daly III et al., 2005). The analysis of guided oral reading procedures led to the conclusion that such procedures had a consistent and positive impact on word recognition, fluency, and comprehension as measured by a variety of test instruments and at a range of grade levels (NICHD, 2000).

### 2.9.2 Assisted Reading

Assisted Reading (Paired Reading) is the strategy reported to be effective by Penner-Wilger (2008). Usually, the students are paired up in accordance with their reading level. As the process requires the spirit of teamwork and corporation, Daly III et al. (2005) suggest that the students in the same pair should have the ability to work well together. Tape-recording is also possible so that the teachers and students can evaluate and discuss on the students' performance including word recognition fluency, reading rate, phrasing, expressions and comprehension.

### 2.9.3 Choral Reading

According to Schumm (2006), choral reading is a quick and uncomplicated approach to build fluency in reading. It can be done in both large- and small- group settings. The process starts from the teacher models fluent reading by reading the text aloud. The teacher should also explain the students about how the text is being read, e.g. pauses. Then, in unison, the students read aloud together with the teacher.

### 2.9.4 Imitative Reading (Echoic Reading)

Primarily, imitative reading aims to improve fluency including word recognition accuracy, intonation and phrasing and comprehension (Allington, 2001). The key of imitative reading is teacher-modeling. The teacher models by reading the text and the student tries to imitate or echo the teacher's reading. The difficulty of imitative reading can be adjusted by the length and the speed of reading (Daly III et al., 2005).

### 2.9.5 Closed Caption TV

Daly III et al. (2005) signify that closed-caption television provides students with meaningful and motivating material. Also, several researchers, cited by Daly III et al. (2005), have found that it is an effective tool to improve fluency and comprehension of ESL students. The most important material for closed-caption television is the written subtitles of students' favorite movie or TV program. Three important steps should be included in the process which are 1) the students watch a part of the captioned TV program together for 5-10 minutes and pause for the students to make a prediction for what comes next, 2) focus on specific kinds of the phonic

patterns, word uses or punctuation, and 3) after watching, the students practice reading aloud the captioning without the auditory portion.

#### 2.9.6 Visual Rhythm

Martin and Meltzer (1976) suggest a method called “visual rhythm” to help teachers improve students’ reading performance. The visual rhythm was prepared by synchronizing the onset timing of each syllable the same way it appeared on the screen with the onset timing of the same syllable as it was heard through the speaker. According to their experiment with primary school students, they infer that the rhythmic group showed the greater degree of improvement in fluency over the control group.

#### 2.9.7 Extensive Reading (ER)

Inspired by the vast interest of practitioners on reading fluency and a number of studies on the effectiveness of Extensive Reading (ER) program in improving L2 learners’ reading rate, Iwahori (2008) examined the effectiveness of ER with the 2<sup>nd</sup> year public high school students in Japan (EFL context). Day and Bamford (1998), cited by Iwahori (2008), define Extensive Reading as an approach to second language (L2) reading instruction aiming to cover large amounts of enjoyable reading material for students. After providing students with graded readers and comic books as reading material they would find enjoyable, she administered pretests and posttests of reading rate and language proficiency and used *t*-test to compare means of the rates and language proficiency within groups. The result from her experiment revealed that students’ reading rates and their language proficiency improved after a 7-week ER treatment; thus, ER was concluded to be the effective approach in this study.

## **2.10 Difficulties in Reading Fluency**

What obstructs a learner from being a fluent reader? Penner-Wilger (2008) concludes that there are various reasons that students may fail to achieve reading fluency. Some factors are addressed as the obstacles of reading fluency. According to Shanker and Ekwall (2003), one of the most serious reading problems of disabled readers is mispronunciation and one of the causes of mispronunciation is poor fluency skills. The second most common errors they mentioned are omissions, recognized when a student skips a word in the sentence. Omissions in reading result from either a fear of mispronouncing a word or poor fluency skills and both of which can lead to diminished comprehension. And the third most common errors in oral reading are insertions recognized when a student inserts words that are nonexistent in the sentence. Although insertions are not as serious as other errors, there are two interesting indications. One is that if the insertions make sense within the context of the sentence, they specify comprehension but if they do not make sense, they indicate the poor fluency skills (Shanker & Ekwall, 2003).

## **2.11 Assessing Reading**

To create a quality assessment, Chappuis et al. (2010) lay stress on the need to clarify the clear purpose of an assessment involving the distinctive characteristics between formative and summative assessments. Briefly, formative assessment is the assessment for learning which not only notifies students' strengths and weaknesses but also allows teachers to use these pieces of information to support students' learning, whereas summative assessment is the assessment of learning in which students' learning achievement is verified. However, assessment normally has been

categorized in various terms. Grabe (2009) categorizes assessments into 5 types by their basic purposes which are (1) reading-proficiency assessment (to understand students' overall reading abilities); (2) assessment of classroom learning or summative assessment; (3) assessment for learning or formative assessment; (4) assessment of curricular effectiveness (to review and evaluate reading curricular); and (5) assessment for research purposes.

For this study, the topic, assessment for research purposes, is the most concern; thus, it then will be explained further. Even though assessment for research purposes is the topic which is not commonly discussed in assessment chapters, (Grabe, 2009) states that it is vital for reading-research results and their implications for instruction. He emphasizes that if researchers develop their own reading-assessment measures, it is important to make sure that the measures are valid i.e. “reliable, construct relevant, useful, fair and responsible” (p. 356). Also, the value of multiple measures should be highlighted.

#### 2.11.1 Assessing L2 Oral Fluency

To measure L2 fluency, Segalowitz (2010) lays emphasis on the significance in clarifying three senses of fluency, cognitive fluency, utterance fluency and perceived fluency. Cognitive fluency involves the ability of the speaker to efficiently assemble and put together the underlying cognitive processes that are responsible for producing utterances with the characteristics they have. Utterance fluency refers to the features of an utterance including the temporal, pausing, hesitation and repair characteristics which are not just the impressions of the listener.

And perceived fluency concerns the interference listeners make about a speakers' cognitive fluency based on their perception of utterance fluency.

## 2.12 Test Development

According to Bachman and Palmer (1996), the stages of test development can be divided into three broad stages which are 1) Design: at this stage, the purpose of the test should be clarified, what should be measured in a theoretical construct is defined, and the characteristics of the test takers and the relevant domain of content for test should be described; 2) Operationalization: a detailed specification of the test structure and various components of the test are required at this stage; 3) Administration: proceeding from the first two stages, this includes piloting the test and analyzing the results. Along with these stages, the most important factor that should be considered in order to develop a test is test usefulness. Test usefulness consists of the elements that help a test writer to come up with a reliable and valid test.

### 2.12.1 Test Usefulness

Bachman and Palmer (1996) believe that test usefulness provides a kind of metric that can be used to evaluate both the tests and all aspects of the tests that we use and develop. Their model of test usefulness consists of 6 test qualities as follows:

1. Reliability: the consistency of measurement. The score derived from a reliable test will be consistent across different characteristics of the testing situation. Hence, “reliability can be considered to be a function of the consistency of scores from one set of tests and test tasks to another” (Bachman & Palmer, 1996, pp. 19-20).

For example, if individuals of the same group take a test in two different settings, on two different occasions, the reliable test should not make any difference to a particular test taker. Regardless of which settings and occasions, she/he should obtain the similar score from the test.

2. Construct Validity: the meaningfulness and appropriateness of interpretations and use of test results. To validate a particular score interpretation, the evidence that the test score reflects the areas of language ability need to be provided. In order to justify the construct validity of the interpretation of a test score, both construct definition and the characteristics of the test task should be considered. According to Bachman and Palmer (1996), a construct is an ability that provides a basis for a given test and for interpreting derived scores from this test. Construct validity also concerns with the domain of generalization (the set of tasks in Target Language Use (TLU) domain to which our interpretation of the scores are generalized), the establishment of a logical case and a search of evidence to support a particular interpretation of the scores. The evidences of construct validity are “content relevance, congruence criterion relatedness and predictive utility” (Bachman & Palmer, 1996, p. 21).

3. Authenticity: the correspondence between the characteristics of a test task and the features of a Target Language Use (TLU) task (which involves the extent test takers can use the language beyond the test/ test tasks). Authenticity is significant as it not only provides a way to generalize the interpretation of the scores beyond the students’ performance on the test to the use of language in TLU domains but it also has potential effect on test takers’ perceptions of the test and on their performance.

For example, a passage which contains topical contents matching with the kinds of topics and materials usually found in real life is preferred to be used for a reading test (Bachman & Palmer, 1996).

4. Interactiveness: the extent that the test encourages test taker's individual characteristics (language knowledge and strategic competence, topical knowledge and affective schemata) in completing a test task. For example, a test task is considered interactive when it requires a test taker to relate his/her topical knowledge to the topical content of the test (Bachman & Palmer, 1996).

5. Impact: the effects of test taking and use of test scores on a micro level (individuals who are affected by the particular test use, i.e. test takers, teachers.) and a macro level (society and educational systems). According to Bachman and Palmer (1996), when a test is used instead of other assessments, it is used in the context of specific values and goals and our choice will have an impact on both the individuals and system that are involved. The most directly affected individuals are test takers and teachers. They stated that the impact on students can be categorized in three aspects which are the experience in taking and preparing for the test, the feedback about their performance on the test and the decision made as an outcome of their test scores. And for teacher or test users, the major impact of the test is on their instruction and can be in both positive and negative ways.

6. Practicality: the relationship between the required resources and the available resources in the design, development, and use of the test. The implementation of a test will be considered practical when the required resources do not exceed the available resources. Thus, it affects every stage of our decision and

possibly leads us to reconsider and revise the specification of the test. We can assume that if a test is not considered to be practical, we are discouraged in administering it. Bachman and Palmer (1996) specify three types of resources which are 1) Human resources: test writers, raters, administrators and staff, 2) Material resources: spaces or rooms, equipment and materials, 3) Time: for developing and administering the test.

The aforementioned qualities of test usefulness were used as criteria for validating the test in the study.

#### 2.12.2 Oral Reading Fluency Test

For many years, assessing fluency had focused upon how quickly students could read a given text known as reading rate, and it was measured in terms of either word per minute (wpm) or miscues per minute (MPM) (Reutzel & Cooter, 2003). Later on, the measure was developed and the focus is on word correct per minute (wcpm) (Reutzel & Cooter, 2003). Daly III et al. (2005) point out the simplest way to assess reading fluency which is recording correctly read words and errors during the first minute of student's reading of a passage. The simplest and most useful way to collect such data is through the use of audio recordings because not only we can use it for later analysis but we also have a second chance to listen to the recording again in case we miss some elements of the reading (Applegate et al., 2008; Reutzel & Cooter, 2003). Even though oral reading fluency is normally done at 1 minute, Daane et al. (2005) found that errors were underestimated and rates were overestimated. These points were implemented in designing the data collection method in this research study.

### 2.12.3 Techniques for Testing Reading Comprehension

Weir (2005) provides some tips in constructing a reading comprehension test alongside some valid examples of both direct and indirect tests to assess reading ability.

1. Indirect task type: Random deletion cloze (Selective deletion gap filling)  
(Weir, 2005)

For this type, content words are deleted from the text, and from the list of words provided, test-takers have to provide an accurate and appropriate word for each blank. By providing the answers (the lists of words) makes it more of a reading test than writing test. However, if the number of the provided words is equal to the number of gaps, the possible problem is if a student select one wrong item, it means she is penalized twice. Thus, within the list of correct answers, a number of additional distracters should be provided. In addition, students should not be penalized for misspelling unless the answer cannot be understood or can be taken as another word.

The vocabulary sections of both TOEFL and Cambridge are located in the reading sections with no separate scores which is a reasonable decision as the tests involve comprehending most of the words in the passage to provide the context for selecting the appropriate answer. For this technique, constructing items are quite easy as selective deletion allows the test constructor to determine where the gaps should be and to focus on the items which are pre-selected since they are important to a specific target audience. Besides, to satisfy the appropriateness in terms of all the contextual

variables (e.g. “discourse type, length, topic, lexical and structural range” (Weir, 2005, p. 121), texts can be selected.

## 2. Direct task types: short- answer questions (SAQs) (Weir, 2005)

Generally, for SAQs, test takers are required to write down answers in the given spaces on the question paper. As the writing is limited in length and the questions can be carefully worded, it can control the possible interference of writing. Thus, the questions should be phrased in simpler language than the testing text. With SAQs, the test constructor can formulate a large number of questions, and it can engage different reading strategies, e.g. skimming, scanning, searching for main ideas, inference, and recognition of a sequence. The length of the text is also adjustable. For example, EAP tests use long texts with SAQs technique as they are more representative of reading that is required in the target situation. In contrast, TOEFL uses a number of short passages as they allow covering the wider range of topics.

## 3. Selected Response Item types

Chappuis et al. (2010) compare four different item types including multiple choice, true/false, matching and fill in the blank as follows.

## Response Item Types

Item	Used When	Advantage	Limitations
Multiple choice	There is only one right answer among several plausible alternatives to the correct answer.	<ul style="list-style-type: none"> <li>- It can be used with a variety of objectives.</li> <li>- It is easy to score.</li> <li>- It can cover lots of material.</li> <li>- If distracters are carefully crafted, it can provide diagnostic information.</li> </ul>	<ul style="list-style-type: none"> <li>- Guessing can twist score. (Percentage of the score derived from a correct prediction for each item can be up to 33% depending on number of distracters.)</li> <li>- Plausible distracters can be hard to identify.</li> </ul>
True/False	A large body of content is to be tested which requires the use of many test items.	<ul style="list-style-type: none"> <li>- Many questions can be asked in a short time.</li> <li>- It is easy to score.</li> </ul>	<ul style="list-style-type: none"> <li>- If an item is not written carefully, it can be misleading.</li> <li>- Guessing can twist score. (50% chance)</li> </ul>
Matching	Association of information of many thoughts or facts is needed to be measured.	<ul style="list-style-type: none"> <li>- It can cover lots of material effectively.</li> <li>- It is easy to score.</li> <li>- The format serves as several multiple choice items.</li> </ul>	If it is not written carefully, process of elimination can twist score.
Fill in the Blank	The purpose is to determine if students know the correct answer, rather than if they can choose it from a given list.	<ul style="list-style-type: none"> <li>- It assesses production of a response.</li> <li>- It reduces the possibility of prediction.</li> <li>- It can cover lots of material effectively.</li> </ul>	It takes longer to score.

#### 2.12.4 Writing Test Items

Chappuis et al. (2010) provide some techniques in order to create different test items as follows.

1. Multiple-Choice Items: Convert the basic focus of the proposition of the test into a question and convert the other part of it into the correct answer. Then create a number of reasonable but incorrect answers to go along with it.

2. True/false Items: To create the true item, paraphrase or simplify the proposition on the test. On the other hand, for the false item, make one part of the proposition false.

3. Matching Items: Take a proposition of the test and separate it into its subject and its match part. Make several subjects and their match parts. Then, list the subjects in order and mix up the match parts.

4. Fill-in-the-blank Items: Leave out the phrase that defines the concept or the one that deals with the effect. Then, ask a question.

To assess reading comprehension, short-answer items are also normally used. Short answer format is “an attractive alternative” (Cunningham, 1998, p. 102) comparing to multiple choice format as it is more flexible, straightforward and less tricky. In general, a short answer item can be constructed in 3 different forms: the form of a question, a statement or a statement with blanks to be filled. Yet, the question format is said to be somewhat easier for less proficient students (Cunningham, 1998). Besides the formats of the items, the appropriate selection of

content to be assessed should be carefully considered. Also, the meaning of the items should be ensured to be understandable and unambiguous for the test takers.

Chappuis et al. (2010) also signify some guidelines for writing quality items which are (1) wording should be simple and focused as aiming to as lowest reading level as possible; (2) the full question should be asked in the subject; (3) clues to the correct answer should be eliminated either within the questions or across questions within a test; (4) the correct answer should not be obvious to those who have not studied the material; (5) critical, easily overlooked words should be highlighted; (6) the appropriateness of the items should be ensured by a qualified person; (7) the scoring key should be double-checked for accuracy before scoring.

Beside objective items, to construct response items, there are a broad range of possible formats.

As the study purports to assess students' reading comprehension as well these topics, Techniques for Testing Reading Comprehension and Writing Test Items (2.12.3 and 2.12.4, were reviewed to help in writing comprehension items.

#### 2.12.5 Test Procedure Steps

##### 1. Selecting a reading text

In order to administer a test, a clear procedure is needed to be clarified; especially a reading fluency test which is not a general reading test that requires only reading texts, sets of questions and the answer-sheets. Focusing on reading assessment, it is undeniable that reading texts play the most important role in reading tests as every reading test requires a text for the test takers to read. To select a reading

text in classroom assessment, a teacher should be aware that the content of the text should be paralleled to the instruction, and it should be appropriate to students' grade level which is not too easy or too hard for the students. In reading fluency assessment, the appropriate reading text should also be carefully selected as it is the essential element. According to Tatum (2009), the foremost practice that is effective for an effective reading fluency instruction is to select appropriate texts and provide opportunities to students to read from texts that are engaging and age-appropriate.

When it comes to testing students' reading fluency skills, one of the major concerns is the practicality in administering the test because it is generally done one on one at a time. Even though the appropriate length of the text depends on the students' level, normally, to work on the students' reading fluency skills, it should be short (Samuels, 1979). Also, he recommended a short meaningful passage to be used in repeated reading in order to improve students' fluency skills. For advanced students, the challenging text may be used. According to Birch (2002), people continue to improve their reading skills on condition that they read challenging and thought provoking materials; thus, various topics should be available for the students such as sports, fashion or fictions.

T. V. Rasinski (2004) suggests that a level-appropriate passage should be approximately 250 words. Also, it was suggested that learners need to read very familiar materials which contain no unknown language features (I.S.P. Nation, 2009). Reutzel and Cooter (2003) point out that observing the difference in a student's fluency with a practiced, self-selected, familiar text versus unpracticed, teacher-

selected, unfamiliar text at the student's level may be informative for teachers. After an appropriate text is selected, next step is administering the test.

## 2. Administering the test

Normally, administering an oral reading fluency test has to be done one on one with each student. After the reading passage is given to the student, the examiner should emphasize that the text should be read in a normal way, and not faster than normal and lets the student read aloud the passage for one minute and tape-record the reading (T. V. Rasinski, 2004). He also recommends that any uncorrected errors made by the student including mispronunciations, substitutions, reversals, omissions, and the end point of the student's reading should be marked in the text by the examiner. To assess a student's miscues, the examiner should have a copy of the story, listen carefully to the oral reading of the test taker and note the miscues that the test taker makes in the provided space (Applegate et al., 2008).

## 3. Evaluating students' oral reading performance: the use of oral reading fluency measures

Historically, "reading rate" has been the focus in measuring oral reading fluency, and consequently, word per minute (wpm) has been normally used to assess students' oral reading fluency performance (Reutzel & Cooter, 2003). It focuses only on the speed of oral reading. Later, the term, reading fluency, has progressed over time (NICHD, 2000), and reading speed has been seen to be a component, yet not the only component of reading fluency. Consequently, word correct per minute (wcpm), the correctly read words produced by the test taker per minute, has been the most

common way in assessing oral reading fluency. It embraces two components of reading fluency, which are reading speed and accuracy. And as only the number of words read correctly is taken into account, it is very important to set a clear standard between correct and incorrect attempt. The followings are some guidelines to determine the correctly read word.

*Figure 2: Curriculum Based Measurement (CBM) Procedures for Assessing and Scoring Oral Reading Fluency (Shinn, 1989, pp. 239-240)*

1. Words read correctly. Words read correctly are those words that are pronounced correctly, given in the reading context.
  - a. The word “read” must be pronounced “reed” when presented in the context of “He will read the book,” not as “red.”
  - b. Repetitions are not counted as incorrect.
  - c. Self-corrections within three seconds are counted as correctly read words.
2. Words read incorrectly. The following types of errors are counted: (a) mispronunciations, (b) substitution, and (c) omissions. Further, words not read within three seconds are counted as errors
  - a. Mispronunciations are words that are misread: dog for dig.
  - b. Substitutions are words that are substituted for the stimulus word: this is often inferred by a one-to-one correspondence between word orders: dog for cat.
  - c. Omissions are words skipped or not read; if a student skips an entire line, each word is counted as an error.
3. Use the three second rule. If students struggle to pronounce a word or hesitate for three seconds, then the students are told the word; and it is counted as an error.

This measurement aims to be used to assess fluency of young native and ESL children. The words counted as incorrect attempts can be categorized into 3 categories; 1) mispronunciations; 2) substitutions and 3) omissions. In this measurement, mispronunciations are the words pronounced incorrectly without the

attempt of accomplished self-corrections. Substitutions are the utterance of the stimulus word instead of the given word. And omissions are the skipped or unread words in the text.

Nevertheless, to be a fluent reader, it is far beyond the ability to read given words correctly. As an integral component of oral reading fluency, the role of expression and phrasing, or prosody has been investigated by many researchers (Valencia et al., 2010). Zutell and Rasinski (1991) created a rubric to assess reading fluency called Multidimensional Fluency Scale (MFS), where prosody comes in to play an important role.



*Figure 3: The Multidimensional Fluency Scale (MFS) (Zutell & Rasinski, 1991, p. 191)*

**Phrasing:**

1. Monotone with little sense of phrase boundaries; frequent word-by-word reading.
2. Frequent two- and three-word phrases; giving the impression of choppy reading; improper stress and intonation that fails to mark ends of sentences and clauses.
3. Mixture of run-ons; mid-sentence pauses for breath, and possibly some chopiness; reasonable stress/intonation.
4. Generally well-phrased, mostly in clause and sentence units with adequate attention to expression.

**Smoothness:**

1. Frequent extended pauses; hesitations, false starts, sound-outs, repetitions, and/or multiple attempts.
2. Several “rough spots” in text where extended pauses, hesitations, and so on, are more frequent and disruptive.
3. Occasional breaks in smoothness caused by difficulties with specific words and/or structures.
4. Generally smooth reading with some breaks, but word and structure difficulties are resolved quickly, usually through self-correction.

**Pace:**

1. Slow and laborious.
2. Moderately slow.
3. Uneven mixture of fast and slow reading.
4. Consistently conversational.

Multidimensional Fluency Scale (MFS) is an informal assessment that can be used to assess students’ reading fluency. Unlike CBM that focuses a great deal on pronunciations and errors, MFS focuses more on the flow of students’ reading. Compare to Shin’s (1989) Curriculum Based Measurement, MFS tends to suit the higher proficiency students. To use MFS, the audio recording is not necessary which raises the degree of practicality in assessing student’s fluency. In this scale, there are

three elements considered which are 1) phrasing, 2) smoothness, and 3) pace. In MFS, phrasing includes the use of stress and intonation to mark ends of sentences and the pauses to appropriately segment the given text. Smoothness refers to the continuation of the utterances without hesitations, false starts and rough spots. And pace is the speed of the utterance. Each category is divided into 1-4 which indicates the different degrees of fluency of a student.

Another widely used rubric is the NAEP's (2002) oral reading Fluency Scale.

It is also a four point scale which focuses majorly on phrasing.

*Figure 4: NAEP oral reading fluency scale, grade 4: Department of Education (2002), USA.*

Fluent	Level 4	Reads primarily in larger, meaningful phrase groups. Although some regressions, repetitions and deviations from text may be present, they do not appear to detract from the overall structure of the story. Preservation of the author's syntax is consistent. Some or most of the story is read with expressive interpretation.
	Level 3	Reads primarily in three- or four- word phrase groups. Some smaller grouping may be present. However, most phrasing seems appropriate and preserves the syntax of the author. Little or no expressive interpretation is present.
Nonfluent	Level 2	Reads primarily in two-word phrase groups with some three- or four- word groupings. Some word by word reading may be present. Word grouping may seem awkward and unrelated to the larger context of sentence or passage.
	Level 1	Reads primarily word by word. Occasionally two- or three-word phrases may occur, but these are infrequent, and or they do not preserve meaningful syntax.

According to Reutzel and Cooter (2003), to adequately assess a student's reading fluency skills, at least four elements should be considered which are "1) automatic decoding of text, 2) reading rate or speed, 3) use of stress, pitch and juncture (prosodic markers) and 4) mature phrasing or chunking of text". Yet, there is no description provided on how each element should be assessed. Later, T. V. Rasinski (2004) adapted his own previous measurement and proposed the adjusted version of MFS.

*Figure 5: The adapted version of Multidimensional Fluency Scale (T. V. Rasinski, 2004, p. 19)*

Dimension	1	2	3	4
Expression and volume	Reads with little expression or enthusiasm in voice. Reads words as if simply to get them out. Little sense of trying to make text sound like natural language. Tends to read in a quiet voice.	Some expression. Begins to use voice to make text sound like natural language in some areas of the text, but not others. Focus remains largely on saying the words. Still reads in a quiet voice.	Sounds like natural language throughout the better part of the passage. Occasionally slips into expressionless reading. Voice volume is generally appropriate throughout the text.	Reads with good expression and enthusiasm throughout the text. Sounds like natural language. The reader is able to vary expression and volume to match his/her interpretation of the passage.

Phrasing	Monotonic with little sense of phrase boundaries, frequent word-by-word reading.	Frequent two- and three-word phrases giving the impression of choppy reading; improper stress and intonation that fail to mark ends of sentences and clauses.	Mixture of run-ons, mid-sentence pauses for breath, and possibly some choppiness; reasonable stress/intonation.	Generally well phrased, mostly in clause and sentence units, with adequate attention to expression.
Smoothness	Frequent extended pauses, hesitations, false starts, sound-outs, repetitions, and/or multiple attempts.	Several “rough spots” in text where extended pauses, hesitations, etc., are more frequent and disruptive.	Occasional breaks in smoothness caused by difficulties with specific words and/or structures.	Generally smooth reading with some breaks, but word and structure difficulties are resolved quickly, usually through self-correction.
Pace	Slow and laborious.	Moderately slow.	Uneven mixture of fast and slow reading.	Consistently conversational.

The adapted version of Multidimensional Fluency Scale consists of 4 indicators. Comparing to the old version, there is one additional indicator which is called expression and volume. This indicator refers to the appropriate use of expression and voice volume. This adapted version has been used widely in many research studies.

Comparing the previously mentioned measures, Figure 2, the curriculum based measurement (CBM), focuses on the correct and incorrect attempts at word level. The aspects in CBM are mostly parallel with the WCPM measure. However, Figure 3, 4 and 5, Multidimensional Fluency Scale, the NAEP oral reading fluency

scale and the adapted version of Multidimensional Fluency Scale, focus on the sentence level, and the errors are unidentified. As the aspects of these measures focus mostly on phrasing, it can be inferred that the major focus of these measures is prosody.

All in all, to develop an English oral reading fluency test, the priority is to define the components of oral reading fluency. The next step is to identify test tasks which can measure the constructs of oral reading fluency test. It is also very significant to create the valid measures which contain a plausible criterion for correctness. These processes have to be done by prioritizing the target users as EFL students. Besides the processes in constructing and administering the English Oral Reading Fluency test, the test takers' attitudes should be assessed as the EORF test is considered new as it is neither in the curriculum set by the Ministry of Education (2008) nor in a standardized test, e.g. TOEIC, TOEFL, IELTS. Consequently, the methods to assess test takers' attitudes will be reviewed.

## **2.13 Assessing Test Takers' Attitudes**

### **2.13.1 Attitude Questionnaire**

The Attitude/ Motivation Test Battery (AMTB) has been developed by Gardner (1985) to focus on the non-linguistic part of the goals of a second language program, which accentuates various aspects that involve language learners' attitude and motivation, for example, wish to carry on studying the language, an interest in learning other languages, etc. AMTB assesses the major affective parts that are concerned with second language learning. Also, it provides a reliable and valid index

of different characteristics about attitudes and motivations, which researchers possibly want to investigate in various contexts.

Test anxiety is an important aspect to consider in administering a test, especially the one that test takers are not familiar with, as test anxiety can affect students in many ways. According to Cizek and Burg (2006), test anxiety can affect students' academic motivation, their attitude toward education and their self-perceptions as a learner. In addition, reading aloud is reported to be highly anxiety-provoking by some students (Gibson, 2008). Thus, test anxiety should be integrated to the questionnaire. The widely used method in assessing test anxiety is using questionnaire. Nist and Diehl (1990) developed a short questionnaire to determine whether test takers experience a mild or severe case of test anxiety.

One significant aspect to look at when administering a test is test takers' motivation because lack of motivation is possibly a threat to proper interpretation of the scores (D. L. Sundre, 2007). As a result, knowing how large a threat is would be very useful. To gauge test-taking motivation of test takers, D. L. Sundre (2007) developed Student's Opinion Scale (SOS) from a study by L. F. Wolf and Smith (1993), with two additional items added by D. L. Sundre (1999). SOS consists of 10 items focusing on two aspects, effort and motivation. In addition, it can be used to accompany various instruments that measure other constructs, for example, scientific reasoning, global history, social sciences, etc.

In summary, the presented literature was related to the areas of reading, reading fluency and reading assessment. Different definitions and the theoretical frameworks of reading fluency were reviewed to come up with the definition of reading fluency for

the study involving three components, rate, accuracy and prosody. Significance of reading fluency and the two aspects of reading, oral and silent reading were discussed to justify the purposes of the research. Finally, to develop an oral reading fluency test, test usefulness (Bachman & Palmer, 1996), reading assessments in terms of both fluency and comprehension and available oral reading fluency measures were also reviewed.



## CHAPTER III

### RESEARCH METHODOLOGY

This chapter presents the details about the procedures and methodology of the research study.

#### 3.1. Research Design

The quantitative approach will be used to answer the following research questions.

1. What are the relative contributions of different oral reading fluency measures: rate, accuracy and prosody in predicting reading comprehension?
  - 1A: What is the contribution of rate to reading comprehension?
  - 1B: What is the contribution of accuracy to reading comprehension?
  - 1C: What is the contribution of prosody to reading comprehension?
2. What are students' attitudes toward an oral reading fluency test?

## 3.2 Population and Sample

### 3.2.1 Population

The population was 250 first year students from faculty of Political Science at Chulalongkorn University. The reason why this population suits the study is that oral reading fluency involves the same constructs as public speaking, one of the most significant skills for political science students. Also, English is incredibly important for students' future careers. According to T. V. Rasinski (2004, p. 4), "a good analogy for understanding reading fluency comes from public speaking". Fluent public speakers employ the same elements associated with reading fluency (i.e., accuracy, appropriate speed, and phrasing and expression) in their speech to facilitate the listener's comprehension. Originally, political science designated the skill by virtue of which a person could manage the affairs of political communities by action and by speech (Strauss, 1959), and as a result, one of the first political skills turning into the object of instruction was the skill of public speaking.

Grabe (2009) mentions that reading research can have an influential impact on students' learning experiences. He also specifies that reading assessment which is treated with care, attention and respect can benefit the learning environment. Hence, the English oral reading fluency test is believed to benefit political science students as the test can be a good practice to evolve students' abilities in both oral reading fluency and public speaking. Not only may the political science students gain the benefits from the test, but the diverse levels of proficiency, ranging from lower to upper intermediate proficiency, also help pinpoint the effectiveness of the test.

### 3.2.2 Sample

From the population, Cochran's formula was used to determine the sample size. At the confidence level of 90%, standard deviation (SD) of 0.5 and the level of precision at 10%, the determined sample size was 53 students. The purposive sampling technique was used to select the sample based on the Chulalongkorn University Test of English Proficiency (CU-TEP) scores. Students with a range of proficiency levels from lower intermediate to upper intermediate were chosen. The main study involved 54 first year students majoring in Sociology and Public Administration, who enrolled in the Experiential English II course during the second semester of the academic year 2013. The test takers were 39 females and 15 males who graduated from secondary schools, which means they studied and passed the required English courses according to the curriculum set by the Ministry of Education of Thailand. They also took and passed the Experiential English I course. Their English proficiency levels varied according to their personal experiences; for instance, some of them graduated from an English Program or a Bilingual Program or had previously taken short courses abroad.

#### *3.2.2.1 Ethical Approval*

The research has gone through the ethical approval procedures. First, the research had been approved by the Committee. Then, the ethical approval was granted by Chulalongkorn University Language Institute as it was in charge of the course the participants were taking. The participants were the volunteered students who were taking Experiential English II with the researcher who was the teacher of the course. The volunteered students, however, had been asked if they would be willing to take

part in the research. They had been informed that they could refuse to participate in the research if it was against their will. Also, the objection would not result in any penalty and would not affect the scores of the course they were taking. In addition, they were informed that they might face discomforts and inconveniences and could withdraw from the research at any time. Then, the research was carried out after the consent was obtained from the participants. (See Appendix E for Consent Form)

#### *3.2.2.2 Roles of the Researcher*

As the researcher was the teacher of the participants and one of the raters, to diminish the possible bias, two strategies were applied. First, the recordings were treated anonymously. The students were told to label their recordings with their ID numbers instead of their names. Second, there were two raters and after the inter-rater reliability was determined, the average scores were used in the study.

### **3.3 Stages of Research**

There are four stages involved in this study.

#### **Stage 1: Instrument validation**

The instruments that are 1) an English oral reading fluency test, 2) the oral reading fluency measures and the comprehension items and 3) an attitudes questionnaire were developed and validated by five experts. They are Ph. D. holders with years of experience in teaching EFL students. Four of them are lecturers at Chulalongkorn University Language Institute, and one of them is a lecturer at the faculty of Humanities, Kasetsart University.

### Stage 2: Pilot Study

A pilot study was conducted in order to try out the instruments, data collection methods and data analysis methods. The participants were 28 first year students (18 females and 10 males) majoring in Public Administration. They were a comparable group of students who shared similar characteristics with the samples in the main study. They also took and passed the Experiential English I course. Their English proficiency levels varied according to their personal experiences; for instance, some of them graduated from an English Program or a Bilingual Program or had previously taken short courses abroad. In addition, the pilot study was carried out after the students gave their consent on the consent form.

### Stage 3: Revision

Revision was made on the oral reading fluency test and the measures by using data gained from the pilot study.

### Stage 4: Main study

The main study was carried out. The revised test and measures were used with the sample to investigate how different measures contribute to comprehension.

## **3.4. Research instruments**

There were three types of research instruments in this study: English Oral Reading Fluency Tests, Measures and Attitude Questionnaire.

### 3.4.1 Test Construction Procedures

The test construction procedures are as follows.

#### 3.4.1.1 Select the Reading Passages

- Select the topics of the reading passages
- Design the reading texts
- Estimate the level of difficulty of the texts

#### 3.4.1.2. Write Test Specifications: Determine the constructs and criteria

#### 3.4.1.3 Construct Comprehension Items

#### 3.4.1.4 Validate the Tests

- First revision

#### 3.4.1.5 Pilot the Tests

#### 3.4.1.6 Conduct Item Analysis

- Final revision

### *3.4.1.1 Select the Reading Passages*

Three English Oral Reading Fluency tests were created as using an “average algorithm” (Valencia et al., 2010, p. 276), the estimation of students’ performance is more reliable than using only one passage (Valencia et al., 2010). The crucial part of the oral reading fluency test, which should be prioritized, is the reading passage. The difficulty of the texts has mostly to do with the difficulty of the vocabulary. However, according to the recommendation of I.S.P. Nation (2009), the reading passages should be very familiar to the students. Thus, three reading passages were created by using the selected topics and vocabulary related to students’ textbook, English Unlimited, as a guideline. The book is used for the course, Experiential English I and II. The created passages were approximately 250 words each. To make sure that the reading passages have the similar level of difficulty, their readability will be tested by using an application from the website ([http://www.online-utility.org/english/readability\\_test\\_and\\_improve.jsp](http://www.online-utility.org/english/readability_test_and_improve.jsp)). If three reading passages provide the similar reading ease scores, it is assumed that they have the similar level of difficulty. After the readability of the texts were adjusted, they were checked by a native speaker who has been working at Chulalongkorn University Language Institute.

### 3.4.1.2 Write Test Specifications

Test specifications will be described following Alderson, Clapham and Wall's (1995) checklist of what test specifications should include.

1. The test's purpose: The purpose of the English Oral Reading Fluency test is to test students' oral reading fluency skills. In addition, the purpose of the comprehension items is to test students' reading comprehension from oral reading.

2. Test levels: inter-mediate to upper-intermediate

3. Constructs:

#### Measures

English Oral Reading  
Fluency measures

1. Rate

2. Accuracy

3. Prosody

Comprehension

#### Constructs

Read the text orally with appropriate speed

Read the words in the text orally with accuracy

Read the text orally with appropriate phrasing

- Comprehend the text

- Recall the main idea and important details of the story

- Answer comprehension questions

4. Description of textbook: English Unlimited

5. Time for the test: Up to 3 minutes for oral reading and 10 minutes to answer comprehension questions

6. Text-length: Approximately 250 words for each passage

7. Text types: To create three reading passages, three topics were chosen from the students' textbook, English Unlimited. Textual types of these passages are descriptive and narrative. All created passages were based on authentic texts with some modifications.

8. Language skills to be tested: Oral reading fluency and reading comprehension

9. Test tasks: 1. Read the given passage orally and audio-record the reading.

2. Answer the comprehension questions.

10. Criteria for marking:

English Oral Reading Fluency

1. Rate (Speed) was measured as the number of the words students read per minute, disregarded for errors.  $\text{Words per minute} = \left( \frac{\text{the number of the total words}}{\text{the time the student used to finish reading in seconds}} \right) \times 60$

2. Accuracy was measured as the percentage correct words of the total words read per minute. Mispronunciations, omissions, repetitions and substitutions are counted as errors.  $\text{Accuracy} = \left( \frac{\text{the number of the total words} - \text{errors}}{\text{the number of the total words}} \right) \times 100$

- Mispronunciations were misread words, for example, the pronunciation of singular versus plural nouns, stress (present as (adj. & n. 'prez ənt) and (v. pri'zent), the in the[th uh] book versus the[th i] earth).

- Omissions were words skipped or unread.
- Repetitions were words nonexistent in the text.
- Substitutions were words replaced for other meaningful words.

(Self-corrections and mispronunciations due to dialect or regional differences were not counted as errors.)

3. Prosody was measured by using the 4-point scale rubric focusing on four aspects (phrasing, stress, intonation and pauses)

Comprehension

0 indicated an incorrect response, 1 indicated a correct response.

#### *3.4.1.3 Construct Comprehension Items*

The constructs of the comprehension test were determined, which are the abilities to comprehend the text, recall the main idea and important details of the story, and answer comprehension questions. The selected formats of the items were multiple choice format as it is easy to score and can be used with a variety of objectives (Chappuis et al., 2010) and short answer format as it is flexible and straightforward (Cunningham, 1998) and it does not require much of writing skills. The number of the items were limited to five items per reading passages because the test aims to test the students' previously mentioned comprehension skills not the student's memorization.

### 3.4.1.3.1 English Oral Reading Fluency test I

Figure 6: The Selected Topic (Pandas)



**Dr Lu Zhi – saving pandas**  
By Carol Lane

Like many children, Lu Zhi was always curious about the natural world around her. But unlike most kids, she was to make preserving that world – and one of its most precious species – her life's work. Dr Lu, director of the Shanshui Conservation Center in China, is one of the world's top experts on panda conservation. After years of laboratory work and field research, she has won international acclaim and too many awards to count.

**Q: How did you come to dedicate yourself to saving the panda?**

**Lu Zhi:** Initially I studied biology but I was attracted to field work and wanted to work outside of the lab. As an undergrad, I began <sup>1</sup>studying with a professor who was focused on pandas. The more I learned, the more I wanted to learn. And once I began to understand the danger they faced as a species – man's destruction of their habitat – I just felt I had to do something. I wanted to take all the knowledge and training I'd built up and use it to benefit the environment.

**Q: What's the biggest challenge you face?**

**Lu Zhi:** The hardest thing is to change people's minds and behaviour, whether it's the government, business or everyday people. Farmers are worried about <sup>2</sup>paying their bills, local governments are concerned about jobs and education, and conservation isn't everyone's top priority.

**Q: How do you change minds?**

**Lu Zhi:** It's always a struggle. But the most important thing is to understand and appreciate why people feel the way they do. Everybody likes pandas but their everyday issues take precedence. You have to put yourself in their shoes and when you do, you realise you'd feel the same. That helps you come up with solutions. <sup>3</sup>Complaining and scolding don't work.

**Q: What is your experience of working with the Chinese government?**

**Lu Zhi:** There's a lot of cooperation. Years ago, while <sup>4</sup>doing research in an area the logging companies worked in, my professor worked with the government to turn the area into a reserve, and showed people things could change. I was really encouraged. Four years after that, the government actually stopped all commercial logging in western China and this benefited the panda a great deal. The <sup>5</sup>logging companies, subsidised by the government, became tree planters. They became our ally.

**Q: Is logging still a threat to the panda?**

**Lu Zhi:** No. But habitat destruction continues in other ways because they're <sup>6</sup>building roads and more tourists are coming. But tourism can be managed in a non-invasive, low-impact way. That's the challenge for that industry.

**Q: You seem so positive. Do you ever get discouraged?**

**Lu Zhi:** Sure. But I get strength from the people I work with, my friends. What we're doing is part of human nature so I can always find allies.

**Q: What do you hope will be your life's greatest accomplishment?**

**Lu Zhi:** That's easy! I hope one day my work won't be needed any more.

The passage was taken from the students' course book, English unlimited, by Tilbury, Hendra, Rea, and Clementson (2011)

The parallel passage I (final version)

### **Reading Passage I**

Pandas live in bamboo forests on the upper mountain slopes of western and southwestern China. The size of their home range, when compared to the home ranges of other bear species, is quite small. Also, female pandas tend to stay in smaller ranges than male pandas do.

Pandas naturally live in the grassy lands of China, staying in rocky places and in hollowed out trees. In the winter, the pandas find shelter in bamboo thickets; they also eat the bamboo. When warmer summer weather arrives, the pandas move up higher into the cold mountains.

Pandas spend most of their time by themselves. Most avoid direct contact with others of their own kind. At some stage in their life, pandas are forced to spend time with each other. In the spring, males and females must find each other in order to mate. In autumn, the females give birth to one cub which will live with her for the next 18 months or more.

Pandas show their readiness to fight by lowering their heads between their front legs, often hiding their eyes with their paws. This position is usually present in females during mating. Aggression is shown by a bark that would send an opponent running up the nearest tree.

Although the pandas will eat many different kinds of plants, 99% of their diet consists of bamboo parts. Pandas will eat 10 to 18 kilograms of bamboo leaves and stems each day. Occasionally, they catch and eat a small bird or small mammal.

Source: <http://www.edu.pe.ca/southernkings/panda.htm>

Number of characters (without spaces) :	1,118.00
Number of words :	249.00
Number of sentences :	17.00
Average number of characters per word :	4.49
Average number of syllables per word :	1.46
Average number of words per sentence:	14.65

Indication of the number of years of formal education that a person requires in order to easily understand the text on the first reading	
Gunning Fog index :	8.38
Approximate representation of the U.S. grade level needed to comprehend the text :	
Coleman Liau index :	8.62
Flesch Kincaid Grade level :	7.27
ARI (Automated Readability Index) :	7.03
SMOG :	9.55
Flesch Reading Ease :	68.88

The Flesch Reading Ease score equals 68.88, which refers to the standard level of readability (60-69 = Standard). The number of years of formal education that a person requires in order to easily understand the text on the first reading is 8.62 years (Gunning Fog Index). The Approximate representation of the U.S. grade level needed to comprehend the text is between grades 7-10 (7.03 -9.55).

Readability calculator:

[http://www.online-utility.org/english/readability\\_test\\_and\\_improve.jsp](http://www.online-utility.org/english/readability_test_and_improve.jsp)

For the mapping score of Flesch reading Ease readability score and it corresponding readability level see Appendix A.

**Passage I: Comprehension questions**

Instructions: Choose the correct answer for the following questions.

1. What are the main aspects about panda mentioned in this story?
  - A. Panda's life cycle, behavior and appearance
  - B. Panda's appearance, habitat and life cycle
  - C. Panda's life cycle, food and endangerment
  - D. Panda's habitat, behavior and food
2. Which statement is TRUE?
  - A. Pandas live in bigger home range than other bear species do.
  - B. In the summer, pandas find shelter in bamboo thickets.
  - C. Male pandas stay in smaller ranges than female pandas do.
  - D. Pandas in nature live in the grassy lands of China.
3. Pandas spend most of their time by themselves. However, at some stage in their life, pandas are forced to spend time with each other to\_\_\_\_\_?  
\_\_\_\_\_
4. How do pandas show their aggression?
  - A. By lowering their heads between their legs
  - B. By barking at their opponents
  - C. By hiding their eyes with their paws
  - D. By chasing their opponents
5. According to the passage what are pandas' occasional foods?  
\_\_\_\_\_

## 3.4.1.3.2 English Oral Reading Fluency test II

Figure 7: The Selected Topic (The Deep Sea)

**Forget space travel. The ocean is our final frontier**  
**Beneath the surface of the sea lie untold mysteries and opportunities**  
**Frank Pope**

**I**t seems we can't get off the planet fast enough. Two thirds of Nasa's annual budget is devoted to manned space exploration, and that figure will grow with the USA's decision to send a man to Mars in 2037. We've seen all there is to see on Earth, right? Wrong. The final frontier is here, beneath the surface of the sea.

Heading down into the ocean, human limits are quickly reached. At 200 metres, the water is as black as a moonless night. Most nuclear submarines would implode before they reach 1km down. At 3km – still less than the average depth of the ocean – there's a good chance that

you'll discover a species completely new to science. The deepest-diving whales go no further. At the very bottom, more than 11km down, lie the Challenger Deeps. Twelve humans have walked on the Moon. None has set foot in the Deeps, and only two have seen them with their own eyes.

Yet things live down there. Big things. Microphones throughout the sea listen for enemy submarines, but no one has explained the undersea roar that occasionally startles listeners. The sound appears biological in origin, and its wavelength suggests that it is produced

by an animal bigger than a blue whale, the largest creature known on the planet.

In the late 1990s, a deep-water submersible was dropped in the Southern Ocean, and passing 4,000 metres – well beyond the diving depth of any whale – it detected something enormous passing beneath it. Surprised? Don't be. The ocean covers 70% of the planet's surface and we've investigated less than 5% of it. We know more about the dark side of the Moon than about the bottom of the sea.

One reason that we explore space is to find evidence of other life forms. The search for extraterrestrial life is important, but robots can look beneath the dry rocks of Mars better than humans. The idea of landing on an alien world to greet alien life is fantasy. For the real thing, I suggest heading down in a deep-diving research submarine.

Satellites and unmanned space probes allow us to look at our planet with a global perspective and stare into the history of the universe. They're absolutely vital for doing ocean research too, but they can't look under the sea, the only place where we can search for clues to the origin of life itself. To do that, we need ships and submersibles, manned and robotic. The cost of fuel-intensive marine expeditions is rising, but the results would benefit all our lives. Understanding the oceans will give us access to new sources of food, drugs and energy.

It's now more than 50 years since explorers Jacques Piccard and Don Walsh made their pioneering descent into the Challenger Deeps. After that, the focus of our imagination turned to the heavens, but perhaps it's time to begin a new era of sea exploration. Manned exploration of space is science fiction. The adventure of the deep sea is science fact.

The passage was taken from the students' course book, English unlimited, by Tilbury et al. (2011).

The parallel passage II (final version)

### **Reading Passage II**

Despite the fact that this world is quite accessible compared with other planets in our own solar system, the deepest depths of the ocean remain almost unexplored. The deep sea is the final frontier of our home planet. It can roughly be defined as everything below 200 meters.

We know so little about the deep sea. We don't know enough about how the ocean works to be able to predict events. That's why we need to keep studying the deep sea and the sea in general. We are still exploring space, and we should still be exploring the deep ocean as well. Many scientists are looking to the deep sea to try to solve some big questions about the role it plays in the Earth's climate. The oceans are taking up a huge amount of the heat that results from global warming. In order to predict how much and how fast the Earth is going to warm in the future due to changes in greenhouse gas concentrations and other changes, we need to know how much energy it's taking up now. The oceans take up the vast majority of this heat.

More humans, 12 in all, have walked on the moon than have traveled to the deepest parts of our own planet. Only two men have visited the very deepest spot on Earth, the Challenger Deep in the Mariana Trench. Over the last several decades, scientists have found some strange and massive creatures living in the deep. They agree that the stakes for understanding what happens in the deep are high for everyone.

Source: <http://www.livescience.com/30890-ocean-deep-mysteries-exploration.html>

Number of characters (without spaces) :	1,143.00
Number of words :	265.00
Number of sentences :	15.00
Average number of characters per word :	4.31
Average number of syllables per word :	1.41
Average number of words per sentence:	17.67

<i>Indication of the number of years of formal education that a person requires in order to easily understand the text on the first reading</i>	
Gunning Fog index :	8.84
<i>Approximate representation of the U.S. grade level needed to comprehend the text :</i>	
Coleman Liau index :	8.04
Flesch Kincaid Grade level :	7.94
ARI (Automated Readability Index) :	7.77
SMOG :	9.32

Flesch Reading Ease : 69.38

The Flesch Reading Ease score equals 69.38, which refers to the standard level of readability (60-69 = Standard). The number of years of formal education that a person requires in order to easily understand the text on the first reading is 8.84 years (Gunning Fog Index). The Approximate representation of the U.S. grade level needed to comprehend the text is between grades 8-10 (7.77 -9.32).

**Passage II:** Comprehension questions

Instructions: Choose the correct answer for the following questions.

1. What is the story mainly about?

- A. Our mysterious planet
- B. The deep sea
- C. Space travel
- D. The surface oceans

2. What do scientists do to solve some big questions?

- A. Keep exploring in the deep sea
- B. Keep exploring in space
- C. Keep exploring in the surface oceans
- D. Keep exploring in the earth

3. According to the passage, the oceans take up the majority of the heat that results from

\_\_\_\_\_

4. How many people have been to the deepest spot on Earth?

\_\_\_\_\_

5. Why understanding what happens in the deep is important to everyone?

- A. Because the oceans cover more than 70 percent of the earth.
- B. Because massive creatures are living there.
- C. Because it can help us predict global warming rate.
- D. Because scientists think there are lots of rare elements.

## 3.4.1.3.3 English Oral Reading Fluency test III

Figure 8: The Selected Topic (The Camera Crew)



**LIFE ON SET**  
**The Camera Crew**

focus puller

clapper loader

camera operator

director of photography

director

At the heart of the creative process, the **director** is responsible for interpreting the screenplay and transforming it into a film with its own distinctive style. The director must be able to communicate their vision not only to the actors but to all the technical departments – lighting, sound, special effects, and so on. On a film set, everybody is accountable to the director. Off set, the director is accountable to nobody except the producer – the person with the money! If the film is a big success, the director will get most of the credit. But look through any film guide and notice how many directors' names appear just once, because they were never invited to direct again.

The **director of photography (DP)** is in charge of the camera and lighting crew. The director will talk to the DP in detail about how they 'see' particular shots. Then it's up to the DP to make sure the team delivers exactly what the director wants. Despite their relatively low profile with the public, creative and reliable DPs are highly regarded in the film industry. A DP on big-budget films will experience many of the things a director does – the travel, the top hotels, the respect – but without taking the blame if it all goes wrong. That's the director's job!

The **camera operator** starts and stops the camera as instructed by the DP. It's the camera operator's responsibility to make sure the camera moves smoothly and to be aware of where the boom – the long pole that holds the microphone – is located, so that it doesn't get into shot. Sometimes the director or DP will take on the role of camera operator too.

The **focus puller's** main task is to focus the camera so that the images being recorded are completely clear at all times. As the focus puller doesn't look through the camera, this requires a high level of expertise, especially if both actors and camera are moving at once. The focus puller also 'builds' the camera before shooting and puts it away at the end of the day. While the camera operator is free to go off and talk to the director or DP about upcoming shots, the focus puller rarely leaves the camera. During shooting, the camera 'belongs' to the focus puller.

The **clapper loader's** duties include loading film into the camera, unloading used film – carefully! – and making sure it's delivered safely to the developers. As the clapper loader literally holds the results of everyone's hard work in their hands every day, this can be one of the most stressful jobs on set. They also operate the clapper board, the small chalk board filmed at the beginning of every take so that the correct pieces of film can be found later on.

The passage was taken from the students' course book, English unlimited, by Tilbury et al. (2011).

The parallel passage III (final version)

### **Reading Passage III**

Pre-production is all about planning and preparation. It serves as a map to keep you on track and to limit possible surprises during video production. Generally, it covers story and script, a shot list and choosing locations to shoot. The script is the map for your story, and can be as detailed as you need it to be to get to where you want to go. Your script should simply be a word for word transcript of everything you want to say. It should contain everything you need.

Once you have a script, you can build your shot lists. Here are a few tips to keep your shots simple and manageable. First, you don't have to shoot your video in the order it will appear. For your first video production, you should shoot as many scenes as possible. This will allow you to better control the audio to reduce noise. Lighting is just as important as audio. People will notice inconsistent lighting as much as poor audio. Don't move the camera unless you have to. You should use locked shots to help maintain a visual consistency throughout your video. Locked shots make your limited resources and technical skill less obvious.

Bright locations are your best bet, but be cautious of inconsistent lighting. If you can't find a well lit office, shooting outdoors on a sunny day might be best. But remember to keep your lighting consistent. And don't shoot anything on a busy street if you are hoping to use the audio. The background noise will wash out anything your audience wants to hear.

Source: <http://simplestoryvideos.com/2013/11/how-to-make-the-perfect-kickstarter-video-step-two-pre-production/>

Number of characters (without spaces) :	1,192.00
Number of words :	265.00
Number of sentences :	21.00
Average number of characters per word :	4.50
Average number of syllables per word :	1.54
Average number of words per sentence:	12.62

<i>Indication of the number of years of formal education that a person requires in order to easily understand the text on the first reading</i>	
Gunning Fog index :	9.27
<i>Approximate representation of the U.S. grade level needed to comprehend the text :</i>	
Coleman Liau index :	8.32
Flesch Kincaid Grade level :	7.50
ARI (Automated Readability Index) :	6.07
SMOG :	9.97
Flesch Reading Ease :	63.77

The Flesch Reading Ease score equals 63.77, which refers to the standard level of readability (60-69 = Standard). The number of years of formal education that a person requires in order to easily understand the text on the first reading is 9.27 years (Gunning Fog Index). The Approximate representation of the U.S. grade level needed to comprehend the text is between grades 6-10 (6.07 -9.97).

**Passage III: Comprehension questions**

Instructions: Choose the correct answer for the following questions.

1. What is the story about?
  - A. Choosing location to shoot
  - B. Making shots
  - C. Camera tips
  - D. Pre-production processes
  
2. What should be in details as much as possible to get to where you want to go?
  - A. Your story
  - B. Your script
  - C. Your shot list
  - D. Your setting
  
3. Which statement is TRUE?
  - A. You have to shoot the video in the order it will appear.
  - B. Scenes should be shot as many as possible.
  - C. Lighting is more important than audio.
  - D. You should move the camera often to get good pictures.
  
4. What help(s) you keep a better visual consistency and make your limited resources less obvious?  

---
  
5. Where are the best locations to shoot?
  - A. Colorful scenes
  - B. Well-decorated offices
  - C. Disturbed streets
  - D. Constantly lit rooms

#### *3.4.1.4 Validate the Tests*

To validate the reading passages and comprehension items, three crucial components of validity, appropriateness, meaningfulness and usefulness (Wasanasomsithi, 2004), were considered. Five experts were asked to judge the appropriateness of the reading passages based on the qualities of test usefulness (Bachman & Palmer, 1996). The format of the instruments was also considered as it is the other aspect of content validation (Wasanasomsithi, 2004), the texts were assured that they are clear with the appropriate font size.

To ensure the validity and reliability of the measures, the validation was conducted by 5 experts, who are Ph. D. holders with years of experience in teaching EFL students. Four of them are lecturers at Chulalongkorn University Language Institute, and one of them is a lecturer at the faculty of Humanities, Kasetsart University. Such aspects of content validation such as the appropriateness of font size, and the clarity of printing and directions were also examined.

#### *3.4.1.5 Pilot the Tests*

After revision, the tests were used with 28 first year students majoring in Public Administration. They were a comparable group of students who shared the similar characteristics with the samples in the main study.

After the pilot, item analysis was carried out as a part of test construction steps. The Item Difficulty Index and the Discrimination Index were calculated as follows.

### 3.4.1.6 Conduct Item Analysis

$$\text{Item Difficulty Index (IDiff)} = \frac{N_{\text{correct}}}{N_{\text{total}}}$$

$N_{\text{correct}}$  = number of students answering correctly

$N_{\text{total}}$  = number of students taking the test

Item Difficulty Index based on Kelley's (1939) derivation

Percentage Range	Difficulty Index	Interpretation
75%-100%	0.75 – 1.0	Easy
26%-74%	0.26 – 0.74	Average
0-25%	0.25 or below	Difficult

$$\text{Item Discrimination Index} = IF_{\text{upper}} - IF_{\text{lower}}$$

$IF_{\text{upper}}$  = item difficulty for the upper group

$IF_{\text{lower}}$  = item difficulty for the lower group

The pilot items for each test consisted of 1 easy item, 3 average items and 1 difficult item. After the pilot, the test was revised, finalized and used to collect the data.

### 3.4.2 Attitudes Questionnaire

The questionnaire aims at assessing students' attitudes concerning factors possibly affecting students' attitudes in taking the test which are 1) students' perception toward learning English, 2) students' test anxiety, 3) students' attitude toward the English Oral Reading Fluency Test and 4) students' motivation. To create the questionnaire, multiple frameworks were reviewed and analyzed. Then, in taking into account of the factors, particular frameworks were selected to be revised to suit the purpose of the questionnaire which are attitude/ motivation test battery by Gardner (1985), Nist and Diehl's (1990) test anxiety questionnaire, and Student Opinion Scale items by D. L. Sundre (2007).

To avoid mistranslation, the questionnaire was written in both English and Thai. Once finished, the experts were asked to judge the appropriateness of the questions derived from the adapted framework to ensure that the questions are valid. After the validation process, experts' comments were used to adjust the questionnaire to be used for the pilot study. The final revision was made after the pilot study. The finalized questionnaire consists of four parts. Part I, Attitudes toward Learning English, examines the attitudes of the students toward learning English. Part II, English Oral Reading Fluency Test Anxiety, determines if students experience a mild or severe case of English Oral Reading Fluency test anxiety. Part III, Attitude toward the English Oral Reading Fluency Test, assesses students' ideas and impressions about the English Oral Reading Fluency Test. Part IV, Student Opinion Scale Items, scrutinizes students' motivation. The final revision of the questionnaire can be found in the Appendix B.

### 3.5 Data Collection

#### 3.5.1. Exploring Different Oral Reading Fluency Measures in Predicting Comprehension Scores

1. Instruments validation: The frameworks used for developing oral reading fluency tests, comprehension questions and measures were analyzed and synthesized. The instruments were then piloted with 28 students. Multiple adjustments were made until the instruments were acceptable in the experts' view. Then, they were used with 54 students in the main study.

2. Increasing the level of familiarity: Before collecting the scores, the students were familiarized with the test processes due to a consideration that if the students are familiar with the test, it will possibly decrease the anxiety which may come from taking the test, especially an unfamiliar one.

3. English oral reading testing: For each test, the students were asked to read a 250 words-long passage aloud until they finished. Before they started, I emphasized that the text should be read in a normal way (not too fast or too slow) as recommended by T. V. Rasinski (2004).

4. Comprehension testing: After the students' oral reading performance was audio-recorded, the reading passages were removed. Then, the students were asked to answer the comprehension questions.

5. Scores collecting: Students' performances were rated and scored following the criteria mentioned previously.

### 3.5.2. Investigating Students' Attitudes

After the students took the EORF tests, they were asked to rate their attitudes toward the test by completing the attitude questionnaire items.

## 3.6. Data Analysis

### 3.6.1. Analyzing the Relative Contributions of Rate, Accuracy and Prosody in Predicting Comprehension

1. *Rate (Speed)*: Many research studies have mentioned that one of the abilities in oral reading fluency is the ability to read rapidly e.g. (Grabe, 2009; T. V. Rasinski, 2004). The connection between reading rate and comprehension can be explained by using automaticity theory of Laberge and Samuels (1974) as they mention that the fluent process of decoding occurs automatically. As a result, the attention which is limited can be allocated to the process of comprehending a text making it much easier. Also, it is more likely that low proficiency readers are those who cannot read the texts hastily. Thus, reading rate should be able to predict reading comprehension in the way that those who can read fast should have higher comprehension than those who cannot.

2. *Accuracy*: The degrees of accuracy contribute to reading comprehension in the way that if a reader is able to read words correctly, it is either because the words are part of his/her sight-word vocabulary or they comes from his/her use of effortful decoding strategy such as sounding out the word (Penner-Wilger, 2008). Daane et al. (2005) indicates that accuracy measures the precision in oral reading of the words in a text, and those who read with the fewest errors demonstrated greater comprehension

on the main NAEP reading assessment. Thus, it is assumable that the more accuracy one performs, the better ability of comprehension one possesses.

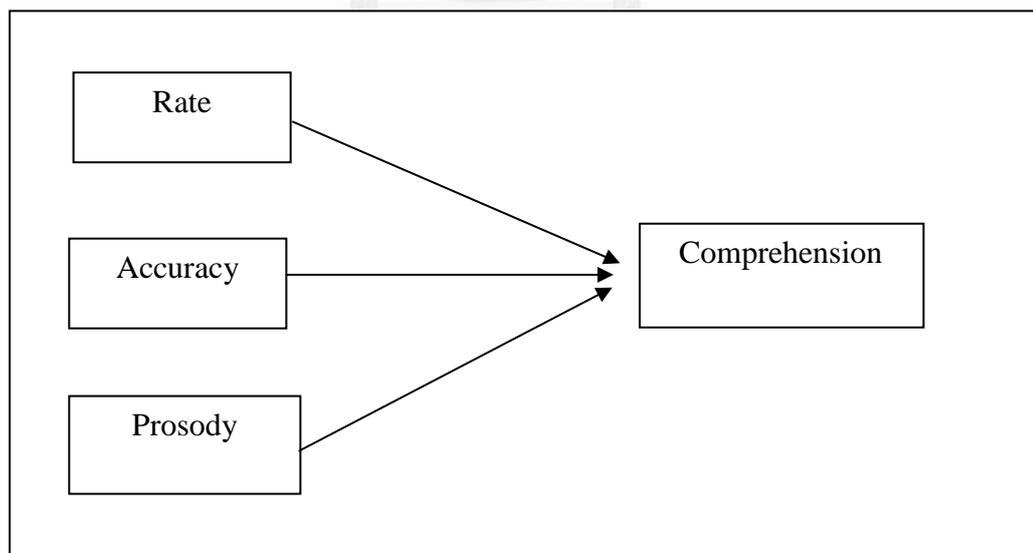
3. *Prosody*: In research studies, speed and accuracy have been used more frequently to measure oral reading fluency than prosody. The major reason is possibly because measuring prosody is somehow subjective as compared to reading rate and accuracy. Nonetheless, prosody is one of the oral reading fluency components which has been mentioned in many research studies e.g. (Fuchs et al., 2001; Grabe, 2009; Penner-Wilger, 2008; T. V. Rasinski, 2004; Valencia et al., 2010). According to T. V. Rasinski (2004), when readers embed appropriate volume, tone, emphasis, phrasing, and other elements in oral expression, they are giving evidence of actively interpreting or constructing meaning from the passage. Valencia et al. (2010) indicate that to read text with comprehension one needs to process both individual words and to analyze their phrasal groupings. Additionally, they found that at the later stages of reading development, prosody is a strong predictor of oral reading fluency and provides a strong correlation to comprehension. They concluded that as the students become more skilled readers, prosody plays more important role to comprehension than rate and accuracy. However, the inaccuracy of the results was found at one minute which possibly came from the time the students needed to become acclimated to the task (Daane et al., 2005).

After the comprehension scores from three passages were obtained, three different measures of oral reading fluency (i.e., rate, accuracy, and prosody) were used to obtain students oral reading fluency scores. There were two raters for accuracy and prosody measure which are considered subjective. One of the raters was

the researcher, and the other was a native speaker, who is currently working as a teacher at Chulalongkorn University Language Institute. As the number of the test takers was 54, and each of them read three reading passages, the total number of recordings was 162. However, there were some technical problems, and the number of the usable recordings after disregarding the broken ones was 151. I scored all 151 recordings. However, the co-rater were asked to score 78, 27 recordings from each reading passage, which was more than 50 percent of the total recordings. To obtain intra-rater reliability, 151 recordings were split to analyze the same time of the day so the raters weren't too tired which might cause the inconsistency in rating. To measure inter-rater reliability, Pearson product-moment correlation coefficient was used.

After the reliability of the scores was measured, multiple regression was used to analyze to what extent rate, accuracy and prosody predicted comprehension scores.

*Figure 9: Multiple Regression Model*



### 3.6.2 Analyzing Students' Attitudes toward the Test

The questionnaire consisted of four parts. Each part examined different factors affecting students' attitudes toward the EORF test, i.e. 1. Attitudes toward Learning English, 2. English Oral Reading Fluency Test Anxiety, 3. Attitude toward the English Oral Reading Fluency Test and 4. Student Opinion Scale Items. The data derived from each part of the questionnaire was analyzed by using descriptive statistics, mean score ( $\bar{x}$ ) and Standard Deviation (SD).



## CHAPTER IV

### RESULTS

This chapter is divided into two main parts, which are the presentations of the results and the discussion of the results.

#### 4.1 Results of the Study

The results of the study are discussed based on the following research questions.

1. What are the relative contributions of different oral reading fluency measures: rate, accuracy and prosody in predicting reading comprehension?
  - 1A: What is the contribution of rate to reading comprehension?
  - 1B: What is the contribution of accuracy to reading comprehension?
  - 1C: What is the contribution of prosody to reading comprehension?
2. What are students' attitudes toward an oral reading fluency test?

#### 4.1.1 Results of the Scores from the English Oral Reading Fluency Tests

*Table 1: The Scores of Rate (words per minute)*

Test I			Test II			Test III		
Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
61	175	106	55	202	113	59	175	114

While the minimums of words per minute were 61, 55 and 59, the maximums were 175, 202 and 175. The averages of the reading rate were 106, 113 and 114 respectively.

*Table 2: The Scores of Accuracy (from the total of 100%)*

Test I			Test II			Test III		
Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
69	99	89	70	99	93	78	99	92

The minimums of the accuracy scores were 69, 70 and 78 while the maximums were 99 for all the three tests. The averages of the accuracy scores were 89, 93 and 92. In L1 reading, according to the Fountas and Pinnell Benchmark Assessment system (Fountas & Pinnell, 2013), it was suggested 95% accuracy for instructional reading and 98% accuracy for independent reading. 90% accuracy was said to be very poor reading for high school or adult readers.

*Table 3: The Scores of Prosody (from the total of 20)*

Test I			Test II			Test III		
Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
5	20	13	5	20	12	5	20	12

The minimums of the accuracy scores for all the three tests were 5 while the maximums were 20. The averages of the prosody scores were 13, 12 and 12 respectively.

To ensure the inter-rater reliability, analyses were done with the accuracy and the prosody scores gained from the two raters as the scorings were considered subjective unlike rate scores, which can be calculated by using the following formula: Rate equals 263 (the length of the passage)/the total time the student used in seconds x 60. From 151 recordings, the co-rater was asked to score 78 (more than 50% of the total). Then, Pearson product moment correlation was used to find the inter-rater reliability for accuracy and prosody scores. The results are shown in the following tables, Table 4 and 5.

*Table 4: Inter-Rater Reliability of Accuracy*

	Rater 1 (Researcher)	Rater 2 (A native speaker)
Rater 1 (Researcher)	1	.87**
Rater 2 (A native speaker)	.87**	1

\*\*  $p < 0.001$  level (2-tailed).

Regarding accuracy, there was a very strong positive correlation between the two raters ( $r = .87$ ,  $N=78$ ,  $p < .001$ ).

*Table 5: Inter-Rater Reliability of Prosody*

	Rater 1 (Researcher)	Rater 2 (A native speaker)
Rater 1 (Researcher)	1	.91**
Rater 2 (A native speaker)	.91**	1

\*\*  $p < 0.001$  level (2-tailed).

Concerning prosody, there was also a very strong positive correlation between the two raters ( $r = .91$ ,  $N=78$ ,  $p < .001$ ).

#### *4.1.1.1 The Relationships among Independent Variables (rate, accuracy and prosody) and between each Independent Variable to Comprehension*

Since the multiple regression analysis was used, the issues of multicollinearity must be addressed due to the fact that increases in multicollinearity may result in the reduction of the overall  $R^2$ , confused estimation of the regression coefficients and negative effects of the statistical significance of coefficients (Hair, Black, Babin, & Anderson, 2010). The problems of multicollinearity can be seen if bivariate

correlations are at 0.7 or higher, yet, levels of multicollinearity can generally be accepted if tolerance values are less than .10 or VIF values are higher than 10 (Hair et al., 2010). Thus, in the present study, treatments of multicollinearity will be applied if VIF is found to be greater than 10, which is the common cutoff value (Freund, Wilson, & Sa, 2006; Fuchs et al., 2001; Hair et al., 2010).

The contribution of rate, accuracy and prosody will be discussed test by test as follows.

#### 4.1.1.1.1 The Results of the English Oral Reading Fluency Test I

*Table 6: Test I: Correlations among the Different Oral Reading Fluency Measures*

	Rate (N = 50)	Accuracy (N = 50)	Prosody (N = 50)
Rate	1	.52**	.83**
Accuracy	.52**	1	.77**
Prosody	.83**	.77**	1

\*\*  $p < 0.001$  level (2-tailed).

Table 6 shows the relationships among the three measures, rate, accuracy and prosody from test I. Rate and accuracy had a moderate positive relationship ( $r = .52$ ,  $N=50$ ,  $p < .001$ ) which was the weakest while accuracy and prosody had a strong positive relationship ( $r = .77$ ,  $N=50$ ,  $p < .001$ ), and prosody and rate had the strongest positive relationship ( $r = .83$ ,  $N=50$ ,  $p < .001$ ).

*Table 7: Test I: Bivariate Correlations of each Oral Reading Fluency Measures to Comprehension*

	Rate (N = 50)	Accuracy (N = 50)	Prosody (N = 50)
Comprehension (N = 50)	.47**	.43**	.51**
p (2-tailed)	.002	.004	.000

\*\* p < 0.01 level (2-tailed).

Regarding bivariate correlations, Table 7 shows that there were significant positive moderate correlations between rate and comprehension ( $r = .47$ ,  $N=50$   $p = .002$ ), accuracy and comprehension ( $r = .43$ ,  $N=50$   $p = .004$ ), as well as between prosody and comprehension ( $r = .51$ ,  $N=50$ ,  $p < .001$ ).

*Table 8: Test I: The Relative Contributions of Rate, Accuracy and Prosody in Predicting Comprehension.*

Variables Entered	Regression Coefficients			Statistical Significance		Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.(p)	Tolerance	VIF
(Constant)	-1.602	2.899		-.553	.584		
Rate	.010	.012	.205	.825	.415	.300	3.333
Accuracy	.025	.038	.152	.674	.505	.365	2.737
Prosody	.074	.110	.225	.673	.505	.166	6.023
F = 4.97, R <sup>2</sup> = .28, Adjusted R <sup>2</sup> = .22, p = .005							

According to Table 8, no independent variables namely rate, accuracy and prosody made statistically significant contribution to comprehension ( $p > .05$ ).

## 4.1.1.1.2 The Results of the English Oral Reading Fluency Test II

*Table 9: Test II: Correlations among the Different Oral Reading Fluency Measures*

	Rate (N = 50)	Accuracy (N = 50)	Prosody (N = 50)
Rate	1	.59**	.81**
Accuracy	.59**	1	.74**
Prosody	.81**	.74**	1

\*\*  $p < 0.001$  level (2-tailed).

Table 9 represents the relationships among the three measures, rate, accuracy and prosody from Test II. Rate and accuracy had a moderate positive relationship ( $r = .58$ ,  $N=50$ ,  $p < .001$ ) which was the weakest while accuracy and prosody had a strong positive relationship ( $r = .74$ ,  $N=50$ ,  $p < .001$ ) and prosody and rate had the strongest positive relationship ( $r = .81$ ,  $N=50$ ,  $p < .001$ ).

*Table 10: Test II: Bivariate Correlations of each Oral Reading Fluency Measures to Comprehension*

	Rate (N = 50)	Accuracy (N = 50)	Prosody (N = 50)
Comprehension (N = 50)	.25	.44**	.33*
p (2-tailed)	.099	.003	.031

\*\*  $p < 0.01$  level (2-tailed). \*  $p < 0.05$  level (2-tailed).

Table 10 shows that there was no significant linear correlation between rate and comprehension ( $r = .25$ ,  $N=50$ ,  $p = .099$ ). However, there were significant

positive moderate correlations between accuracy and comprehension ( $r = .44$ ,  $N=50$ ,  $p = .003$ ) and between prosody and comprehension ( $r = .33$ ,  $N=50$ ,  $p = .031$ ).

*Table 11: Test II: The Relative Contributions of Rate, Accuracy and Prosody in Predicting Comprehension*

Variables Entered	Regression Coefficients			Statistical Significance		Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.(p)	Tolerance	VIF
(Constant)	-5.786	3.922		-1.475	.148		
Rate	-.001	.012	-.015	-.062	.951	.351	2.847
Accuracy	.099	.049	.430	2.018	.050	.446	2.244
Prosody	.007	.110	.018	.061	.951	.238	4.193
F = 3.11, R <sup>2</sup> = .21, Adjusted R <sup>2</sup> = .16, p = .022							

According to Table 11, only accuracy made a statistically significant contribution to comprehension ( $p=.05$ ), and for every 1-unit increase in accuracy, comprehension increased by .43 unit (Beta =.43).

## 4.1.1.1.3 The Results of the English Oral Reading Fluency Test III

Table 12: **Test III**: Correlations among the Different Oral Reading Fluency Measures

	Rate (N = 51)	Accuracy (N = 51)	Prosody (N = 51)
Rate	1	.49**	.73**
Accuracy	.49**	1	.69**
Prosody	.73**	.69**	1

\*\*  $p < 0.001$  level (2-tailed).

Table 12 represents the relationships among the three measures, rate, accuracy and prosody from test III. Rate and accuracy had a moderate positive relationship ( $r = .49$ ,  $N=51$ ,  $p < .001$ ) which was the weakest while accuracy and prosody had a strong positive relationship ( $r = .69$ ,  $N=51$ ,  $p < .001$ ) and prosody and rate had the strongest positive relationship ( $r = .73$ ,  $N=51$ ,  $p < .001$ ).

Table 13: **Test III**: Bivariate Correlations of each Oral Reading Fluency Measures to Comprehension

	Rate (N = 51)	Accuracy (N = 51)	Prosody (N = 51)
Comprehension (N = 51)	.28	.42**	.43**
p (2-tailed)	.074	.005	.004

\*\*  $p < 0.01$  level (2-tailed).

Table 13 shows that there was no significant linear correlation between rate and comprehension ( $r = .28$ ,  $N=51$ ,  $p = .074$ ). However, there were significant

positive moderate correlations between accuracy and comprehension ( $r = .42$ ,  $N=51$ ,  $p = .005$ ) and between prosody and comprehension ( $r = .43$ ,  $N=51$ ,  $p = .004$ ).

*Table 14: Test III: The Relative Contributions of Rate, Accuracy and Prosody in Predicting Comprehension*

Variables Entered	Regression Coefficients			Statistical Significance		Collinearity Statistics	
	B	Std. Error	Beta	t	Sig. (p)	Tolerance	VIF
(Constant)	-1.731	3.311		-.523	.604		
Rate	-.003	.009	-.079	-.379	.707	.460	2.175
Accuracy	.045	.039	.229	1.170	.249	.525	1.904
Prosody	.017	.013	.332	1.318	.195	.316	3.161
F = 3.61, R <sup>2</sup> = .19, Adjusted R <sup>2</sup> = .13, p = .037							

According to Table 14, no independent variables made statistically significant contribution to comprehension ( $p > .05$ ).

#### 4.1.1.1.4 Summary of the three tests

Relating to research question 1, it can be concluded that through all the three tests, rate and accuracy consistently had moderate positive correlations while accuracy and prosody, and prosody and rate consistently had strong positive linear relationships.

*Table 15: Summary of correlations among the different oral reading fluency measures*

	Correlation Coefficients		
	Test I	Test II	Test III
Rate and Accuracy	.52**	.59**	.49**
Accuracy and Prosody	.77**	.74**	.69**
Prosody and Rate	.83**	.81**	.73**

\*\*  $p < 0.001$  level (2-tailed).

The bivariate correlations of each oral reading fluency measures to comprehension through the three tests are shown in Table 4.5.2 below. According to the table, rate had a significant moderate positive relationship with comprehension in test I ( $r = .47, p = .002$ ) but no significant relationships with comprehension in test II and III ( $r = .25$  and  $.28$  respectively,  $p > .05$ ). The correlations between accuracy and comprehension, however, were very consistent through all the three tests. Accuracy had significant positive moderate relationships with comprehension ( $r = .43, p = .004$ ;  $r = .44, p = .003$ ; and  $r = .42, p = .005$  respectively). Also, in all the three tests, prosody had significant positive moderate relationships with comprehension ( $r = .51, p < .001$ ;  $r = .33, p = .031$ ; and  $r = .43, p = .004$  respectively).

*Table 16: Summary of Bivariate Correlations of Each Oral Reading Fluency Measures to Comprehension*

	Rate			Accuracy			Prosody		
	Test I	Test II	Test III	Test I	Test II	Test III	Test I	Test II	Test III
Comprehension	.47**	.25	.28	.43**	.44**	.42**	.51**	.33*	.43**
P (2-tailed)	.002	.099	.074	.004	.003	.005	.000	.031	.004

Table 17 shows that no independent variables made a statistically significant contribution to comprehension ( $p > .05$ ) in Test I and Test III, and only accuracy made a statistically significant contribution to comprehension ( $p > .05$ ) in test II.

*Table 17: Summary of Multiple Regression Analysis*

Variables	Test I	Test II	Test III
Rate, Accuracy and Prosody	Not available	Accuracy	Not available



**Research question 2:** What are students' attitudes toward an oral reading fluency test?

#### 4.1.2 Results of Students' Attitudes toward the English Oral Reading Fluency (EORF) Test

The questionnaire consisted of four parts: 1. students' attitudes toward learning English, 2. EORF test anxiety, 3. students' attitudes toward the EORF Test and 4. student opinion scale items. The data derived from each part of the questionnaire were analyzed by using descriptive statistics, mean score and Standard Deviation (SD).

##### 4.1.2.1 Students' Attitudes toward Learning English

The first part of the questionnaire examined the attitudes of the students toward learning English.

*Table 18: Students' Attitudes toward Learning English*

Statements	1 Strongly disagree	2 Disagree	3 Not sure	4 Agree	5 Strongly Agree	$\bar{x}$	SD.
<b>1. Learning English is really important.</b>	-	-	-	50 (93%)	4 (7%)	4.93	0.26
<b>2. I really enjoy learning English.</b>	-	1 (2%)	11 (20%)	30 (56%)	12 (22%)	3.98	0.71
<b>3. English is an important part of the university curriculum.</b>	-	-	-	24 (44%)	30 (56%)	4.56	0.50
<b>4. I want to learn as much English as possible.</b>	-	-	6 (11%)	17 (31%)	31 (57%)	4.46	0.69
<b>5. I love learning English.</b>	1 (2%)	1 (2%)	12 (22%)	29 (54%)	11 (20%)	3.89	0.82

\*Percentages may not total 100 due to rounding.

The results revealed that 100% of the students asserted that learning English was really important and English was an important part of the university curriculum. In addition, the majority of the students enjoyed and loved learning English and wanted to learn as much English as possible.

#### 4.1.2.2 Students' English Oral Reading Fluency Test Anxiety

The second part of the questionnaire illustrated if students experienced a mild or severe case of English Oral Reading Fluency test anxiety. The results can be seen in Table 19.

Table 19: Students' English Oral Reading Fluency Test Anxiety

Statements	1 Strongly disagree	2 Disagree	3 Not sure	4 Agree	5 Strongly Agree	$\bar{x}$	SD.
1. I have visible signs of nervousness such as sweaty palms, shaky hands, and more right before the EORF test.	20 (37%)	18 (33%)	2 (22%)	4 (7%)	-	2.00	0.95
2. I have "butterflies" in my stomach before the EORF test.	28 (51%)	19 (36%)	6 (11%)	1 (2%)	-	1.63	0.76
3. I feel nauseated before the EORF test.	16 (30%)	38 (70%)	-	-	-	1.70	0.46
4. I read through the EORF test's comprehension questions and feel that I do not know	12 (22%)	17 (31%)	22 (41%)	2 (4%)	1 (2%)	2.31	0.93

any of the answers.

<b>5. I panic before and during the EORF test.</b>	23 (43%)	18 (33%)	10 (19%)	1 (4%)	1 (2%)	1.89	0.96
<b>6. My mind goes blank during the EORF test because I am not confident with my pronunciation.</b>	14 (26%)	10 (19%)	18 (33%)	10 (19%)	2 (4%)	2.56	1.18
<b>7. I come up with some answers only after the test.</b>	12 (22%)	7 (13%)	22 (41%)	13 (24%)	-	2.67	1.08
<b>8. I have trouble concentrating before the EORF test.</b>	13 (24%)	14 (26%)	16 (30%)	8 (15%)	3 (6%)	2.52	1.18
<b>9. I make mistakes on easy comprehension questions or put answers in the wrong places.</b>	8 (15%)	13 (24%)	22 (41%)	11 (20%)	-	2.67	0.97
<b>10. I have difficulty choosing the answers of the comprehension questions because I have focused too much on the pronunciation.</b>	5 (9%)	5 (9%)	12 (22%)	22 (41%)	10 (19%)	3.5	1.18

\*Percentages may not total 100 due to rounding.

The results showed that the majority of the students had neither exhibited any visible signs of nervousness nor had “butterflies” in their stomach and nauseated before the EORF test. Only a few students panicked before and during the EORF test. They felt that they did not know any of the answers after reading through the EORF test’s comprehension items. 23% of the students claimed that their mind went blank during the EORF test, and 24% of the students came up with some answers only after

the test. 21% of the students had trouble concentrating before the EORF test, and 20% of the students said they made mistakes on easy comprehension questions or put answers in the wrong places. Lastly, 60% of the students had difficulty choosing the answers of the comprehension questions because they focused too much on the pronunciation.

#### 4.1.2.3 Students' Attitudes toward the EORF Test

This part of the questionnaire assessed students' ideas and impressions about the English Oral Reading Fluency Test. It contained both positive items (1, 3, 5 and 7) and negative items (2, 4, 6, 8 and 9). The results were shown in Table 20.

Table 20: Students' Attitudes toward the English Oral Reading Fluency Test

Statements	1 Strongly disagree	2 Disagree	3 Not sure	4 Agree	5 Strongl y Agree	$\bar{x}$	SD.
<b>1. This EORF test is meaningful.</b>	-	-	2 (4%)	35 (65%)	17 (31%)	4.28	0.53
<b>2. This EORF test is unenjoyable.</b>	13 (24%)	12 (22%)	23 (43%)	6 (11%)	-	2.41	0.98
<b>3. This EORF test is interesting.</b>	-	4 (7%)	4 (7%)	32 (59%)	14 (26%)	4.04	0.80
<b>4. This EORF test is complicated.</b>	5 (9%)	25 (46%)	17 (31%)	7 (13%)	-	2.48	0.84
<b>5. This EORF test is necessary.</b>	-	-	11 (20%)	25 (46%)	18 (33%)	4.13	0.73
<b>6. This EORF test is useless.</b>	29 (54%)	20 (37%)	5 (9%)	-	-	1.56	0.66
<b>7. This EORF test is educational.</b>	-	1 (2%)	12 (22%)	29 (54%)	12 (22%)	3.96	0.73

<b>8. This EORF test is difficult.</b>	2 (4%)	19 (35%)	26 (48%)	5 (9%)	2 (4%)	2.74	0.83
<b>9. This EORF test is unimportant.</b>	19 (35%)	29 (54%)	6 (11%)	-	-	1.76	0.64
<b>10. The instructions in this EORF test is clear</b>	-	-	12 (22%)	28 (52%)	14 (26%)	4.04	0.70

\*Percentages may not total 100 due to rounding.

The results showed that almost all of the students thought that the EORF test was meaningful. Most of them thought the EORF test was interesting, necessary and educational, and the instructions in the EORF test was clear. Regarding the negative items, 46% of the students denied that the EORF test was unenjoyable. 55% of the students disagreed that the EORF test was complicated. 39% of the students denied that the EORF test was difficult. Most of the students disagreed that the EORF test was useless and unimportant.

#### 4.1.2.4 Student Opinion Scale Items

This part scrutinized students' motivation by focusing on two aspects: Importance and Effort. Each aspect was comprised of five items. Importance (items: 1, 3, 4, 5 and 8) indicated how important doing well on the test was to the students. Effort (items: 2, 6, 7, 9 and 10) signified the perceived degree of work the students put forth in completing the test. Negative items were 3, 4, 7 and 9. The results were shown in Table 21.

Table 21: Student Opinion Scale

Statements	1 Strongly disagree	2 Disagree	3 Not sure	4 Agree	5 Strongly Agree	$\bar{x}$	SD.
<b>1. Doing well on the EORF test was important to me.</b>	1 (2%)	1 (2%)	7 (13%)	34 (63%)	11 (20%)	3.98	0.76
<b>2. I engaged in good effort throughout this EORF test.</b>	-	-	4 (7%)	34 (63%)	16 (30%)	4.22	0.57
<b>3. I am not curious about how I did on this EORF test relative to others.</b>	1 (2%)	1 (2%)	9 (17%)	29 (54%)	14 (26%)	4.00	0.82
<b>4. I am not concerned about the score I receive on this EORF test.</b>	1 (2%)	5 (9%)	14 (26%)	22 (41%)	12 (22%)	3.72	0.98
<b>5. This EORF test was an important test to me.</b>	-	3 (6%)	23 (43%)	23 (43%)	5 (9%)	3.56	0.74
<b>6. I gave my best effort on this EORF test.</b>	-	-	10 (19%)	25 (46%)	19 (35%)	4.17	0.72
<b>7. While taking this EORF test, I could have worked harder on it.</b>	1 (2%)	2 (4%)	9 (17%)	26 (48%)	16 (30%)	4.00	0.89
<b>8. I would like to know how well I did on this EORF test.</b>	-	1 (2%)	12 (22%)	25 (46%)	16 (30%)	4.04	0.78
<b>9. I did not give this EORF test my full attention</b>	10 (19%)	26 (48%)	13 (24%)	5 (9%)	-	2.24	0.87

**while completing it.**

<b>10. While taking this EORF test, I was able to persist to completion of the task.</b>	1 (2%)	10 (19%)	10 (19%)	20 (37%)	13 (24%)	3.63	1.10
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\*Percentages may not total 100 due to rounding.

Regarding Importance, most of the students thought doing well on the EORF test was important to them. Also, the majority of the students asserted that the EORF test was an important test to them and they would like to know how well they did on the test. However, the negative items, after reversed, revealed that most of the students were not curious about how they did on this EORF test relative to others and they were not concerned about the score they would receive on the test. These conflicting results will be discussed in the discussion section.

Regarding Effort, almost all of the students asserted that they engaged in good effort throughout this EORF test. Even though the majority of the students thought that they gave their best effort on the test, they thought that could have worked harder on it. In addition, they claimed that they gave this EORF test their full attention while completing it (reversed item) and were able to persist to completion of the task while taking the test.

## 4.2 Summary of the Results

The Chapter presented the results of the study based on the two research questions, which focused on two objectives. The first objective was to investigate to what extent different oral reading fluency measures contribute to comprehension. As there were three English Oral Reading Tests and three sets of the comprehension items, the results were presented test by test. The results from the multiple regression outputs showed that only accuracy in Test II made a statistically significant contribution to comprehension.

The second objective was to investigate students' attitudes toward an oral reading fluency test. The attitudes questionnaire examined different aspects that involve students' attitudes and experiences on the test on the EORF test. The results can be summarized as follows. First, almost all of the students had positive attitudes toward learning English. Second, although some students had exhibited certain signs of anxiety from taking the EORF test, almost all of the items showed that the number of the students who didn't experience anxiety outnumbered the ones who did. Third, the majority of the students had positive attitudes toward the English Oral Reading Fluency Test. Last, concerning the two aspects of the students' motivation, Importance and Effort, it can be concluded that the majority of the students thought that the test was important and they put great effort in finishing the test although there were some contrary results among certain items, which will be discussed in Chapter V under the discussion section.

## CHAPTER V

### DISCUSSION, CONCLUSION AND IMPLICATIONS

This chapter consists of four parts. The first part is the discussion of the study, the second part provides a brief summary which includes the discussion of the problems, the relevant background literature and the research methodology. The third part discusses the findings as well as the conclusion of the discussion. The last part presents recommendation for future research.

#### 5.1 Discussion

##### 5.1.1 Discussion of the Test Development

##### *5.1.1.1 Construct and Criterion of the English Oral Reading Fluency Test*

The heart of the English Oral Reading Fluency Test is the reading passage that can be used to assess students' English oral reading fluency performance regarding the three constructs, rate, accuracy and prosody. To be more specific, the three constructs include the ability to read the text orally with appropriate speed (rate), read the words in the text orally with accuracy (accuracy) and read the text orally with appropriate phrasing (prosody). In the current study, there were three English Oral Reading Fluency Tests. Each test consisted of one reading passage. The three reading passages were created taking into account two aspects, the degree of familiarity and the level of difficulty of the texts. As the reading passages should be very familiar to the students (I.S.P. Nation, 2009), to ensure the degree of familiarity, three reading texts were created based on the authentic texts to be paralleled to the three topics

selected from the students' textbook, English Unlimited. The three passages were adjusted to have the similar length (approximately 250 words) and the similar level of difficulty. Consequently, the three reading passages provided the similar reading ease scores, which had the standard readability level according to the reading ease score mapping table. The texts were then checked by a native English teacher before undergoing the validation process

To measure students' oral reading fluency performance, criterion or criterion for correctness was set for each construct. In L1 contexts, words correct per minute (wcpm) is frequently used to assess oral reading fluency. It takes into account both rate and accuracy as it is calculated by counting the number of words read correctly in one minute (or the total number of words read per minute minus the number of errors). Moreover, wcpm has been used frequently to measure "rate" in many research studies, for example, Fuchs et al. (2001), Lems (2006), Fujita and Yamashita (2014) and Pey et al. (2014). In this study, to be able to distinguish the impact between reading speed and errors, rate was measured as the number of words read per minute (WPM) to provide "an unambiguous measure of rate" (Valencia et al., 2010, p. 275).

Accuracy was calculated as percentage correct words of the total words read per minute. Accuracy equaled  $(\text{the number of the total words} - \text{errors}) / \text{the number of the total words} \times 100$ . Mispronunciations, omissions, repetitions and substitutions were counted as errors while self-corrections and different pronunciations due to dialect or regional differences were not counted as errors.

Prosody was measured by using the 4-point scale rubric focusing on four aspects, which are phrasing, stress, intonation and pauses. The three measures (rate,

accuracy and prosody), therefore, were used as they are the indicators of oral reading fluency (Valencia et al., 2010). They should be able to specify students' oral reading fluency performance in the way that a student who has high oral reading fluency proficiency should have high rate, high accuracy and high prosody scores. Thus, the scores from the different measures should have positive correlations.

As fluency assessments must have some degree of reliability and validity (T. V. Rasinski, 2004), the test and the measures were assured that they provided valid and reliable results by using the validation process and inter-rater reliability. Owing to the validation process, five experts were asked to judge the EORF tests regarding the three crucial components of validity, appropriateness, and meaningfulness and usefulness (Wasanasomsithi, 2004). In addition, face validity including the format of the reading texts and the questions was also considered. As a result, all five experts were in agreement that the EORF tests were valid. Regarding the reliability of the tests, the inter-rater reliability was analyzed, and the results revealed that the two raters were highly consistent with each other. It can, therefore, be assumed that the tests and the measures were reliable.

From the study, the three pairs of the three measures had significant positive correlations. This finding supports Daane et al.'s (2005) finding saying that three oral reading constructs, rate accuracy and prosody, are related to each other. Accuracy and prosody and prosody and rate had strong positive linear relationships. However, of all the three pairs, the relationship between rate and accuracy was the weakest, which can be assumedly explained that when students have to focus on how fast they can read, it increases the chances of making errors. This assumption can be supported by the

discussion noted by Skehan and Foster (1997) that fluency (in the sense of rate) comes at the cost of accuracy and vice versa. In addition, it was found that the relationships among these measures were consistent across the three tests with slightly different  $r$  values. Hence, it can be concluded that these measures i.e. rate, accuracy and prosody, to some extent, are reliable.

#### *5.1.1.2 Comprehension Items*

To test the students' reading comprehension, the comprehension items were created. The comprehension items tested the students on four constructs including the ability to comprehend the text, recall the main idea and important details of the story, and answer comprehension questions. The study focused on the comprehension from the oral reading as comprehension was presumed to be a byproduct of reading fluency, which consequently arose the issue that the comprehension items involved students' ability to memorize the reading texts. In the attempt to limit the impact of the issue, the number of the comprehension items was limited to five items for each text. In addition, only the main idea and important details of the story were asked.

The English Oral Reading Fluency Tests and the measures were then used to collect rate, accuracy, prosody and comprehension scores in order to answer the first research question.

### 5.1.2 Relationships between Oral Reading Fluency Measures (rate, accuracy and prosody) and Comprehension

To examine the relative contributions of rate, accuracy and prosody to comprehension, multiple regression analysis was used as it is the most commonly used and versatile dependence technique (Hair et al., 2010). In using multiple regression analysis, the issues of multicollinearity were addressed and the results were carefully interpreted. Analyzing the output of the regression models, the first value to be discussed is the significance of the overall model. The findings show that all of the overall regression models had a significant level of predictive accuracy (p values < .5). The p values of the overall regression models of test I, test II and test III equal .005, .022 and .037 respectively. However, the coefficient of determination (R squared) values derived from all regression models were relatively low, which were possibly caused by certain degree of multicollinearity as some independent variables were highly correlated. The study, however, gave importance to the relationships between the predictors (rate, accuracy and prosody) and the measure variable (comprehension). Thus, regression coefficients were prioritized.

Test I regression output showed that no independent variables made statistically significant contribution to comprehension ( $p > .05$ ). Test II regression output showed that only accuracy made statistically significant contribution to comprehension. Test III regression output displayed that no independent variables made statistically significant contribution to comprehension ( $p > .05$ ). There are two possible assumptions to help explain the outcome. First, there were other factors contributing to comprehension, for example, reader's prior knowledge (Anderson & Pearson, 1984). Second, even though the values of VIF of all the tests were not higher

than 10, which were considered as acceptable, the problems of multicollinearity can be seen at much lower levels as well (Hair et al., 2010).

One of the remedies for multicollinearity is to use simple correlations between each independent variable and dependent variable in order to understand the relationship between them (Hair et al., 2010). Thus, correlations between each independent variable and dependent variable were analyzed.

#### *Rate and comprehension*

The results from the three tests showed that rate had a significant moderate positive relationship with comprehension in test I ( $r = .47$ ,  $p = .002$ ) but no significant relationship with comprehension in test II and III ( $r = .25$  and  $.28$  respectively,  $p > .05$ ). One possible explanation may involve students' cognitive knowledge about the topic of the first test, Pandas. In addition, according to the literature review, reading rate has probably been examined the most in the past several decades. In L1 contexts, Traxler (1932) reviewed a large number of earlier studies and concluded that most of the findings showed high correlations between rate and comprehension. Fuchs et al. (2001) stated that oral reading rate had a very strong positive correlation with passage comprehension ( $r = .84$ ). In this study, even though rate had a significant positive relationship with comprehension in the first test, the result was different in the second and third test. The values of the Pearson correlation coefficients of the second and the third test were relatively close to each other, and similar to prior research in another EFL context. In Fujita and Yamashita (2014) study with EFL high-school students, as the sample was larger ( $N = 127$ ), rate was found to have a significant weak positive correlation to comprehension ( $r = .24$ ,  $p < .01$ ). Accordingly, it is possible that while

the relationship between rate and comprehension is rather strong in L1 contexts, it is weak in EFL contexts. Nonetheless, to draw a conclusion, more research studies in EFL contexts are needed to be carried out to see if such pattern is consistent.

#### *Accuracy and comprehension*

In the current study, the relation between accuracy and comprehension was the most prominent because not only were the correlations between accuracy and comprehension very consistent as accuracy had significant positive moderate relationships with comprehension ( $r = .43$ ,  $p = .004$ ;  $r = .44$ ,  $p = .003$ ; and  $r = .42$ ,  $p = .005$  respectively) through all the three tests, but accuracy also made a statistically significant contribution to comprehension in test II. This finding conforms to the study done by Protopapas et al. (2007) with 534 Greek students, grades 2, 3 and 4, where word accuracy was consistently found to have significant moderate correlations with comprehension for all three grade levels ( $r = .39$ ,  $.30$  and  $.34$  respectively). A possible assumption of this finding is that accuracy scores have to do with errors and errors possibly represent either carelessness or the insufficient knowledge of vocabulary which can both affect comprehension. This assumption can be supported by Grabe's (2009) indication that accuracy is strongly associated with word recognition as fluent word recognition must be rapid, automatic, complete and accurate at the same time. Regarding L2 readers, he claimed that the absence of accuracy results in the degradation of comprehension. On the contrary, completely specified lexical entries and accuracy are necessary for fluency and advanced comprehension (Grabe, 2009).

### *Prosody and comprehension*

Throughout the three tests, even though prosody did not make a statistically significant contribution to comprehension in the regression analysis, prosody had significant positive moderate relationships with comprehension throughout the three tests ( $r = .51, p < .001$ ;  $r = .33, p = .031$ ; and  $r = .43, p = .004$  respectively). This finding somewhat holds up Valencia et al.'s (2010) conclusion from their study in L1 context that for more skilled readers, comprehension possibly concerns more with prosody than rate and accuracy as prosody consistently made a statistically significant contribution to comprehension across three different grade levels (Valencia et al., 2010). In addition, the finding substantiates previous research claiming that the connection between prosody and comprehension exists. For example, Kuhn and Stahl (2003) indicated that prosody possibly provides the connection between fluent oral reading and comprehension. T. V. Rasinski (2004) mentioned that elements of prosody such as volume, tone, emphasis and phrasing are the evidence of active interpretation and meaning construction (T. V. Rasinski, 2004). Levasseur et al. (2006) indicated that to read text with comprehension, one needs to process both individual words and to analyze their phrasal groupings (prosody).

Two assumptions may help to explain the low correlations between oral reading fluency scores and comprehension scores. First, as readers concentrate on correct reading, the act of oral reading may interfere with comprehension (Valencia et al., 2010). This especially makes sense for reading in a foreign language as it would be harder for EFL students to focus on both oral reading and comprehension at the same time. In addition, regarding to an item from the attitude questionnaire, it was

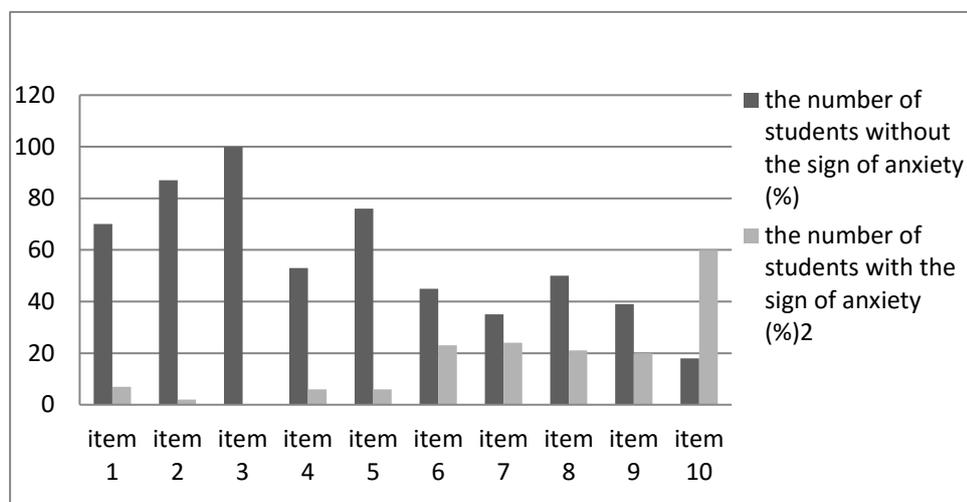
found that the majority of the test takers thought that they had difficulty choosing the answers of the comprehension questions because they had focused too much on the pronunciation. Second, the nature of the test caused some limitations as follows: 1) The length of the text limited the number of the comprehension items. 2) As the test assessed the students' comprehension from oral reading, it, to some extent, required the ability to recall the story. Thus, the comprehension scores only represented the students' oral reading comprehension.

### 5.1.3 Discussion of Students' Attitudes toward the English Oral Reading Fluency (EORF) Test

The results from Part I of the questionnaire, the attitudes of the students toward learning English, showed that the majority of the students participating in the test had positive attitudes toward learning English. Also, all of them recognized the significance of English (according to the data in item 1 and 3).

Regarding part II, student's anxiety toward the English Oral Reading Fluency Test, the results show that some students had experienced certain signs of anxiety from taking the EROF test. For a clearer picture, the following chart displays the percentages of the students with and without the particular sign of anxiety.

Figure 10: Students' Signs of Anxiety



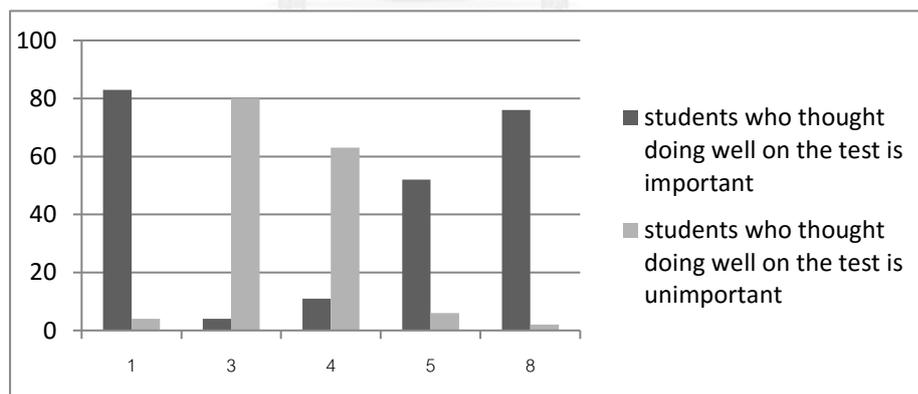
Obviously, the percentages of the students who exhibited no signs of anxiety were significantly higher than the percentages of the students who experienced anxiety except item 10, which is, however, expectable as some research studies have concerned that focusing on pronouncing aloud, the students' attention may be drawn off from comprehension i.e., (Applegate et al., 2008). To conclude, although reading aloud was reported to be highly anxiety-provoking by some students (Gibson, 2008), in considering a holistic view of the results, the EORF test should not concern test users regarding the test anxiety as almost all of the items showed that the number of the students who exhibited no signs of anxiety outnumbered the ones with signs of anxiety. In addition, some degree of anxiety may be healthy to help the test takers to stay focused (Nist & Diehl, 1990).

Part III of the questionnaire assesses students' ideas and impressions about the English Oral Reading Fluency Test, which contained both positive items (1, 3, 5 and 7) and negative items (2, 4, 6, 8 and 9). After the scales of the negative items were reversed, it is obvious that students had positive attitudes toward the EROF test as

almost all of the students thought that the test was meaningful and the majority of the students think it was enjoyable, interesting, necessary, useful, educational and important. Also, regarding the difficulty of the EORF test (items: 4 and 8), even though a large number of students were not sure whether the test was difficult or not, the students who thought it was neither difficult nor complicated were much greater in number than those in the opposite.

Part IV of the questionnaire scrutinized students' motivation by focusing on two aspects: Importance and Effort. Importance (items: 1, 3, 4, 5 and 8) indicated how important doing well on the test was to the students. Effort (items: 2, 6, 7, 9 and 10) signified the perceived degree of work the students put forth in completing the test. Negative items were 3, 4, 7 and 9. For a clearer picture, the two following charts display the two aspects, Importance and Effort respectively.

*Figure 11: Student Opinion Scale (Importance)*

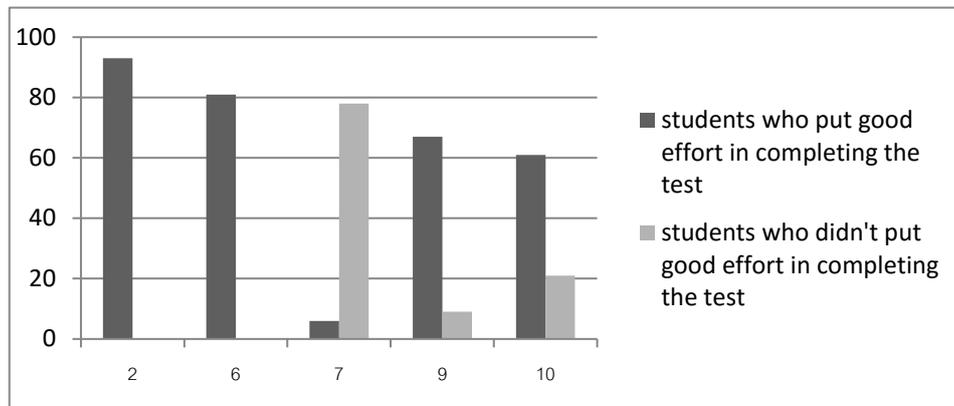


Focusing on the Importance aspect, after reversing the scales of the negative items (3 and 4), three (1, 5 and 8) out of five items (1, 3, 4, 5 and 6) show that the students thought doing well on the test is important to them. Thus, the results of item

3 and 4 will be discussed further as they indicated that the majority of the students thought doing well on the test was unimportant to them.

The focus of this section is on how important doing well on the test was to the students, but as item 3 states that students were not curious about how they did on this EORF test relative to other students, it can be interpreted that the students did not want to compare themselves to others. One evidence that can support this is from the result of item 1 showing 83% of the students thought that doing well on the test was important to them, which is clear that most of the students thought that the test was important. The result from item 4 shows that a number of the students were not concerned about the score they received on this EORF test, which could be caused by the fact the students had been told prior to taking the test that the score on this test had nothing to do with the course they were taking. All in all, it can be concluded that the majority of the students thought that the test was important as they agreed that doing well on the EORF test was important and the test was an important test to them, and they would like to know how well they did on the test considering the results of items 1, 5 and 8.

Figure 12: Student Opinion Scale (Effort)



Regarding Effort, the chart signifies that the majority of the students had put effort in completing the EORF test (items: 2, 6, 9 and 10). Even though item 7 indicates that the majority of the students thought they could have worked harder on the test. The result of item 7 might suggest that the students didn't put 100% of their effort on the test. As Effort indicates 'the perceived degree of work', it can be concluded that the majority of the students thought they put good effort in completing the test as taking into account of the results of the other items mentioned previously.

To summarize, based on research question 2. What are students' attitudes toward an oral reading fluency test?, it was found that the students even though some students had exhibited certain signs of anxiety from taking the EORF test, those who experienced no anxiety outnumbered them, and the majority of the test takers had positive attitudes and opinions toward the EORF test.

## 5.2 Research Summary

The study was derived from the recognition of the significance of oral reading fluency mentioned in many studies e.g. (Daane et al., 2005; NICHD, 2000; T. V. Rasinski, 2004; Reutzler & Cooter, 2003) and the need of more empirical studies

regarding oral reading fluency, especially in EFL contexts (Grabe, 2009). Also, the need of oral reading assessments for Thai EFL students as such evaluation is required by the Ministry of Education (2008). Fluency, both oral and silent, has been presently gaining interests from researchers although it was neglected in the past (T. V. Rasinski et al., 2012). As a result, a body of research on oral reading fluency is growing (Valencia et al., 2010). The past research in L1 contexts revealed the relationship between oral reading fluency measures and comprehension.

In Chapter 2, past literature related to the areas of reading, reading fluency and reading assessment was presented. Different definitions and the theoretical framework of reading fluency were reviewed, and it is clear that reading fluency should involve three components, which are rate, accuracy and prosody (Grabe, 2009). Although the processes of reading can be viewed from different perspectives, bottom-up, top-down or interactive models, fluency is the bridge to connect between the high-level and the low-level processes (Opitz, 2007) regardless of which model best portrays your personal belief. However, there has been a long-term debate whether oral reading or silent reading should take on a more important role in language learning. Some arguments against oral reading is that reading is generally a silent activity, and reading aloud is a skill needed only by public speakers and broadcasters not for majority people and it can be demotivating for students as it is a difficult thing to do well, yet for native speakers (Gibson, 2008). In reality, we read both aloud and silently depending on places and times preferably for our choice, and there are moments and times, we are compared in our reading no matter silently or aloud, e.g., in school (Baker & Luke, 1991). Oral reading not only leads to better silent reading (Van den Broek & Kremer, 2000), but also can be used as a diagnostic tool which

allows teachers to identify more persistent problems such as pronunciation and graphemic-phonemic connections and it is often used with the aim of comprehension (Gibson, 2008).

Significance of reading fluency were mentioned by many researchers. It is reported that reading fluency is significant on students' reading development (Konza, 2006; Taguchi et al., 2004). On the contrary, the lack of fluency in reading is not only one of the causes of comprehension difficulty (Gunning, 2002), but also can affect students' motivation to read because for those who have not yet developed reading fluency, the process of decoding texts drains attention leaving insufficient attention for constructing the meaning from texts (Cappello & Moss, 2009), which demotivates them to read. From the literature, reading fluency has often been mentioned in relation to comprehension. The research studies in L1 contexts reveal a strong connection between reading rate and comprehension (Fuchs et al., 2001). Only little research on fluency has been done in the contexts of L2 including EFL (Grabe, 2009). A few of the relevant studies, for example, found that reading rate has a significant low positive correlation to comprehension (Fujita & Yamashita, 2014; Lems, 2006).

To develop an oral reading fluency test, test usefulness (Bachman & Palmer, 1996) was addressed. Reading assessments in terms of both fluency and comprehension as well as the available oral reading fluency measures were also reviewed. The first measure used is word per minute (wpm), which focuses on reading speed. Later, as the term, reading fluency, has progressed over time (NICHD, 2000), word correct per minute (wcpm), which focuses on both reading speed and accuracy, has been the common way in assessing oral reading fluency. As an integral

component of oral reading fluency, the role of expression and phrasing, or prosody has been investigated by many researchers e.g. (Valencia et al., 2010), and NAEP oral reading fluency scale and Rasinski's (2004) Multidimensional Fluency Scale have frequently been adopted and adapted to assess oral reading fluency focusing on prosody.

Based on the literature review, to add a new perspective on a growing body of research concerning the oral reading fluency assessments in terms of the use of English Oral Reading Fluency test and measures in EFL context, this current study has two objectives:

- 1) To investigate to what extent different oral reading fluency measures contribute to comprehension
- 2) To investigate students' attitudes toward an oral reading fluency test

The population was 250 first year students from the Faculty of Political Science at Chulalongkorn University. Cochran's formula was used to determine the sample size. The purposive sampling technique was used to select the sample based on Chulalongkorn University Test of English Proficiency (CU TEP) scores. The main study involved 54 students with a range of proficiency levels from lower intermediate to upper intermediate levels. The pilot study was carried out with 28 first year students. They were a comparable group of students who shared similar characteristics with the samples in the main study.

The instruments consisted of three English Oral Reading Fluency (EORF) tests, four measures (rate, accuracy, prosody and comprehension questions) and an

attitude questionnaire, which underwent a validating process by five experts in the field.

The research study was divided into two main stages: the pilot study and the main study. The instruments were used in the pilot study. After the final revision, they were used in the main study. The main study investigated the relationship between students' scores of each oral reading fluency measure (rate, accuracy and prosody) and their comprehension scores, as well as students' attitudes toward the EORF test. The study employed a computer lab to make it possible to assess a number of students at the same time. To collect data, for each test, the students read the given passages and recorded their oral readings. Then, the reading passages were removed, and the comprehension worksheets were distributed. Lastly, the attitude questionnaire was distributed.

To find the relationship between students' scores of each oral reading fluency measure (rate, accuracy and prosody) and their comprehension scores, both the Pearson correlation coefficient and multiple regression analysis were used. Descriptive statistics were used to analyze the results from the attitude questionnaire.

### **5.3 Conclusion of the Research Findings**

The results show the consistent positive relationships among pairs of rate, accuracy and prosody throughout the three tests, which supports Daane et al.'s (2005) finding saying that three oral reading constructs, rate, accuracy and prosody, are related to each other.

In using the multiple regression analysis, only accuracy made statistically significant relationship to comprehension (Test II). When focusing on each pair of oral reading fluency measures (rate, accuracy and prosody) and comprehension, the results from the three tests showed that the correlations between rate and comprehensions were not consistent ( $r = .47, p = .002$ ;  $r = .25, p > .05$ ;  $r = .28, p > .05$  respectively), and it's possible that while the relationship between rate and comprehension is rather strong in L1 contexts, it is weak in EFL contexts. On the other hand, through all the three tests, the correlations between accuracy and comprehension were very consistent as it had significant positive moderate relationships with comprehension ( $r = .43, p = .004$ ;  $r = .44, p = .003$ ; and  $r = .42, p = .005$  respectively), which not only conforms to the study by Protopapas et al. (2007) with Greek students, but supports Grabe's (2009) claim that completely specified lexical entries and accuracy are necessary for advanced comprehension. The last variable, prosody had significant positive moderate relationships with comprehension in all the three tests ( $r = .51, p < .001$ ;  $r = .33, p = .031$ ; and  $r = .43, p = .004$  respectively), which substantiates previous research claiming that the connection between prosody and comprehension exists, for example, Kuhn and Stahl (2003) indicated that prosody possibly provides the connection between fluent oral reading and comprehension.

The second research question focused on students' attitudes toward the EORF test. In considering a holistic view of the result, the majority of the students had positive attitudes and opinion toward the EORF test. For example, the majority of the students perceived that the EORF test was meaningful, interesting, necessary and educational. Regarding the test anxiety, although some students had exhibited certain

signs of anxiety from taking the EORF test, teachers should not be concerned as almost all of the items show that the number of the students who didn't experience anxiety outnumbers the ones who did. In addition, some degree of anxiety may be healthy to help the test takers to stay focused (Nist & Diehl, 1990). In addition, it can be concluded that students' awareness of certain signs of test anxiety did not negatively affect students' attitude and opinion, which can be seen from the sequence of the questionnaire as Students' EORF Test Anxiety is in the first section, which means even though some students had identified that they had experienced certain signs of anxiety, the majority of the students specified that they had positive attitudes toward the test in the latter sections, Students' Attitudes toward the EORF Test and Student Opinion Scale. The last part of the questionnaire focused on students' motivation in two aspects. Despite some contrary results among certain items, it can be concluded that the majority of the students thought that the test was important and they put great effort in finishing the test. All in all, although the EORF test is new and requires students to perform oral and comprehension skills, stake holders should have no concern in adopting the test because the majority of the students showed positive attitudes and opinion toward the test.

#### **5.4 Implications**

Historically, "reading rate" has been the focus in measuring oral reading fluency, and consequently, word per minute (wpm) has been normally used to assess students' oral reading fluency performance (Reutzel & Cooter, 2003). The teacher has to work with each student one on one by using the tool called a running record. Yet, not to mention that reading rate is just one indicator of fluent oral reading, the

aforementioned procedure can be rather unpractical in English classes in Thailand due to the nature of the classes, which is large in size and is subjected to time constraint. Taking into account of the issue, this study made use of a computer lab which is generally accessible in many institutions in Thailand alongside a voice recording software. The use of these tools provides some benefits. Firstly, it is possible to assess a number of students at the same time. Secondly, it is recommended that the simplest and most useful way to collect reading fluency data is through the use of audio recordings because not only can we use it for later analysis but we also have a second chance to listen to the recording again in case we miss some elements of the reading (Applegate et al., 2008; Reutzel & Cooter, 2003). Hence, it allows teachers to have flexible time to work on the students' recordings and to use different criteria or measures to assess and reassess different dimensions of reading fluency. Furthermore, it can be used as a reference for teachers to discuss and work further in finer detail with their students, and to keep track on the students' progress.

The teachers of English in Thailand are required by the Ministry of Education (2008) to make sure that by grade 12, their students are able to read aloud various genres of text accurately. Yet, oral reading should rather be assessed multidimensionally, and reading fluency, therefore, should be set as the achievement goal for Thai EFL learners. Consequently, the study benefits Thai EFL teachers. Not only can the setting be implemented, EFL teachers can administer EORF test with students in different grade levels, who have different English proficiency levels by adjusting the readability of the reading text to be appropriate for their students. Besides, as the measures, rate, accuracy and prosody, were ensured to be valid and reliable, they can be used to assess students' EORF performance.

### **5.5 Limitations**

Since the population was the students from the Faculty of Political Science, the findings of this research study might not be able to be generalized to other situations.

### **5.6 Recommendations for Future Work**

Not only does this study add a new perspective on growing body of research concerning the oral reading fluency assessments in terms of the use of English Oral Reading Fluency test and measures in EFL context, but it is also the first study done in Thai context to assess Thai students' English oral reading fluency in relation to their comprehension. More research studies in related areas that are recommended are as follows.

Firstly, replicated studies with larger and different groups of participants, for example, Thai middle school students who have lower proficiency levels, will also lead to new insights toward English oral reading fluency in a Thai EFL context.

Secondly, the studies on the English oral reading fluency instruction and practices in Thai EFL contexts are necessary as Thai students' English oral reading is required to be assessed by the Ministry of Education (2008), yet particular instruction and practices have never been officially used nor included into the curriculum.

Lastly, the participants in the current study were selected as oral reading fluency employs the same construct as public speaking, an important skill for political science students. Although the purpose of the current study does not involve speaking, it is interesting to see if there is any relationship between oral reading fluency skills

and speaking skills as it is believed that oral reading can help students to practice and improve pronunciation (Gibson, 2008). Segments and the accuracy in producing particular sounds are the focus in specialist books on pronunciation, and so isolated words or single sentences are read orally or spoken. In addition, to allow the words flow as natural-sounding a manner as possible, prosodic features occurring in natural speech as well as oral reading can be concentrated on in oral reading longer texts with the purpose of increasing awareness of these features and practicing them (Gibson, 2008).



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## APPENDIX

### Appendix A: Flesch Reading Ease Score Mapping Table

Flesch Reading Ease Score	Readability Level
0 - 29	Very difficult
30 - 49	Difficult
50 - 59	Fairly difficult
60 - 69	Standard
70 - 79	Fairly easy
80 - 89	Easy
90 - 100	Very easy

Source: <http://www.rfp-templates.com/readability-scores/flesch-reading-ease>

## Appendix B: Attitudes Questionnaire

Part 1. Attitudes toward Learning English (adapted from Gardner's (1985) Attitude/Motivation Test Battery)

Statements	<b>1</b> Strongly disagree ไม่เห็นด้วย อย่างยิ่ง	<b>2</b> Disagree ไม่เห็นด้วย	<b>3</b> Not sure ไม่แน่ใจ	<b>4</b> Agree เห็นด้วย	<b>5</b> Strongly Agree เห็นด้วยอย่าง ยิ่ง
1. Learning English is really important. การเรียนภาษาอังกฤษนั้นสำคัญมาก					
2. I really enjoy learning English. ฉันสนุกกับการเรียนภาษาอังกฤษ					
3. English is an important part of the university curriculum. ภาษาอังกฤษเป็นส่วนสำคัญของหลักสูตรของมหาวิทยาลัย					
4. I want to learn as much English as possible. ฉันต้องการเรียนภาษาอังกฤษให้มากที่สุดที่จะทำได้					
5. I love learning English. ฉันรักการเรียนภาษาอังกฤษ					

Part 2. English Oral Reading Fluency Test Anxiety (adapted from Nist and Diehl's (1990) PHCC Test Anxiety Questionnaire)

Statements	<b>1</b> Strongly disagree ไม่เห็นด้วย อย่างยิ่ง	<b>2</b> Disagree ไม่เห็นด้วย	<b>3</b> Not sure ไม่แน่ใจ	<b>4</b> Agree เห็นด้วย	<b>5</b> Strongly Agree เห็นด้วยอย่าง ยิ่ง
1. I have visible signs of nervousness such as					

<p>sweaty palms, shaky hands, and more right before the EORF test. ฉันมีอาการตื่นเต้นที่สังเกตเห็นได้ เช่น เหงื่อออกที่ฝ่ามือ มือสั่น และอาการอื่นๆ ก่อนที่จะเริ่มทำแบบทดสอบการอ่าน คล่องแบบออกเสียงในภาษาอังกฤษ</p>					
<p>2. I have "butterflies" in my stomach before the EORF test. ฉันรู้สึกท้องปั่นป่วน ก่อนที่จะเริ่มทำแบบทดสอบการอ่าน คล่องแบบออกเสียงในภาษาอังกฤษ</p>					
<p>3. I feel nauseated before the EORF test. ฉันรู้สึกคลื่นไส้ ก่อนที่จะเริ่มทำแบบทดสอบการอ่าน คล่องแบบออกเสียงในภาษาอังกฤษ</p>					
<p>4. I read through the EORF test's comprehension questions and feel that I do not know any of the answers. ฉันอ่านคำถามความเข้าใจแล้วรู้สึกว่าฉันไม่รู้คำตอบเลยสักข้อเดียว</p>					
<p>5. I panic before and during the EORF test. ฉันรู้สึกหวั่นวิตกทั้งก่อนและระหว่างการทำแบบทดสอบการอ่านคล่องแบบออกเสียงในภาษาอังกฤษ</p>					
<p>6. My mind goes blank during the EORF test because I am not confident with my pronunciation. ระหว่างการทำแบบทดสอบการอ่านคล่องแบบออกเสียงในภาษาอังกฤษฉันรู้สึกคิดอะไรไม่ออกเพราะฉันไม่มั่นใจกับการออกเสียงของฉัน</p>					
<p>7. I come up with some answers only after the test. ฉันนึกคำตอบที่คิดไม่ออกได้เมื่อทำแบบทดสอบเสร็จแล้ว</p>					
<p>8. I have trouble concentrating before the EORF test. ฉันไม่สามารถรวบรวม</p>					

สมาธิได้ก่อนเริ่มทำแบบทดสอบการอ่าน คลังแบบออกเสียงในภาษาอังกฤษ					
9. I make mistakes on easy comprehension questions or put answers in the wrong places. ฉันตอบคำถามความเข้าใจข้อง่ายผิดหรือใส่คำตอบผิดข้อ					
10. I have difficulty choosing the answers of the comprehension questions because I have focused too much on the pronunciation. ฉันมีปัญหาในการเลือกคำตอบของคำถามความเข้าใจเพราะฉันให้ความสนใจกับการออกเสียงมากเกินไป					

Part 3. Attitudes toward the English Oral Reading Fluency Test (adapted from Gardner's (1985) Attitude/ Motivation Test Battery)

Statements	<b>1</b> Strongly disagree ไม่เห็นด้วย อย่างยิ่ง	<b>2</b> Disagree ไม่เห็นด้วย	<b>3</b> Not sure ไม่แน่ใจ	<b>4</b> Agree เห็นด้วย	<b>5</b> Strongly Agree เห็นด้วยอย่าง ยิ่ง
1. This EORF test is meaningful. แบบทดสอบการอ่านคลังแบบออกเสียงในภาษาอังกฤษนี้มีความสำคัญ					
2. This EORF test is unenjoyable. แบบทดสอบการอ่านคลังแบบออกเสียงในภาษาอังกฤษนี้ไม่ให้ความเพลิดเพลิน					
3. This EORF test is interesting. แบบทดสอบการอ่านคลังแบบออกเสียงในภาษาอังกฤษนี้น่าสนใจ					
4. This EORF test is complicated. แบบทดสอบการอ่าน					

คล่องแบบออกเสียงในภาษาอังกฤษนี้ ซับซ้อน					
5. This EORF test is necessary. แบบทดสอบการอ่านคล่อง แบบออกเสียงในภาษาอังกฤษนี้จำเป็น					
6. This EORF test is useless. แบบทดสอบการอ่านคล่องแบบออกเสียง ในภาษาอังกฤษนี้ไม่มีประโยชน์					
7. This EORF test is educational. แบบทดสอบการอ่าน คล่องแบบออกเสียงในภาษาอังกฤษนี้ให้ ความรู้					
8. This EORF test is difficult. แบบทดสอบการอ่านคล่อง แบบออกเสียงในภาษาอังกฤษนี้ยาก					
9. This EORF test is unimportant. แบบทดสอบการอ่าน คล่องแบบออกเสียงในภาษาอังกฤษนี้ไม่ สำคัญ					
10. The instructions in this EORF test is clear คำสั่งใน แบบทดสอบการอ่านคล่องแบบออกเสียง ในภาษาอังกฤษนี้ชัดเจน					

Part 4. Student Opinion Scale items (adapted from the Student Opinion Scale (Sundre, 2007))

Statements	1 Strongly disagree ไม่เห็นด้วย อย่างยิ่ง	2 Disagree ไม่เห็นด้วย	3 Not sure ไม่แน่ใจ	4 Agree เห็นด้วย	5 Strongly Agree เห็นด้วยอย่าง ยิ่ง
1. Doing well on the oral reading fluency (EORF) test was important to me. การทำแบบทดสอบการอ่านคล่องแบบ ออกเสียงในภาษาอังกฤษได้ดีมี ความสำคัญสำหรับฉัน					
2. I engaged in good effort throughout this EORF test. ฉันตั้งใจทำ					

แบบทดสอบการอ่านคล่องแบบออกเสียง ในภาษาอังกฤษนี้					
3. I am not curious about how I did on this EORF test relative to others. ฉันไม่สนใจที่จะเปรียบเทียบกับคนอื่นว่าฉันทำแบบทดสอบการอ่านคล่องแบบออกเสียงในภาษาอังกฤษนี้ได้ดีแค่ไหน					
4. I am not concerned about the score I receive on this EORF test. ฉันไม่สนใจว่าฉันทำแบบทดสอบการอ่านคล่องแบบออกเสียงในภาษาอังกฤษนี้ได้คะแนนเท่าไร					
5. This EORF test was an important test to me. แบบทดสอบการอ่านคล่องแบบออกเสียงในภาษาอังกฤษนี้เป็นแบบทดสอบที่สำคัญสำหรับฉัน					
6. I gave my best effort on this EORF test. ฉันพยายามอย่างดีที่สุดในการทำแบบทดสอบการอ่านคล่องแบบออกเสียงในภาษาอังกฤษนี้					
7. While taking this EORF test, I could have worked harder on it. ขณะกำลังทำแบบทดสอบการอ่านคล่องแบบออกเสียงในภาษาอังกฤษนี้ฉันรู้สึกว่าคุณควรจะทำได้ดีกว่านี้					
8. I would like to know how well I did on this EORF test. ฉันอยากรู้ว่าฉันทำแบบทดสอบการอ่านคล่องแบบออกเสียงในภาษาอังกฤษนี้ได้ดีแค่ไหน					
9. I did not give this EORF test my full attention while completing it. ฉันไม่ได้ให้ความสนใจอย่างเต็มที่ในขณะที่กำลังทำแบบทดสอบการอ่านคล่องแบบออกเสียงในภาษาอังกฤษนี้					

<p>10. While taking this EORF test, I was able to persist to completion of the task. ขณะกำลังทำแบบทดสอบการอ่านคื่องแบบออกเสียงในภาษาอังกฤษฉันพยายามอย่างยิ่งเพื่อที่จะทำให้เสร็จ</p>					
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## Appendix C: Accuracy Scoring Guide

Please make sure that each student's ID number written on the copy of the story matches the recording you are working with. Listen to the recording carefully. Following along your copy of the story, mark the words that are read incorrectly according to the list below. Use the letters in the parentheses to classify the type of the errors. (Please see the example).

1. *Mispronunciations (m)* are misread words. (ex. singular VS plural, stress (ex. present as (adj. & n. 'prɛz ənt) and (v. prɪ'zɛnt), the in the[th uh] book vs the[th i] earth)
2. *Omissions (o)* are words skipped or unread.
3. *Insertions (i)* are words nonexistent in the text.
4. *Substitutions (s)* are words replaced for other meaningful words.  
(Self-corrections and mispronunciations due to dialect or regional differences are not counted as errors.)

### Reading Passage II

Despite the fact that this world is quite accessible compared with other planets in our own solar system, the deepest depths of the ocean remain almost unexplored. The deep sea is the final frontier of our home planet. It can roughly be defined as everything below 200 meters.

We know so little about the deep sea. We don't know enough about how the ocean works to be able to predict events. That's why we need to keep studying the deep sea and the sea in general. We are still exploring space, and we should still be exploring the deep ocean as well. Many scientists are looking to the deep sea to try to solve some big questions about the role it plays in the Earth's climate. The oceans are taking up a huge amount of the heat that results from global warming. In order to predict how much and how fast the Earth is going to warm in the future due to changes in greenhouse gas concentrations and other changes, we need to know how much energy it's taking up now. The oceans take up the vast majority of this heat.

More humans, 12 in all, have walked on the moon than have traveled to the deepest parts of our own planet. Only two men have visited the very deepest spot on Earth, the Challenger Deep in the Mariana Trench. Over the last several decades, scientists have found some strange and massive creatures living in the deep. They agree that the stakes for understanding what happens in the deep are high for everyone.

## Appendix D: Prosody Rubric

**Prosody Scoring Sheet**

Student's ID number \_\_\_\_\_ test \_\_\_\_\_

Instructions: Listen carefully to the reading. Check off what you hear on the line.

Dimension	Points				Weight	Total Weight/20
	4	3	2	1		
<b>Phrasing</b>	<p>____ Mostly well-phrased, typically in clause and sentence units. Preservation of the author's syntax is consistent. (Up to 2-3 mistakes)</p>	<p>____ Reads primarily in larger, meaningful phrase groups. Most phrasing seems appropriate. (Precision: 80% of the text)</p>	<p>____ Reads primarily in three- or four- word phrase groups. Some smaller grouping may be present. (Precision: more than 50% of the text)</p>	<p>____ Frequent word-by-word reading</p>	2	
<b>Stress</b>	<p>____ Stresses almost all appropriate words in a sentence. ____ Stresses almost all appropriate syllables in a word. (Up to 2-3 mistakes)</p>	<p>____ Stresses most appropriate words in a sentence. ____ Stresses most appropriate syllables in a word. (Precision: 80% of the text)</p>	<p>____ Stresses the majority of appropriate words in a sentence. ____ Stresses the majority of appropriate syllables in a word. (Precision: more than 50% of the text)</p>	<p>____ Improper word and sentence stress.</p>	1	
<b>Intonation</b>	<p>____ Uses appropriate pitch almost all of the time according to the punctuation marks. (Up to 2-3 mistakes)</p>	<p>____ Uses appropriate pitch most of the time according to the punctuation marks. (Precision: 80% of the text)</p>	<p>____ Majorly uses appropriate pitch according to the punctuation marks. (Precision: more than 50% of the text)</p>	<p>____ Fails to use pitch according to the punctuation marks.</p>	1	
<b>Pauses</b>	<p>____ Excellent attention to punctuation. ____ Appropriate pauses. (Up to 2-3 mistakes)</p>	<p>____ Good attention to punctuation. ____ Some extended pauses (not longer than 3seconds). (Precision: 80% of the text)</p>	<p>____ Some attention to punctuation. ____ Some extended pauses (longer than 3seconds). (Precision: more than 50% of the text)</p>	<p>____ No attention to punctuation. ____ Frequent extended pauses.</p>	1	

Total score \_\_\_\_\_

## Appendix E: Consent Form

### ใบยินยอมเข้าร่วมการวิจัย (Consent Form)

โครงการวิจัยเรื่อง: โครงสร้างแบบทดสอบและเกณฑ์วัดผลการอ่านคล่องแบบออกเสียงใน  
ภาษาอังกฤษของนักศึกษาไทยระดับปริญญาตรี

วันที่ให้คำยินยอม วันที่.....เดือน.....พ.ศ.....

1. ก่อนที่จะลงนามในใบยินยอมให้ทำการวิจัยนี้ ข้าพเจ้าได้รับการอธิบายจากผู้วิจัยถึง  
วัตถุประสงค์ของการวิจัย วิธีการวิจัย และมีความเข้าใจดีแล้ว
2. ผู้วิจัยรับรองว่าจะตอบคำถามต่าง ๆ ที่ข้าพเจ้าสงสัยด้วยความเต็มใจ ไม่ปิดบังซ่อนเร้นจน  
ข้าพเจ้าพอใจ
3. ข้าพเจ้ามีสิทธิ์ที่จะบอกเลิกการเข้าร่วมโครงการวิจัยนี้เมื่อใดก็ได้ และเข้าร่วมโครงการวิจัยนี้  
โดยสมัครใจ และการบอกเลิกการเข้าร่วมการวิจัยนั้น ไม่มีผลต่อคะแนนหรือเกรดของรายวิชา  
5500112 ที่จะพึงได้รับต่อไป
4. ผู้วิจัยรับรองว่าจะเก็บข้อมูลเฉพาะเกี่ยวกับตัวข้าพเจ้าเป็นความลับ จะเปิดเผยได้เฉพาะในรูปแบบ  
ที่เป็นสรุปผลการวิจัย การเปิดเผยข้อมูลของตัวข้าพเจ้าต่อหน่วยงานต่าง ๆ ที่เกี่ยวข้องต้อง  
ได้รับอนุญาตจากข้าพเจ้าแล้วจะกระทำได้เฉพาะกรณีจำเป็นด้วยเหตุผลทางวิชาการเท่านั้น
5. ข้าพเจ้าได้อ่านข้อความข้างต้นแล้ว และมีความเข้าใจดีทุกประการ และได้ลงนามในใบ  
ยินยอมนี้ด้วยความเต็มใจ

ลงนาม.....ผู้ยินยอม

(.....)

ลงนาม.....ผู้ทำวิจัย

(.....)

## VITA

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