

INTEGRATION OF LEXICAL APPROACH IN READING
COMPREHENSION INSTRUCTION OF CHINESE
ENGLISH MAJOR STUDENTS



A Thesis Submitted in Partial Fulfillment of the Requirements for the
Degree of Master of Arts in English Language Studies
Suranaree University of Technology
Academic Year 2021

การบูรณาการแนวการสอนแบบเน้นคำศัพท์เพื่อการสอนการอ่าน
เพื่อความเข้าใจของนักศึกษาชาวจีนเอกวิชาภาษาอังกฤษ



วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรศิลปศาสตรมหาบัณฑิต
สาขาวิชาภาษาอังกฤษศึกษา
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จ้ง เหยา : การบูรณาการแนวการสอนแบบเน้นคำศัพท์เพื่อการสอนการอ่านเพื่อความเข้าใจ
ของนักศึกษาชาวจีนเอกวิชาภาษาอังกฤษ (INTEGRATION OF LEXICAL APPROACH IN
READING COMPREHENSION INSTRUCTION OF CHINESE ENGLISH MAJOR
STUDENTS) อาจารย์ที่ปรึกษา : อาจารย์ ดร.จิตพนัส สุวรรณเทพ, 197 หน้า.

คำสำคัญ: แนวการสอนแบบเน้นคำศัพท์/การอ่านเพื่อความเข้าใจ/นักศึกษาชาวจีนที่เรียนภาษาอังกฤษ
ในฐานะภาษาต่างประเทศ

งานวิจัยฉบับนี้มีวัตถุประสงค์เพื่อการบูรณาการแนวการสอนแบบเน้นคำศัพท์เพื่อการสอนการ
อ่านให้กับนักศึกษามหาวิทยาลัย โดยศึกษาผลของการใช้แนวทางนี้ต่อความสามารถในการเข้าใจในการ
เรียนการอ่านของนักศึกษาชาวจีนเอกวิชาภาษาอังกฤษ และศึกษาความคิดเห็นของนักศึกษาที่มีต่อการ
สอนแบบเน้นคำศัพท์ งานวิจัยนี้เป็นการศึกษากึ่งทดลองที่ดำเนินขึ้นในมหาวิทยาลัยวิทยาลัยครูแห่ง
หนึ่ง ซึ่งใช้เวลาดำเนินการทั้งหมด 11 สัปดาห์ โดยผู้เข้าร่วมเป็นนักศึกษาชั้นปีที่หนึ่งเอกวิชา
ภาษาอังกฤษ จำนวน 88 คนซึ่งเป็นกลุ่มตัวอย่างนักศึกษาจากห้องเรียนสองห้อง กลุ่มทดลอง
ประกอบด้วยนักศึกษาจำนวน 45 คนซึ่งใช้แนวทางการเรียนแบบเน้นคำศัพท์เพื่อการอ่านบทความ
แบบยาวจำนวน 4 บทความ และกลุ่มควบคุมจำนวน 43 คนซึ่งใช้การเรียนแบบไวยากรณ์และการแปล
และการเรียนแบบมุ่งเน้นปฏิบัติงานด้วยบทความเดียวกันกับกลุ่มทดลอง ผลของการทดสอบหลัง
บทเรียนการอ่านเพื่อความเข้าใจแสดงให้เห็นว่ากลุ่มทดลองมีคะแนนที่สูงกว่ากลุ่มควบคุมและมีความ
แตกต่างกันอย่างมีนัยสำคัญระหว่างทั้งสองกลุ่มโดยมีค่าอยู่ที่ 0.047 ($p = 0.047 < 0.05$) นอกจากนี้ กลุ่ม
ทดลองยังมีพัฒนาการมากกว่ากลุ่มควบคุมเมื่อเปรียบเทียบคะแนนการอ่านทั้งแบบทดสอบก่อน
บทเรียนและหลังบทเรียน สำหรับกลุ่มทดลอง คะแนนเฉลี่ยของแบบทดสอบหลังบทเรียน ($M = 70.77$)
สูงกว่าคะแนนทดสอบก่อนบทเรียน ($M = 66.30$) และค่าสมมุติฐานเท่ากับ 0.000 ($p = 0.000 < 0.05$)
ในขณะที่กลุ่มควบคุมมีพัฒนาการขึ้นเล็กน้อย โดยมีคะแนนทดสอบหลังบทเรียน ($M = 65.97$) สูงขึ้น
กว่าคะแนนทดสอบก่อนบทเรียนเล็กน้อย ($M = 65.44$) และมีค่าสมมุติฐานอยู่ที่ 0.637 ($p = 0.637 >$
0.05) ผลการวิจัยของแบบสอบถาม บทสัมภาษณ์ชนิดกึ่งโครงสร้างและบันทึกหลังการสอนแบบ
อิเล็กทรอนิกส์พบว่านักศึกษาส่วนใหญ่คิดว่าการเรียนแบบเน้นคำศัพท์เหมาะสมกับพวกเขาและยังมี
ประโยชน์และประสิทธิภาพในการพัฒนาความสามารถในการอ่านอีกด้วย สรุปได้ว่าแนวทางการเรียน
แบบเน้นคำศัพท์นั้นช่วยส่งเสริมความสามารถในการอ่านเพื่อความเข้าใจแก่นักศึกษา อีกทั้งนักศึกษา
ยังมีทัศนคติเชิงบวกต่อการเรียนแนวทางนี้ ดังนั้นแนวการสอนแบบเน้นคำศัพท์จึงสามารถนำมาใช้กับ
การสอนการอ่านเพื่อความเข้าใจแก่นักศึกษาระดับอุดมศึกษา

สาขาวิชาภาษาต่างประเทศ
ปีการศึกษา 2564

ลายมือชื่อนักศึกษา Zhong Yao
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ZHONG YAO : INTEGRATION OF LEXICAL APPROACH IN READING
COMPREHENSION INSTRUCTION OF CHINESE ENGLISH MAJOR STUDENTS.
THESIS ADVISOR : JITPANAT SUWANTHEP, Ph.D., 197 PP.

Keywords: Lexical Approach/Reading Comprehension Instruction/Chinese EFL
Students

This study aimed to integrate the lexical approach into college English reading instruction, then explored the approach's effects on Chinese English major students' reading comprehension ability, and examined students' opinions of the lexical approach. The quasi-experimental study was conducted in a Normal University lasted 11 weeks, and 88 first-year English major students from two intact classes participated in it. The experimental group (EG) consisted of 45 students using the lexical approach to learn four long reading texts, and the control group (CG) with 43 students employed the grammar-translation method and task-based language teaching to learn the same texts. The results from the reading comprehension tests showed that the EG outperformed the CG in the posttest and there was a statistically significant difference between the two groups at the value of 0.047 ($p = 0.047 < 0.05$). In addition, the EG made much more progress than the CG by comparing the scores of the reading pretest and posttest. As to the EG, the mean score of the posttest ($M = 70.77$) was higher than the pretest ($M = 66.30$) and the p-value was 0.000 ($p = 0.000 < 0.05$), while the CG had little improvement, since the mean score of the posttest ($M = 65.97$) was slightly higher than the pretest ($M = 65.44$), and the p-value was 0.637 ($p = 0.637 > 0.05$). The findings from the questionnaire, a semi-structured interview, and electronic reflective journals revealed that most students thought the lexical approach was suitable to them, and it was useful and effective in improving their reading ability. In conclusion, the lexical approach could facilitate students' reading comprehension ability, and students had positive opinions of this approach. Therefore, the lexical approach can be applied to English reading instruction in higher education.

School of Foreign Languages
Academic Year 2021

Student's Signature Zhong Yao
Advisor's Signature Jitpanat Suwanteep

ACKNOWLEDGEMENTS

I would like to take this opportunity to appreciate all the people who have contributed and supported the completion of this dissertation. First and foremost, I would like to express my deepest gratitude to my advisor, Dr. Jitpanat Suwanthep. Her constructive suggestions, loving care, and consistent encouragements contributed considerably to helping me complete this research project.

Secondly, I would like to give my sincere appreciation to the committee members, Associate Professor Dr. Pragasit Sitthitikul, and Dr. Suksan Suppasetserree for spending their time reading my work and providing such valuable and insightful comments and suggestions.

Thirdly, I am grateful to all the teachers in the School of Foreign Languages at Suranaree University of Technology for their useful guidance and assistance. Meanwhile, I am particularly thankful to the teachers and participants in Hunan First Normal University, who provided great help and support for my project.

Besides, I appreciate greatly all my friends and classmates in SUT, and especially Wen Shuangqing and Wanwisa Changkwian who offered much help with my study and life in SUT.

Finally, I would like to express my special thanks to my parents for their support and love throughout the project!

Yao Zhong

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LIST OF ABBREVIATIONS

CET-4	College English Test-Band 4
CET-6	College English Test-Band 6
CG	Control Group
CSE	China's Standards of English Language Ability
EFL	English as a Foreign Language
ESL	English as a Second Language
ETSEM	English Teaching Syllabus for English Majors
EG	Experimental Group
GTM	Grammar-translation Method
IEC	Integrated English Course
IOC	Item Objective Congruence
MOE	Ministry of Education
NMET	National Matriculation English Test
PPT	PowerPoint
SPSS	Statistical Package for the Social Sciences
TBLT	Task-based Language Teaching
TEM-4	Test for English Majors-Band 4
TEM-8	Test for English Majors-Band 8
TOEFL	Test of English as a Foreign Language

CHAPTER 1

INTRODUCTION

This study aims to explore the effects of the lexical approach on Chinese English major students' reading comprehension ability. This chapter gives a brief introduction to the study. It starts with the description of the research background, elaborates on the problems that exist in college reading instruction and students' current reading situations, and then puts forward the proposed solutions. After that, it presents the research purposes and research questions. Furthermore, it expresses the significance of the study. Finally, the definitions of key terms are described.

1.1 Background of the Study

1.1.1 The Importance of Reading and Reading Comprehension

English is the main international language and the most widely used language in the world. Therefore, the importance of learning English cannot be understated in an increasingly interconnected and globalized world. Reading is one of the basic skills of learning English and is viewed as the most vital and requisite skill for students both in and outside the classroom. Grabe and Stoller (2013) proposed that reading ability is crucial to academic success. Al-Jarrah and Ismail (2018) claimed that a “lack of reading ability results in poor academic performance among students” (p. 32). Li (2015) pointed out that reading is the most important skill that students need to master, which reflects comprehensive language competence to a certain extent. Therefore, the importance of reading cannot be underestimated, especially in today's highly information-based society, which demands people to possess the ability to obtain information timely and understand it accurately. Nowadays, the term “21st-century skills” is prevalent in education, and they are crucial for people who desire to succeed in their careers. The 21st-century skills can be divided into three categories: learning skills, literacy skills, and life skills. Among them, literacy skills are composed

of information literacy, media literacy, and technology literacy, which train the learners to discern and differentiate reliable information from misleading information that floods the internet. Information literacy skill refers to understanding the facts, figures, charts, etc. Media literacy skill requires people to know how information is published and how to get it. Technology literacy involves the machines that are performed in the information-based society, and people are supposed to understand how the technology works. In such a case, correct understanding of information is the first step when learners look through it via the internet. Therefore, understanding the contents of these media is of paramount importance, which comes to reading comprehension.

As some researchers pointed out, reading comprehension has received considerable attention as a general indicator of reading achievement (Soden et al., 2015). Additionally, Tang (2009) claimed that reading comprehension is the key to the success of an English exam. Moreover, Ahmadi and Gilakjani (2012) stressed that reading comprehension is the foundation for a substantial amount of learning for English as a Foreign Language (EFL) learners. According to Block and Pressley (2002), comprehension is the final goal of reading instruction. Conforming to this view, Fernandes et al. (2017) expressed that “comprehension is the goal of reading” (p. 1988). In other words, if learners read a text without comprehending the meaning, then they acquire little from the text. As Goodman and Goodman (2009) put forward, “there is no reading without comprehension” (p. 92). Hence, reading comprehension is the key determinant of a person’s reading ability.

1.1.2 English Learning Situations in China

In China, English is seen as a very important subject. According to the *English Curriculum Standards for Compulsory Education* issued by the Ministry of Education (MOE) in 2017, students must learn English from the third grade. In some developed regions, many schools offer the English course in the first grade. Some families even let their children begin learning English when they are in kindergarten or at an earlier stage. Regarding the national English exams in China, whether it is the National Matriculation English Test (NMET), the Graduate School Entrance English Examination, College English Test-Band 4 (CET-4), College English Test-Band 6 (CET-6), Test for English Majors-Band 4 (TEM-4), or Test for English Majors-Band 8 (TEM-8), reading

comprehension accounts for a large proportion of these exams. However, many students are unable to achieve good grades when participating in these national exams. Tang (2009) pointed out that based on the feedback from the examination center, reading is precisely the weakness for Chinese students. Therefore, it is urgent to seek effective teaching methods to improve students' reading comprehension ability.

1.1.3 The Importance of Reading Instruction

Multiple factors exert influences on learners' reading comprehension ability, incorporating learners' language abilities, interest, purposes, background knowledge, reading strategies (Chalaysap, 2012; Koda, 2007; Tyler & Chard, 2000), text variables (Chalaysap, 2012), and teaching methods (Alshumaimeri, 2011). Among these factors, teaching methods play a pivotal role in improving learners' reading comprehension ability. According to the *English Teaching Syllabus for English Majors (ETSEM)* issued by the Teaching Advisory Committee for Tertiary English Majors under the MOE in 2000, higher education aims to cultivate the English majors to have a solid language foundation and extensive cultural knowledge, and they can use English proficiently in different situations. In the basic stage, namely, for the first-year and second-year students, teachers are supposed to impart basic knowledge of English, conduct comprehensive and rigorous English skills training for students, develop students' practical language ability, and help them have correct learning methods. Therefore, teachers who as instructors and facilitators are indispensable to students' learning. Ikhsan (2017) stated that reading teaching is an important activity carried out in the classroom where a teacher guides the students to figure out the main idea and purposes of a text and helps them to apprehend the meaning of it; meanwhile, students manage to gain some knowledge from the text. Linse (2005) contended that the aim of reading instruction is not only to guide the students to extract meaning from a text, but more importantly, is to train them how to synthesize and evaluate what they read. Wahid and Thais (2020) further remarked that teaching reading means enlightening students to how to read well, along with having an in-depth understanding of the written information. To recapitulate, the final goal of reading teaching is to empower the students to decode a text correctly and comprehend the deep meaning.

1.2 Statement of the Problem

1.2.1 Problems of English Reading Instruction in Chinese University Context

There are two main approaches in foreign language teaching: the structural approach and the communicative approach. The structural approach emphasizes language learning itself but neglects students' communicative ability. The salient teaching method of this approach is the grammar-translation method (GTM) which is used for reading instruction for a long time. By learning this method, although students can learn accurate and systematic grammatical rules, they fail to use language appropriately in different real-world situations. In addition, the language that they learn cannot satisfy their practical needs, since it is based on grammatical rules, not the native English speakers' language conventions.

On the contrary, the communicative approach highlights real communication while overlooks the inner relations of the language. The typical teaching method within this approach is the task-based language teaching (TBLT) which focuses on using authentic language and asking students to do meaningful tasks with the target language. Richards and Rodgers (2014) defined it as an approach using real-world or pedagogical tasks as the core unit of planning and instruction in language teaching. Since the assessment of this method depends on whether students can complete a task successfully; therefore, it puts more emphasis on language fluency rather than accuracy. This method has its distinct strengths. In terms of reading, the use of tasks will stimulate students' interest and prevent them from boredom, and it helps develop students' reading skills and strategies that are important for text comprehension. However, this method lies in some problems as well. To begin with, it is challenging for the teachers to find authentic and appropriate materials for students to read. Moreover, if a teacher cannot balance fluency and accuracy, it might bring about the situation that learners achieve fluency at the expense of accuracy. As Seedhouse (1999) argued that TBLT overemphasizes tasks and communicating meaning, which will affect the learning of correct language form.

In conclusion, either the GTM or TBLT has respective drawbacks. When a teacher employs these methods in teaching reading, it is easy to lead to two extremes, either language accuracy or fluency. As a result, it is necessary to probe new and useful

approaches to handle these problems and maintain the balance between form and meaning.

1.2.2 Reading Problems of EFL Learners

Considerable researchers and practitioners have made efforts to ascertain EFL learners' reading problems. Xia (2011) found out that the main reading problems haunted by Chinese English major students involved limited vocabulary, slow reading speed, and insufficient background knowledge. In addition, Li (2015) revealed that when taking the TEM-4, the common problems that Chinese English major students faced were low vocabulary ability, the barrier of long and difficult sentences, and an incorrect understanding of the main idea of a text. Furthermore, Duan and Yang (2016) explored the difficulties that Chinese students had with their academic English through interviews, and found out that they had difficulty understanding sentence structures, had a small vocabulary size, and had inadequate background knowledge. Additionally, Alsubaie (2014) conducted a study to explore the reading comprehension challenges faced by Saudi Arabian EFL learners in a university, and it disclosed that students lacked good decoding skills, read slowly, had ineffective reading strategies, and had inadequate background knowledge. Besides, Wahid and Thais (2020) reported that lacking vocabulary and being unable to understand the meaning of a text are major barriers to reading comprehension ability for Indonesian EFL learners. It can be observed that whether in China or other EFL countries, lacking vocabulary, having difficulty coping with long and complex sentences, insufficient background knowledge, and being unable to catch the main idea of a text are main problems for EFL learners.

In addition, the researcher conducted a reading problems analysis of first-year English major students in Hunan First Normal University through an online questionnaire, finding that the findings of the questionnaire are consistent with previous studies. There were six classes with 259 students in total, and the effective questionnaire response was 101. Students' reading problems can be categorized into four aspects.

a. Low Reading Motivation

The findings showed that more than one-third of students (36.6%) had low reading motivation; therefore, they spent less time on reading compared with

other English skills. For these students, learning a text means getting the answers to the reading comprehension exercises. In such a case, students gain little from the text.

b. Ineffective Reading Instruction

More than one-third of students (35.7%) thought that the reading methods taught by the teacher were ineffective to their reading ability. Moreover, it showed that many students had difficulty grasping the key points and understanding the structure and purposes of a passage when taking reading exams. Nevertheless, these aspects are the focuses of a reading class.

c. Lack of Reading Strategies

According to the results, even though most students (73.3%) had learned English for at least ten years, they were unsatisfied with their reading comprehension ability. One possible reason is that in the reading class, the teacher focuses more on explaining the language points and asking students to do reading comprehension exercises rather than teaching them reading strategies. In addition, the results revealed that a great number of students (65.3%) lacked proper reading methods. About one-third of students (35.6%) read a text word by word. Some students (16.8%) did the repeated reading. In other words, after reading a sentence or a paragraph, they always go back and repeat reading. A few students (12.9%) read with sound; that is to say, they read a passage in a low voice or through silent reading with lip movements. These reading methods have salient drawbacks. One aspect is that they decrease the reading speed; hence, students find it hard to read a passage within the limited time. The other aspect is that they fail to help students recognize the relationship between a word and other words; therefore, they cannot build the connection between words and ideas, and finally grasp the whole picture of a passage successfully. Moreover, it showed that they lacked appropriate strategies to deal with long and complicated sentences. When encountering such a sentence in taking a test, some students (36.6%) utilized the theme and main idea of a passage to help understand it. Some students (27.7%) figured out the sentence structure by grammatical analysis. Others (8.9%) chose to give up the sentence. A few students (25.7%) would use sense groups and lexical chunks to help understand the sentence. Sense groups refer to the components that are divided based on the meaning and structure of a sentence; each component

is called a sense group. Words in the same group are closely related and cannot be split at will; otherwise, they will lead to misunderstanding. For example, the sentence “All students should follow the rule that pets are forbidden to be raised in the dormitory”, can be divided into four sense groups, “all students / should follow the rule / that pets are forbidden to be raised /in the dormitory”. Meanwhile, “follow the rule”, “are forbidden to”, “raise pets” and “in the dormitory” are lexical chunks.

d. Small Vocabulary Size

The results showed that many students (43.6%) possessed small vocabulary storage, especially lacking fixed phrases and collocations. One possible justification is that they recognize and learn words individually. When learning the vocabulary, they learn the spelling and Chinese meaning and neglect other aspects such as English definitions, collocations, grammatical functions, derivatives, etc. In addition, multiple students (60.4%) are not familiar with the lexical chunks. When reading a passage, they would not highlight fixed phrases, collocations, or sentence patterns with various symbols. However, considerable students (69.3%) agreed that learning chunks is more effective than learning individual words.

As a result, the problems that exist in college reading instruction and students' reading situations need to be relieved or solved. To facilitate students' reading comprehension ability, a new teaching approach is needed. Therefore, this study attempts to explore the effects of the lexical approach on Chinese English major students' reading comprehension ability. The lexical approach is put forward by Lewis (1993), proposing that the basis of language learning and communication is not grammar but lexis, especially multi-word combinations, in other words, lexical chunks, which are the core of this approach.

Lexical chunks are multi-word units with stable structures and meanings, and they are stored and retrieved as a whole; therefore, learners produce them as a whole without grammar analysis, such lexical chunks as once upon a time, strong wind, how do you do? Lexical chunks are useful for reading comprehension, which can be verified through both empirical studies and theoretical foundations. Tanaka (2006) stated that chunk reading contributes to enhancing reading comprehension, for it aids students to know how the meaning of English is formed (as cited in Nishida, 2013).

Some studies have corroborated the roles of lexical chunks in facilitating reading ability, which involve increasing reading speed (Ellis, 2003), facilitating sentences understanding (Nishida, 2013), expanding vocabulary (Lv, 2016), improving reading comprehension ability (Anggraeni, 2015; Kiroğlu & Demirel, 2012; Wahid & Thais, 2020), and enhancing retention of information (Kiroğlu & Demirel, 2012). In addition, from the theoretical aspects, according to the chunking theory, Miller (1956) found out that people could only hold five to nine units of information in the brain. To expand the information capacity, they can use the chunks strategy to organize the scattered pieces of information into meaningful chunks stored in the brain. As relating to reading, it is possible that reading through chunks will increase the reading speed. Additionally, learners will pay attention to the relationship between a word and other words, which is likely to help them have a better understanding of sentences and finally interpret the text. Moreover, based on the capacity theory (Just & Carpenter, 1992), working memory capacity constrains language comprehension, and both processing and storage of working memory are mediated by activation. When reading a passage, information is activated through decoding text contents and retrieving from the long-term memory. Since lexical chunks possess textual and contextual functions, they can help the readers understand a passage better. Furthermore, on the ground of the language acquisition theory, both children and adults learn, store, and use abundant lexical chunks during their first and second language acquisition processes. Therefore, possessing large lexical chunks is beneficial to EFL learners' language development. In consequence, it is feasible to apply the lexical approach to reading instruction.

Multiple practitioners have explored the impacts of the lexical approach on English teaching since the approach sprouts. Debabi and Guerroudj (2018) conducted a quasi-experimental study and proved that using the lexical approach to EFL writing helped students improve their collocation ability. Gao (2019) elaborated on the idea of how to apply the lexical approach to teach writing, to cope with the "Chinglish" problem among Chinese students, and "Chinglish" means using grammatically correct but unnatural language in language use. In addition, other researchers also apply the lexical approach to teach writing (Abdulqader et al., 2017; Jiang, 2015; Qader, 2016; Tang, 2012). Moreover, Ördem and Paker (2016) carried out a

quasi-experimental study in Turkey and demonstrated that applying the lexical approach to a reading course contributed to the use and retention of collocations. Furthermore, Lv (2016) conducted a study to apply the lexical approach to college English vocabulary teaching, and it revealed that the lexical approach could improve students' vocabulary proficiency and learning confidence. Besides, Nam (2013) undertook a study to implement the lexical approach to English grammar teaching in Korea and testified that this approach was beneficial to teaching and learning grammar. Besides, Tuan and Nguyen (2014) carried out a study by using the lexical approach to improve Vietnamese students' oral communication ability, which revealed that the lexical approach significantly facilitated students' oral communication performance, and they held a positive attitude to the approach. Additionally, a few practitioners apply the lexical approach to speaking as well (Khalil, 2018; Sample, 2014).

It shows that the lexical approach has been implemented in English teaching in various aspects, and most practitioners focus more on speaking and writing skills. In terms of reading, researchers concentrate more on students' collocation ability. In addition, among these studies, the main participants are non-English major second language learners. This is the same in China's research context. According to the researcher's knowledge, scarce studies have been conducted to implement the lexical approach to the Integrated English Course (IEC) for English major students. The current study applied the lexical approach to this course, which lasted 11 weeks. The participants were first-year English major students with an intermediate English proficiency level. Since China has its English proficiency assessment system, namely, China's Standards of English Language Ability (CSE), developed by the National Education Examinations Authority in 2018 to be used as a yardstick for the nation's English language education. CSE is divided into three broad stages: elementary, intermediate, and advanced, and it can be further classified into nine levels. Based on the CSE (2018), levels 1–3 are the elementary stage, and the roughly corresponding learners are primary and junior high school students; levels 4–6 are the intermediate stage, and the roughly corresponding learners are high school and undergraduate non-English major students; levels 7–9 are the advanced stage, and the roughly corresponding learners are undergraduate English major and advanced English learners.

Participants of the present study were first-year English major students enrolled by the university after taking the NMET. According to *Item 11 of the Admission Regulations of Hunan First Normal University in 2020*, students' English scores must be over 115 (total is 150). It means that all the participants reached the intermediate level; thus, they are at an intermediate English proficiency level.

Moreover, this approach is not as popular as some typical approaches used to teach reading like TBLT whether in China or other countries, and many teachers are not very familiar with the lexical approach. For example, Dorkchandra (2016) administered a close-ended questionnaire to 140 EFL teachers from 9 state universities in the north-eastern parts of Thailand, to explore what extent the lexical approach was known and utilized by these college teachers, and the results indicated that teachers were at a moderate level in terms of the two aspects. This implies that the lexical approach is not popular among Thai university EFL teachers. As a result, this study might enrich the literature of the lexical approach and attempts to trigger more teachers' interests in this approach.

1.3 Purposes of the Study

To solve the problems mentioned above and improve students' reading comprehension ability, the present study attempted to examine the effects of the lexical approach on Chinese English major students' reading comprehension ability. Specifically, it aimed to investigate the following aspects:

1. To explore the effects of the lexical approach on students' reading comprehension ability, and
2. To investigate students' opinions of using the lexical approach to learn reading.

1.4 Research Questions

Based on the purposes of the study listed previously, this study was intended to answer the following questions:

- 1) To what extent does the lexical approach affect Chinese English major students' reading comprehension ability?
- 2) What are students' opinions of using the lexical approach to learn reading?

1.5 Significance of the Study

Although plentiful studies have been conducted to implement the lexical approach to English teaching, studies that apply the lexical approach to college reading teaching are still inadequate, especially for English major students. Based on the researcher's investigation and knowledge, few studies have been done to apply the lexical approach to IEC for English major students in China. Therefore, the current study is significant for the following aspects.

First, from the students' perspective, this study is likely to help them increase reading strategies, such as replacing the word-by-word reading method with the chunk-by-chunk reading method and dealing with unknown words and long and complex sentences. In addition, the study is possible to raise students' awareness of the importance of lexical chunks by teaching them how to identify, classify, and organize the lexical chunks.

In addition, from the pedagogical perspective, since this study has designed elaborate lesson plans about how to apply the lexical approach to teach reading, it might shed some light on college reading instruction. Moreover, the study might attract teachers' attention and facilitate them to focus more on lexical chunks.

Finally, from the research perspective, this study might enrich the academe, since very few studies are conducted on English major students. Additionally, the research findings can be served as resources for future studies which aim to explore reading comprehension in an EFL or English as a Second Language (ESL) context.

1.6 Definitions of Key Terms

Key terms used in the present study are stated in the following.

Integrated English Course

It refers to an integrated skills training course for the first-year and second-year English major students, which involves training students' listening, speaking, reading, and writing skills, and it aims to improve their comprehensive language competence.

EFL Reading

It is seen as an interactive process that happens between the reader and the writer. During the reading process, a reader selects appropriate strategies to decode the written symbols, and then combines the information from the text with the background knowledge to comprehend the text and obtain the writer's intended meaning.

Reading Comprehension Ability

In this study, it means the ability to understand the meaning of a text, which includes two aspects, decoding skill and comprehension. Decoding means identifying the written words and reading them accurately and fluently, and comprehension means constructing meaning, involving understanding the deep meaning of words, recognizing the relationship between sentences and sentences, and paragraphs and paragraphs. The goal of reading comprehension is to understand the whole picture of a text, including summarizing main ideas, understanding relationships between sentences and paragraphs, obtaining the writer's purposes, etc.

Grammar-translation Method

It is a language teaching method that students learn grammatical rules systematically and then apply these rules to translate sentences and texts from and into the target language.

Task-based Language Teaching

It is a language teaching method that uses tasks as the core unit of planning and instruction. Students communicate with each other through interaction with the target language for real-world and non-linguistic purposes.

The Lexical Approach

It is a teaching method put forward by Lewis (1993). The key concept of the approach is that language comprises multi-word prefabricated chunks, not traditional grammar and vocabulary. When applying this approach to language teaching, the teacher should guide the learners to focus on learning chunks rather than analyzing language.

Lexical Chunks

They are defined as multi-word units, which are conventionalized and frequently used. They have stable structures and meanings and are stored and retrieved as a whole. Learners produce them automatically and effortlessly without grammar analysis.

In this chapter, an introduction to the research background of the study is presented. Then it describes the problems of college English reading instruction and students' existing reading problems. In addition, the research purposes and research questions are presented. Furthermore, it concisely illustrates the significance of the study. In the end, it explains the key terms of the study to avoid any misunderstanding. The next chapter will elaborate on the related literature of the present study.



CHAPTER 2

LITERATURE REVIEW

This chapter gives an overview of the related literature review and relevant studies of the lexical approach. First, it starts with a review of reading, including the definitions of reading and reading comprehension, factors that influence the reading comprehension ability, reading process, reading strategies, and reading assessment. After that, it presents three reading teaching methods, including the grammar-translation method, task-based language teaching, and the lexical approach. Then it introduces the basic concepts of the lexical chunks. Moreover, it presents the framework for designing teaching activities of the study. Furthermore, it elicits the theoretical foundations of the lexical approach, including chunking theory, capacity theory, and language acquisition theory. The final part illustrates the related studies of applying the lexical approach to reading teaching.

2.1 The Nature of Reading

As one of the basic language skills, reading plays an essential role in people's daily life. People read every day, whether to search for information via mobile phones, to read magazines for pleasure, or to obtain information from the board in the subway station. It seems that reading is very simple; however, it is quite a complex activity. Therefore, it is necessary to know the nature of reading, and what it means to be able to read.

2.1.1 EFL Reading

Reading is fundamental to functioning in the society, and many people take it for granted. As Wolf (2007) stated that people are born to read, and reading is invented by humans; with this invention, people reconstruct the brain's organization to expand ways of thinking. As a result, it alters people's intellectual evolution. The definition of reading varies from scholar to scholar. No single statement can capture

the complexity of reading, and the act of reading is difficult to be understood and described.

Nuttall (2005) viewed reading as an interactive process, and it is a conversation between the reader and the writer. Moreover, Anderson (2003) stated that reading is a process where the readers integrate the written information with their prior knowledge to interpret the meaning. Furthermore, Aebersold and Field (1997) proposed that reading happens when people view a text and interpret the written symbols of that text. According to these scholars, reading is an interactive process that takes place between the reader and the writer, and the text plays the medium role which provides information that the writer wants the reader to understand. During the process, the reader also brings background knowledge to reading and actively constructs the meaning to interpret the writer's writing purposes.

Aside from that, Johnson (2008) stated that "reading is the practice of using text to create meaning" (p. 3). Additionally, Goodman (1982) concluded that "reading is a psycholinguistic guessing game" (as cited in Chalaysap, 2012, p. 39). As further mentioned by Chalaysap (2012), "to Goodman, reading is a meaning-seeking rather than a meaning-extracting process" (p. 39). Furthermore, Cook (2001) stated that reading occurs in contexts, and interpreting the meaning of a text originates from the reader's prior knowledge and the processes through which the reader handles it. This view emphasizes the importance of readers' background knowledge and shows that readers are expected to connect their existed knowledge with the information from a text to construct meaning. It can be assumed that these experts underscore the contributions of the readers. The readers, rather than the text, play a central role in the reading process.

Besides, Grabe and Stoller (2013) pointed out that a reader is likely to have different purposes to read in different situations, which need different reading skills and strategies. Different from everyday reading which is usually for pleasure, academic reading demands higher requirements for the learners. Sengupta (2002) described that "academic reading is complex, multi-level and different from other kinds of reading" (p. 3), and the scholar further defined academic reading as "purposeful and critical reading of a range of lengthy academic texts for completing the study of specific major

subject areas” (p. 3). As Sohail (2015) put forward that these texts are difficult to interpret as they present philosophies through complicated language; hence, some words and sentences are hard to understand. In addition, Gorzycki et al. (2016) synthesized some scholars’ perspectives of academic reading, and proposed that a strong purpose and metacognitive awareness are essential in academic reading; in the process of reading, readers are supposed to control and monitor their understanding of the structure, logic, and the context of a text, to solve problems that appear in the text, and to use the cognitive processes to comprehend, evaluate, and critique the text. In consequence, in academic reading, readers are expected to consciously explore the writer’s intentions, to be actively engaged with the text and relate the textual information with their background knowledge, and to critically think about the information obtained from the text. In the study, all the learning texts have around 1000 words, and they are excerpted from the classical works written by native English speakers. When learning a text, students are required to grasp all the new words and phrases, understand long and complicated sentences, recognize the structure, interpret the meaning, get the main idea, understand the rhetorical devices, identify the relationship between sentences and paragraphs, infer the writer’s tones, attitudes, and intentions, etc.

In conclusion, reading is seen as an interactive process. During the process, a reader uses prior knowledge and selects appropriate skills or strategies to process a text in order to obtain the author’s intended meaning. Academic reading in the current study can be perceived as learning a long text which contains philosophies that require the learners to explore. Learners are required to stimulate their background knowledge, use their cognitive processes to interpret, and metacognitive awareness to monitor their understanding. Moreover, they are expected to critically think and evaluate the information and philosophies gained from the text.

2.1.2 Definitions of Reading Comprehension

Cutler and Clifton (1999) proposed that reading and reading comprehension should not be equated; comprehension is a more all-encompassing concept than reading. It is necessary to understand reading comprehension from different facets.

Tighe et al. (2015) considered reading comprehension as “the overall goal in reading” (p. 440), as Anderson (2003) stated that the aim of reading is comprehension. Linse (2005) mentioned that “reading comprehension refers to reading for meaning, understanding, and entertainment” (p. 71). Additionally, Pang et al. (2003) noted that “comprehension is the process of deriving meaning from connected text. It involves word knowledge (vocabulary) as well as thinking and reasoning” (p. 14). Mikulecky and Jeffries (2007) further expounded that reading comprehension is not just recognizing and understanding a text, but more importantly, students can make sense of what they read by linking the contents of the text to what they have already known. Similarly, Koda (2005) proposed that reading comprehension occurs when a reader derives and incorporates diverse information from a text and connects it with the prior knowledge. In consonance with the view, Pressley (2002) maintained that good text comprehension emerges if a reader can predict what the text may be about, connect the information in a text with the background knowledge, ask questions during reading, monitor the understanding of a text, and summarize and criticize what is being read. It can be revealed that the purpose of reading is to obtain reading comprehension which involves various complicated processes. As reported by Kendeou et al. (2007), reading comprehension is a complicated process that consists of multiple subskills and activities, and the pivot of comprehension is the reader’s ability to integrate various information and configure a coherent representation of a text. Rahmani and Sadeghi (2011) showed agreement with the view, and noted that during the reading process, readers construct diverse representations of a text that are useful for comprehension, and they pointed out that reading comprehension is an interactive mental process where a reader’s language knowledge, worldview knowledge, and specific knowledge of a given topic are intertwined.

According to Alderson (2000), a common view of reading is that reading is made up of two parts, “decoding (word recognition) and comprehension; comprehension can be described as consisting of parsing sentences, understanding sentences in discourse, building a discourse structure, and then interpreting this understanding with what one already knows” (p. 12). Conforming to this view, Koda (2007) put forward that reading comprises three major segments: decoding, text-

information building, and reader-model construction. Decoding means deriving the linguistic information from a text directly. Text-information building can be defined as combining the derived information into phrases, clauses, sentences, and paragraphs. Reader-model construction refers to linking the text information to the reader's background knowledge. Chalaysap (2012) maintained that a set of processes will be activated when reading a text, which can be divided into lower-level processes and higher-level processes. Lower-level processes consist of decoding and syntactic parsing, and higher-level processes involve the connection between the text information and the reader's background knowledge, the connection between the text information and the reader's inferencing skills, and finally comes to the construction of the global meaning of a text (Field, 2003; Grabe & Stoller, 2013). Chalaysap (2012) further pointed out that the lower-level processes tend to be more skill-oriented and more linguistic automatic while the higher-level processes require the readers to utilize their background knowledge and inferencing skills to comprehend a text. Keenan et al. (2008) expressed that reading comprehension needs the successful expansion and arrangement of lower-level and higher-level processes.

2.1.3 Factors Affecting Reading Comprehension Ability

Tyler and Chard (2000) pointed out that six factors affect readers' ability when comprehending written materials: background experiences, intellectual abilities, language abilities, affection, the purpose of reading, and reading strategies. According to Chalaysap (2012), four variables influence the reading comprehension ability: the reader, the author, the text, and the language. Moreover, Koda (2007) put forward those variables that impact reading comprehension entail linguistic knowledge, background knowledge, metacognitive awareness, and reading strategies. Among them, linguistic knowledge subsumes orthographic, phonological, vocabulary, morphological, syntactic, discourse markers, and text-structure knowledge. Furthermore, teaching methods impinge on learners' reading comprehension. Besides, Alshumaimeri (2011) contended that reading methods affect students' reading performance. In conclusion, multilayer elements have impacts on the reading comprehension ability, involving linguistic knowledge, background knowledge, reading strategies, teaching methods, and variables from the author and the text. The present study will encompass teaching

methods, reading strategies, students' reading interests and attitudes toward reading, and linguistic knowledge. Given the linguistic knowledge, it will concentrate on vocabulary, morphological, syntactic, and discourse markers knowledge. The next subpart will discuss the reading process.

2.1.4 Reading Process

The reading process refers to “cognitive activity involving skills, strategies, attentional resources, knowledge resources, and their integration” (Grabe & Stoller, 2013, p. 9). It can be divided into three stages: pre-reading, while-reading, and post-reading (Ahmadi & Gilakjani, 2012; Pham, 2018; Saricoban, 2002; Tarshaei & Karbalaei, 2015).

In the pre-reading stage, the readers establish a purpose in mind and have a reading plan. They have an overview of the text, including the title, the subheadings, illustrations, etc. to have an initial impression and recognize the possible difficulties and problems, then activate related background knowledge and anticipate what it will talk about (Ahmadi & Gilakjani, 2012). Stimulating a reader's prior knowledge related to the topic of the text to the maximum significantly contributes to the comprehension of a text (Pham, 2018). The goal of the pre-reading activity is to have a “quick perception of some elements related to the external appearance of the text” and “get an initial overview of the text to be read” (Pham, 2018, p. 404).

During the while-reading stage, the readers contact the text directly from the part to the whole and obtain information from it purposefully. They use the decoding skill to recognize the written symbols and read them fluently. Then they integrate information from the text with their prior knowledge to comprehend the text and construct meaning. As Pham (2018) pointed out, “during reading, readers make sense of the text by taking different actions to achieve both decoding and understanding the text simultaneously” (p. 403). During the process, they may pause or reread the text to check understanding, monitor their comprehension, and make new predictions. The main purposes of this stage are to figure out the language structure and the logical organization of the text, use contextual clues for understanding meaning and guessing the meaning of unknown words, develop comprehension, and interpret the writer's purpose (Tarshaei & Karbalaei, 2015).

In the post-reading stage, the readers finish reading the text and aim “to check for accurate comprehension of the text” (Tarshaei & Karbalaei, 2015, p. 363). In this stage, they will compare their unknown knowledge before reading with the gained knowledge from reading the text, and then link it together to build new knowledge. Nordin et al. (2013) put forward that to have a deep understanding of a text, readers need to summarize, synthesize, and evaluate their reading by making inferences, drawing conclusions, and reflecting on the reading process, which helps develop their critical reading skills. The subsequent section will discuss about the reading strategies.

2.1.5 Reading Strategies

Reading strategies can be defined as “deliberate, goal-directed attempts to control and modify the reader’s efforts to decode text, understand words, and construct meanings of text” (Afflerbach et al., 2008, p. 368). In conjunction with this perspective, multiple scholars and researchers put forward that reading strategies are conscious behaviors that readers exhibit during the reading process to obtain the meaning of a text (Aarnoutse & Schellings, 2003; Kasemsap & Lee, 2015; Pressley, 2006), and they are beneficial to helping them become active and competent readers. Thus, teachers should provide guidance for the learners about what the reading strategies are, and how to effectively use them in reading. Zhang (1993) put forward that there are four types of reading strategies: cognitive, compensation, memory, and test-taking strategies. Cognitive strategies refer to how the readers obtain information through consciously engaging with their mental and physical processes (Kasemsap & Lee, 2015), which include predicting through activating prior knowledge, figuring out a text structure by searching for specific patterns, making a summary, and translating (Oxford, 1990). Compensation strategies can be possibly defined as the strategies that learners use when they encounter difficulties or confusion during the process of reading, which involve guessing unknown words’ meaning, inferring, and making connections (Zhang, 1993). Memory strategies are used to help learners process, store, and retain the contents of a text (Qanwal & Karim, 2014), which encompass “highlighting, paraphrasing, and rereading the text” (Kasemsap & Lee, 2015, p. 104). Test-taking strategies mean the strategies employed by learners to perform well in diverse reading comprehension tests (Qanwal & Karim, 2014). The current study covers cognitive,

compensation, and memory strategies. Furthermore, in the present study, reading comprehension ability includes two aspects, decoding skill and comprehension. Decoding refers to automatic and rapid word recognition (Hoover & Gough, 1990); in other words, a reader reads a text accurately and fluently. Automatic word recognition commonly refers to the sight vocabulary that a reader knows automatically (Bell & McCallum, 2008), and adequate word recognition is the basis for comprehension (Richek et al., 2002). Additionally, many researchers agree that quick and effortless word decoding plays an important role in reading a text fluently (Alderson, 2000; Bell & McCallum, 2008; Richek et al., 2002). In the study, the teacher will guide the students to improve their word recognition skills through chunks. The next subpart will talk about the reading assessment.

2.1.6 Reading Assessment

Assessments include three major types: informal, formal, and criterion-referenced (Bell & McCallum, 2008). Informal assessments are usually used in classroom learning, which are the “non-standardized methods of evaluating progress, such as interviews, observations, and teacher-made tests” (Overton, 2006, p. 15). Teacher-made tests refer to the assessments that aim to evaluate whether students have mastered specific knowledge and skills based on the curriculum requirements and materials (Bell & McCallum, 2008), including worksheets, evaluation checklists, quizzes, etc. The present study involves quizzes, cloze, words evaluation lists, and dictations, to check students’ vocabulary. Formal assessments are treated as norm-referenced tests (Bell & McCallum, 2008), which are used to compare a particular student’s performance with the peers (Hussain et al., 2015; Overton, 2006), such tests as monthly exams, mid-term exams, and final exams. This test is excluded from the present study. A criterion-referenced test is used to evaluate students’ learning outcome based on the pre-set criteria (Hussain et al., 2015). Different from the norm-referenced test, it compares a person’s knowledge or skills against a predetermined standard, and scores will not be affected by other students’ performance. In the study, CET-4 is the criterion-referenced test used as the reading comprehension test to assess the participants’ reading comprehension ability. According to Grabe (2009), the common feature of all the standardized reading tests is that they reflect the constructs

of reading comprehension ability in various forms, and constructs means the core aspects of the component abilities of comprehension. Based on the assumptions of standardized test constructions, an effective standardized reading test should reflect these aspects of reading constructs: “1) fluency and reading speed; 2) automaticity and rapid word recognition; 3) search processes; 4) vocabulary knowledge; 5) morphological knowledge; 6) syntactic knowledge; 7) text-structure awareness and discourse organization; 8) main-ideas comprehension; 9) recall of relevant details; 10) inferences about text information; 11) strategic processing abilities; 12) summarization abilities; 13) synthesis skills; 14) evaluation and critical reading” (Grabe, 2009, p. 357).

These 14 aspects reflect the constructs of the reading comprehension ability comprehensively and elaborately. The reading test of the study includes three parts: cloze, a long passage, and two short passages. The cloze requires the test-takers to choose appropriate words from the given words to fill in the blanks, which mainly assesses the participants’ decoding skills, vocabulary, and morphological knowledge. The second part requires the test-takers to match the statements with corresponding paragraphs, which assesses the participants’ fluency and reading speed, search processes, text-structure awareness, and discourse organization ability. The third part includes ten multiple-choice questions which primarily assess the participants’ automaticity and rapid word recognition, main-ideas comprehension, recall of relevant details, inferences about text information, and strategic processing abilities.

Moreover, based on the experiences in teaching reading and developing materials, Day and Park (2005) proposed six types of comprehension and five forms of questions that are useful for helping students become interactive readers. Six types of comprehension are “literal comprehension, reorganization, inference, prediction, evaluation, and personal response” (Day & Park, 2005, pp. 62–64). “Literal comprehension refers to an understanding of the straightforward meaning of the text” (Day & Park, 2005, p. 62), and readers can find the answers to such questions directly and explicitly from the text. Reorganization requires the readers to combine the scattered information from different paragraphs of a text for further understanding. Drawing inferences set higher requirements for the readers since they need to combine the obtained information with their background knowledge to comprehend the text.

Prediction means the readers use their understanding and prior knowledge related to the topic and other relevant matters to predict what might happen next. Evaluation requires the readers to give judgments about the text. “Personal response requires readers to respond with their feelings for the text and the subject” (Day & Park, 2005, p. 64). Five forms of questions include “yes/no questions, alternative questions, true or false, wh-questions, and multiple-choice questions” (Day & Park, 2005, pp. 65–66). In the current study, the treatment would involve all kinds of comprehension and forms of questions, and the reading comprehension tests use multiple-choice questions to mainly assess literal comprehension, reorganization, and inference.

In summary, this section discusses the definitions of EFL reading and reading comprehension, factors that affect reading comprehension ability, reading process, reading strategies, and reading assessments. The next section will present the reading teaching methods.

2.2 Reading Teaching Methods

This section introduces three reading teaching methods: the grammar-translation method, task-based language teaching, and the lexical approach. The grammar-translation method belongs to traditional teaching approaches, and the task-based language teaching and the lexical approach belong to communicative language teaching. The grammar-translation method and task-based language teaching would be applied to the control group to teach reading, and the lexical approach would be implemented to the experimental group.

2.2.1 Grammar-translation Method

The grammar-translation method is the oldest foreign language teaching method with a history of several hundred years. It dominated foreign language teaching from the mid-19th century to the mid-20th century, and it is still widely used in some parts of the world today. According to Richards and Rodgers (2014), this method has these main features. Firstly, learners learn the target language through mastering the grammatical rules systematically, and then apply the knowledge through translating sentences and texts from and into the target language. Secondly, it emphasizes reading

and writing, and little attention is paid to listening and speaking. Thirdly, the teacher uses the native language as the main medium of instruction, and there is little use of the target language. Fourthly, the teacher focuses more on accuracy rather than fluency. The goal of this method is to enable the learners to read and translate the literature of the target language. This method may help students master clear and systematic grammatical knowledge and improve their reading, writing, and translation skills. However, it is not conducive to cultivating students' communicative competence. Moreover, this teaching method is monotonous, and it is easy for students to lose learning interest.

2.2.2 Task-based Language Teaching

According to Richards and Rodgers (2014), task-based language teaching is an approach that teachers guide the students to complete tasks in the classroom. These tasks focus on meaning exchange, and students use the language for real-world and non-linguistic purposes (Van den, 2012). Nunan (2005) proposed that the TBLT reflects these principles. At first, the teacher selects the teaching contents based on students' needs, and the materials are authentic. In addition, it focuses on asking students to communicate through interaction with the target language. Moreover, it concentrates more on the learning process rather than the product. Furthermore, it advocates using the learners' own experiences to facilitate classroom learning, and what they learned should be closely related to the language use outside the classroom. This teaching method emphasizes "learning by doing" and has many advantages. Firstly, students need to complete a variety of tasks, which can help stimulate their learning interest. Secondly, it combines language knowledge and language skills to propel students to finish tasks, which helps improve students' comprehensive language competence. Thirdly, when taking the tasks, all the students have the chance to participate actively and think independently with guidance from the teacher, which is conducive to playing their initiative role in language teaching and learning. Nevertheless, this teaching method requires a high level of creativity and initiative on the part of the tasks, and they should be various, which causes a burden on teachers. Moreover, there is a risk for learners to achieve fluency at the expense of accuracy.

2.2.3 The Lexical Approach

Lewis (1993) created the lexical approach which views the chunks as the basic unit of language teaching. It is a groundbreaking teaching approach which has made great contributions to language teaching and learning.

2.2.3.1 Definitions of the Lexical Approach

Lewis (2002) stated that the key concept of the lexical approach is that language comprises multi-word prefabricated chunks, not traditional grammar and vocabulary. When teachers apply this approach to language teaching, they should guide the learners to attach importance to learning chunks as much as possible rather than analyzing language. The focus of the approach is lexis, not grammar, and lexis refers to “different kinds of multi-word chunks” (Lewis, 1997a, p. 15). In addition, Lewis (1997a) highlighted the importance of collocations and institutionalized expressions, for these two parts are not deserved enough attention from language teachers. The lexical approach emphasizes lexical chunks rather than grammar, which is a big challenge to traditional teaching approaches whose center is the grammar, as Harwood (2002) claimed that lexis has been secondary to grammar for a long time. However, this approach neither dichotomizes grammar and vocabulary nor denies the value of grammar. It holds a word-grammar view. Grammar plays a subordinate role in the approach. “Grammar tends to become lexis as the event becomes more probable” (Lewis, 1997a, p. 41). “Probable” here means natural and standard language that native speakers use in their daily life. Grammar helps learners use novel language - new combinations of lexical items to talk about unusual situations, while prefabricated lexis helps learners handle highly probable events fluently and effortlessly. Sentences formed based on grammatical rules are possible language, of which the purpose is to learn the language for language. These specially-made sentences might not be practical in communication. On the contrary, prefabricated lexis is the language that occurs in real communication. As a result, the lexical approach concentrates on actually-occurring or probable language instead of possible language that sometimes or never occurs in real communication. Therefore, this approach “places communication of meaning at the heart of language and language learning” (Lewis,

1997a, p. 15). The goal of the approach is to develop learners' awareness of lexical chunks and use them as an important feature of naturalistic language.

Moreover, the lexical approach is a lexis-based teaching approach and focuses on developing the learner's stocks of lexical chunks. This approach is a challenge to the regular point of view about second language instruction, which divides language into grammar (structure) and vocabulary (words). Instead, it argues that language consists of chunks used to produce a continuous coherent text. In this approach, chunking is the key to comprehensibility. As Lewis (2002) pointed out, only a reader can chunk a text correctly, it is likely for the reader to understand the text successfully, and only a speaker can express appropriate chunks, there will be fewer misunderstandings between the speaker and the listener(s). As a result, improving learners' awareness of lexical chunks and helping them identify chunks are of importance. It is the basic procedure of using the approach to teach reading. Once the learners can identify lexical chunks, they can process, organize, and use them. In the beginning, it might not be easy for the learners to identify chunks; therefore, the teacher is supposed to organize activities about how to identify chunks correctly and provide guidance for the learners. The next subsection will discuss the principles of the lexical approach.

2.2.3.2 Principles of the Lexical Approach

According to Lewis (2002), "language consists of grammaticalized lexis, not lexicalized grammar" (p. vi). It shows that lexis plays a prominent role while grammar is subordinate in language teaching and learning. "Lexis" refers to the lexical chunks rather than individual words, and they are the basic unit of sentences. In other words, the lexis itself includes grammatical information, that is "grammaticalized lexis". On the contrary, according to the traditional grammar-centered teaching methods such as GTM, people produce sentences by organizing individual words through grammatical rules; therefore, grammar takes a leading role in language learning. In addition, based on the lexical approach, learners will not specifically learn the grammatical rules and structures but sentence frames, and then fill in the slot. For example, when a teacher teaches the sentence pattern "What did you do last night?" if uses the GTM to teach, the teacher will explain the rules and patterns of the simple past tense, and then lets

students make sentences and do exercises. By using the lexical approach to teach, the teacher lets the students generalize the sentence frame “what did you do...”, and then lets them fill in the slot with appropriate phrases by themselves. Therefore, this is “lexicalized grammar”. It is seen as the pivotal principle of the lexical approach. Except for this cardinal principle, other key principles related to reading teaching can be summarized as follows. First, the basic function of language teaching is to raise students’ awareness of chunks and cultivate their ability to chunk language successfully. Hence, “vocabulary should be taught in chunks instead of as individual words” (Norland & Pruettt-Said, 2006, p. 55). In addition, collocation is seen as an organizing principle within syllabuses, and the primary significance of language teaching is the co-text. Moreover, teachers are supposed to teach language holistically rather than separately and try to use authentic language as much as possible. Furthermore, during the teaching process, teachers should pay more attention to sub-sentential and supra-sentential elements rather than sentence grammar; to put it simply, teachers should focus more on the lexis and discourse rather than grammatical rules and patterns explanation. Besides, teachers should emphasize tasks and processes instead of exercises and products. Meanwhile, teachers are expected to provide opportunities for students to “work with dictionaries and other reference tools” (Sethi, 2013, p. 7). The goal of the lexical approach is to improve learners’ communicative power which is the foundation, not the product of grammatical competence. Finally, the “observe-hypothesize-experiment” model should be applied to teaching, which means that learners are exposed to the language input as much as possible and then observe the language in use. After that, they make hypotheses about the way that language works, and then they experiment with the language by using it in their contexts.

It can be shown that implementing the lexical approach to reading might change a teacher’s mindset to some extent, for this approach indicates many changes in language teaching. A teacher’s view about the nature of language and learning decides the teaching methods and teaching techniques. However, a person’s mindset is hard to change once stabilized. Therefore, the current study will pay more attention to this aspect; that is to say, spending enough time on the training session with the teacher and students until they are familiar with the lexical approach.

Additionally, during the teaching process, the teacher is expected to emphasize and review the principles of the lexical approach. The next subpart will discuss the advantages and disadvantages of the lexical approach.

2.2.3.3 Advantages and Disadvantages of the Lexical Approach

With the lexical approach getting more popular, many scholars and researchers agree that this approach is conducive to language teaching and learning.

Kim (2008) acknowledged that the lexical approach has moved a big step forward, which shifts from grammar teaching to vocabulary teaching as the focus of language teaching. Scrivener (2011) pointed out that the lexical approach accentuates that learners should be exposed to the language and then experiment with it instead of the traditional ‘present and practice’ method. It indicates that students should get substantial input, then observe, and finally use the language. In addition, Hunt and Beglar (2005) stated that with the incorporation of chunking, exposure, and experimentation, learners manage to improve their target language through lexical items. Schmitt (2000) posited that the lexical approach helps lessen the burden for learners to study grammatical rules. For example, when a teacher teaches the sentence pattern ‘Have you ever to...?’, introducing it to learners as a kind of lexical chunks in place of structural analysis. As Nam (2013) pointed out, “the prefabricated lexical items guarantee grammatically accurate, culturally authentic, pragmatically acceptable, and native-like fluent utterances” (p. 331); moreover, the researcher further put forward, “the lexical approach suggests that knowledge of lexical chunks encompasses the knowledge of syntactic structures and syntactic relationships the words may have” (pp. 331–332). In line with the idea, Singleton (2000) proposed that some particular words are possible to be related to syntactic structures. For instance, when learning the word “desire”, the learners master the lexical phrase “desire to do something” as a substitute for learning the individual word “desire”. When they recall the word, they retrieve the lexical chunk instead of making efforts to think about the usage of the word. Therefore, the lexical approach significantly increases grammatical accuracy. Take ‘I see what you mean’ versus ‘I grasp what you mean’; ‘I’ll get back to you as soon as I can’ versus ‘I’ll return very soon’” (Lewis, 1997a, p. 37) and “‘as a matter of fact’ versus ‘as a matter of opinion’” (Wills, 2003,

p. 44) as examples. In a nutshell, as reported by Nam (2013), “the lexical approach promotes the transition from grammatical yet artificially contrived language to natural language that is widely accepted by the speech community” (p. 332).

Except for these good points, the lexical approach spares criticism as well. First, this approach lacks specific teaching guidelines and teaching activities. Richards and Rodgers (2014) claimed that the lexical approach “is still an idea in search of an approach and a methodology” (p. 225). Additionally, it offers little guidance about how to specify syllabus objectives, and its methodology is an eclectic mix of procedures that mainly aim at raising learners’ awareness of chunks (Attya et al., 2018). Moreover, Boers and Lindstromberg (2009) contended that the lexical approach is too autonomous to provide clear teaching guidelines and “available pedagogical materials” (Harwood, 2002, p. 148).

Secondly, the lexical approach is more suitable for intermediate and upper-level students. Boers and Lindstromberg (2009) claimed that this approach counts heavily on students’ autonomy, which is too hard to realize; in addition, instructing students to learn chunks incidentally is time-consuming. Their opinion implies that it is not suitable for using the approach to teach beginning learners. However, several studies have proved that the lexical approach can be used to teach the pupils (Nam, 2013; Zhang, 2017).

Thirdly, since the lexical approach puts overwhelming weight on lexis, some people concern that students may memorize the chunks without understanding their meanings and grammatical functions; as a result, they are unable to apply them appropriately and accurately in different situations. Sample (2014) argued that “students can have all the chunks, but without syntactic knowledge, they will be context bound and unable to adapt to different situations” (p. 274). On the one hand, Lowe (2003) admitted that the lexical approach exerts a key influence on promoting the evolution of language teaching; on the other hand, the scholar pointed out the lexical view of language is not the whole answer, and even if learners have learned all the phrase types which encompass most of the words of the language, it cannot explain how learners apply them to communicative situations (as cited in Shi & Wang, 2015). Put another way, like Shi and Wang (2015) remarked, “it reminds people of the importance of both

grammar and communicative goals in verbal communication” (p. 67). Besides, Xu (2019) claimed that the lexical approach ignores grammatical rules and structures teaching, which is not conducive to overall language learning.

Concerning these drawbacks of the lexical approach, this study tries to handle the problems from the following aspects. To begin with, the framework for designing teaching activities is based on Lewis (1997a) and Richards and Rodgers (2014). In addition, it adds other practicing activities such as cloze, role play, words evaluation, and dictation. Moreover, the teacher will also guide students to deal with long and difficult sentences by using lexical chunks and their grammatical knowledge. Furthermore, the participants are first-year Chinese English major students with an intermediate proficiency level. Besides, before applying the approach to reading teaching, the participants are trained to be familiar with lexical chunks and the lexical approach. Therefore, all these efforts are beneficial to the implementation of the lexical approach to reading instruction.

2.3 Lexical Chunks

“Lexical chunks” is the core concept of Lewis’s (1993) lexical approach; therefore, it is essential to know different aspects of the lexical chunks, including their definitions, characteristics, classifications, and functions.

2.3.1 Definitions of Lexical Chunks

Before defining the lexical chunks, the first thing is to know what chunks are. The term “chunks” first appeared in psychology and was coined by the famous American psychologist Miller (1956) in his classic article “The Magic Number Seven Plus or Minus Two: Some Limits on Our Capacity for Processing Information”, proposing that chunking is the process of processing information which combines several smaller units into larger meaningful units. He emphasizes that the short-term memory capacity of the brain is limited, generally five to nine meaningful blocks of information, which are called chunks. Though the memory span is a fixed number of chunks, the size of a chunk is not limited. The capacity of each block has flexibility, which can be a number, a word, a phrase, or a sentence. Therefore, Miller (1956) suggested that people can increase the number of pieces of information, which can be grouped into larger chunks by recoding. Materials

can be recoded into chunks by organizing relevant items logically, which become related and easily retrieved groups and then stored in the short-term memory. He further pointed out that long-term memory becomes more efficient by doing this way. For example, as to the sentence “Once upon a time, a lovely smart white bear lives in a dense forest with its kind and considerate parents”, it can be organized into four chunks, “once upon a time”, “a lovely smart white bear”, “lives in a dense forest”, and “with its kind and considerate parents”. Therefore, this sentence with 20 words can be retained in the reader’s short-term memory quickly and accurately, and it also facilitates the retention of long-term memory. Shao (2006) also stated that the process of forming chunks is the process of learning and remembering; that is, combining small stimulation units into larger ones. Therefore, the term “chunks” is initially applied to the study of the characteristics of human memory. Subsequently, it enters the linguistic area. In this field, it has attracted much attention of considerable scholars. They study the lexical chunks from different perspectives, use different terms, and give different definitions. In such a case, people have deepened the research of the lexical chunks, and eventually, Lewis (1993) created the lexical approach. Here the study briefly describes the evolution of lexical chunks.

At first, Becker (1975) proposed the term “lexical phrase” which consists of multi-word units, and they should be stored and retrieved as a whole for the efficiency of language learning; additionally, he pointed out that the minimal units of communicational language are the idiosyncratic chunks, not the single words. Then Pawley and Syder (1983) put forward the concept of “lexicalized sentence stems”, which is “a unit of clause length or longer whose grammatical form and lexical content is wholly or largely fixed” (p. 191). They mention the length of lexical chunks and highlight that the form and meaning of lexical chunks are almost invariable. Next, Nattinger and Decarrico (1992) labeled the lexical chunks as “lexical phrases of language with varying length loaded with discourse functions” (p. 1), and they are conventionalized and have an idiomatically pre-determined meaning. They explore lexical chunks from a discourse aspect in speaking and writing. Subsequently, Moon (1997) viewed lexical chunks as “multi-word items” that consist of two or more meaningful words and are inseparable, and they are formed through “the results of

lexical (and semantic) processes of fossilization and word-formation, rather than the operation of grammatical rules” (p. 43). This view is consistent with Becker’s (1975) perspective, for they both think that lexical chunks are formed based on their specific meanings rather than grammatical rules. Later, Wray (2002) defined lexical chunks as “formulaic sequences” which are a set of prefabricated consecutive words that can be stored and retrieved as a whole in the memory, and grammar analysis and generation are not necessary. Wray’s (2002) opinion is in line with Becker’s (1975) view that learners should store and retrieve lexical chunks as a whole without grammar analysis. Afterwards, Lewis (2002) proposed that “lexical items are socially sanctioned independent units. Many are words, but many consist of multi-word units” (p. 90). It reflects that the lexical chunks are conventionalized; moreover, Lewis (2002) related them with the society, and they are formed through long social practices. With the development of social technology, Zhang (2018) took a further step and used the term “multimodal lexical chunks”, which refer to realizing the meaning construction and acquisition of lexical chunks through various forms such as language, image, sound, and action. In addition, there are some other different terms proposed by researchers on the phenomenon of chunks, e.g., speech formula (Peters, 1983), prefabricated language (Howarth, 1998), lexical patterns (Hunston & Francis, 1998), and lexical bundles (Conrad & Biber, 2005). Table 2.1 shows the evolution of lexical chunks.

Table 2.1 The Evolution of Lexical Chunks

Scholars	Terms
Becker (1975)	Lexical phrase
Pawley & Syder (1983)	Lexicalized sentence stems
Peters (1983)	Speech formula
Nattinger & Decarrico (1992)	Lexical phrases
Moon (1997)	Multi-word items
Howarth (1998)	Prefabricated language
Hunston & Francis (1998)	Lexical patterns
Wray (2002)	Formulaic sequence
Lewis (2002)	Lexical chunks
Conrad & Biber (2005)	Lexical bundles
Zhang (2018)	Multimodal lexical chunks

This paper adopts the term “lexical chunks” that Lewis (2002) proposed, for it covers all the other terms and is popularly acceptable. Moreover, it can be observed that the above scholars’ different definitions of lexical chunks have common features, and they are complementary. Consequently, it can be concluded that lexical chunks are multi-word units that are prefabricated and frequently used, and they have stable structures and meanings and are usually stored by the learners as a whole for the convenience of processing, memorization, and retrieval. When learners produce the language, they extract the lexical chunks as a whole from their brain automatically and effortlessly without grammar analysis. The next subpart will introduce the main features of lexical chunks.

2.3.2 Characteristics of Lexical Chunks

It is necessary to know the characteristics of lexical chunks since not all sequences memorized by the learners are lexicalized (Pawley & Syder, 1983).

According to Pawley and Syder (1983), a lexical item has the following features: “firstly, the meaning of the expression is not (totally) predictable from its form; secondly, it behaves as a minimal unit for certain syntactic purposes; thirdly, it is a social institution” (p. 209). They highlight that the last feature is often overlooked; however, it is the basic feature to differentiate a lexicalized and non-lexicalized sequence. Regarding the first feature, due to the arbitrariness nature of a language, the meaning of a whole sentence is not the sum meaning of each word, and it is conventionalized. Therefore, the meaning of a sentence can hardly be predicted from its form, which is especially fit for idioms, proverbs, and some fixed expressions. As to the second feature, according to Lewis (1993), chunks are the core of a language and are treated as a whole to be stored and retrieved, and they are inseparable. As a result, they form the minimal unit of some syntactic purposes. In terms of the third feature, multitudes of lexical chunks are fixed or semi-fixed, which are established by people through long social practices and are consistent with people’s living and language using habits. In addition, Lewis (2002) proposed that “there is a vast difference between what we could say and what we do say” (p. 90), that is what he referred to as “possible language” and “probable language”. Many sentences are possible based on grammatical rules. However, these possible sentences can be recognized as

improbable or even bizarre when communicating with a native speaker. This is one of the language learning problems that Pawley and Syder (1983) are trying to address, nativelike selection. Lewis (2002) accentuated that the teachers should emphasize probable language rather than possible language to facilitate students' authenticity of language output.

In addition, Liu (2016) claimed that “lexical chunks are featured by predictability, stationarity, and easy access” (p. 1180). In terms of predictability, readers can predict related word combinations. For instance, when reading the lexical chunk “on the one hand”, readers assume that the subsequent part could appear “on the other hand”; when people hear the word “suicide”, it is easy for them to relate it with the verb “commit”. Stationarity means the chunks should be remembered and extracted as a whole and cannot be analyzed. As to easy access, lexical chunks are very common and frequently used. In summary, as to the characteristics of lexical chunks, the views of Pawley and Syder (1983) and Liu (2016) are complementary. The former view expresses the features of lexical chunks from the form, syntactic function, and conventionality, and the latter view describes them from conventionality, structure, and frequency of use. The next part will describe the classifications of lexical chunks.

2.3.3 Classifications of Lexical Chunks

As there are various terms for chunks, different categories of the lexical chunks have been put forward. To make them clear, it uses tables to present the classifications of lexical chunks.

To start with, Becker (1975) classified the lexical chunks into six types. Table 2.2 shows Becker's classification of lexical chunks.

Table 2.2 Becker's Classification of Lexical Chunks (Becker, 1975, p. 61)

Classifications	Concepts	Examples
Polywords	Fixed multi-word phrases with no variability	blow up, for good
Phrasal constraints	Units consisting of a small number of words, some of which constrain the variability of others; in the limiting case the whole phrase is invariable.	by sheer coincidence

Table 2.2 Becker's Classification of Lexical Chunks (Becker, 1975, p. 61)

(Continued)

Classifications	Concepts	Examples
Deictic locutions	Phrases with low variability, short-to-medium length	for that matter, that's all.
Sentence builders	Phrases up to sentence length, often containing slots for "parameters" or "arguments"	I'd like to ____.
Situational utterances	Usually complete sentences with little variability	How can I ever repay you?
Verbatim texts	Texts of any length memorized verbatim, or approximately so	Better late than never.

Becker's classification of the lexical chunks contributes to future research. However, the differences between the structure and functions of lexical chunks are vague. Fu (2016) agreed that Becker's classification of lexical chunks fails to differentiate the form and function.

Moreover, Nattinger and DeCarrico (1992) categorized the lexical chunks into four types. Table 2.3 presents Nattinger and DeCarrico's classification of lexical chunks.

Table 2.3 Nattinger and DeCarrico's Classification of Lexical Chunks

(Nattinger & DeCarrico, 1992, pp. 38-43)

Classifications	Concepts	Examples
Polywords	Short phrases function like individual words, have no variability and are continuous	by the way
Institutionalized expressions	Lexical phrases of sentence length and are invariable and continuous	How are you?
Phrasal constraints	Short to medium length phrases and allow variation	a ___ ago
Sentence builders	Provide the framework for whole sentences, contain slots for parameters or arguments for expressing a whole idea, and allow variation	My point is that ____.

Nattinger and DeCarrico (1992) further developed Becker's (1975) classification of lexical chunks. They classify lexical chunks in terms of structural and functional characteristics, which gives people a new angle to use the lexical chunks.

Lastly, Lewis (1997b) divided the lexical chunks into four types as well. Table 2.4 describes Lewis's classification of lexical chunks.

Table 2.4 Lewis's Classification of Lexical Chunks (Lewis, 1997b, pp. 256–259)

Classifications	Concepts	Examples
Words and polywords	Used as independent units and are invariable; a degree of idiomaticity with the polywords	Words: pen, calculator Polywords: by the way, on the other hand
Collocations	Pairs or groups of words that co-occur with very high frequency	raise capital, a short-term strategy
Institutionalized utterances	Recalled as a whole and of which much conversation is made; usually used in speaking to express pragmatic meaning	I'll get it. There's a call for you.
Sentence frames and heads	Mostly the written equivalent of institutionalized utterances with discourse features that allow people to decode complex written texts	Firstly, secondly, thirdly... We come now to a number of important reservations...

It shows that comparing Nattinger and DeCarrico's (1992) and Lewis's (1997b) classification of lexical chunks, they share a lot in common. The different aspect is that Lewis selects collocation as an independent category to highlight its importance in language teaching and learning. Lewis (2002) contended that the classification of lexical chunks is not definite, and is a tool used to record and accumulate lexical chunks more conveniently. This paper chooses Lewis's (1997b) classification of lexical chunks, because compared to Nattinger and DeCarrico's (1992) classification, Lewis puts more emphasis on the collocations, and in the IEC, the teacher will spend much time on teaching collocations when teaching the language points. Moreover, students are weak in learning collocations; therefore, using Lewis's (1997b) classification contributes to

raising their awareness of collocations. The next section will discuss the functions of lexical chunks.

2.3.4 Functions of Lexical Chunks

Moon (1998) conducted a study to examine the functions of lexical chunks based on a corpus-based approach and put forward that there are five functions of lexical chunks. The first is the informational function, which means that lexical chunks are tools for conveying information and stating propositions, e.g., for sale, fast asleep. The second is the evaluative function. It denotes that lexical chunks are used to express a speaker's or writer's evaluations, e.g., down to earth, second to none. The third is the situational function. This function is typically found in spoken discourse. It is more related to extralinguistic contexts and responds to situations, e.g., excuse me, beg your pardon. The fourth is the modalizing function. It shows that lexical chunks indicate modality. In other words, they can convey true values, requests, advice, and so on, e.g., I mean, as we know it. The final one is the organizational function. It signifies that lexical chunks organize texts and signal discourse structure, e.g., at first, by contrast. Moon (1998) explored the functions of lexical chunks from their contributions to the content and structure of a text, and the current paper expounds on the benefits of chunks in reading comprehension from the following aspects.

To begin with, lexical chunks help facilitate reading fluency. When reading a passage, learners read it chunk by chunk rather than word by word. For one thing, it increases processing speed (Ellis, 2003). For another thing, it improves reading accuracy. Samuels (2013) contended that the ability to know the meaning of every word of a sentence is quite different from the ability to understand a sentence. Therefore, to understand a sentence, a learner must possess the ability to integrate the meaning of each word in a sentence. As Liu (2016) put forward, chunks are loaded with the pragmatic function and contain frequently used formula language and patterns. Hence, lexical chunks are conducive to comprehending sentences. Moreover, Alderson (2000) claimed that based on the results of numerous studies of eye movements, the difference between good and poor readers is the ability to recognize words automatically rather than the input of the amounts of letters. Therefore, a rapid and accurate word recognition ability plays a crucial role in reading comprehension. When

learners read a passage chunk by chunk, they will put the words that are linked together, which become chunks. In this way, learners process and store chunks as a whole. In addition, when they decode and process a text in chunks, they pay attention to the co-text and context of the words, which assists their understanding. As a result, reading through chunks is likely to increase reading speed and reading accuracy.

In addition, lexical chunks are beneficial to understanding a text's structure. Lewis (2002) maintained that "a text can be crudely separated into two quite different parts: a frame which structures the discourse, and slots filled with content-bearing language" (p. 35). From the perspective of genre analysis, reading materials can be categorized into narrative texts, argumentative essays, expository texts, novels, news reports, playbooks, etc. The contents involve various facets such as politics, economy, culture, religion, and history. Different genres of reading texts have their distinct discourse organization modes, such as the overall structure, the opening, the body part, and the conclusion part. Correspondingly, different genres have different stylistic lexical items. Learning these items helps learners understand the text structure better.

Lastly, lexical chunks are useful in enhancing the understanding of a passage. While reading, a reader builds a mental representation of a text (Kintsch, 1998). One important way to build a coherent representation for decoding and retrieving information from a text is to utilize the structure (Mann & Thompson, 1986). Due to the limited processing capacity, readers are unable to remember all information in a text. Hence, some information more than others must be selected for deeper decoding. Various functions of the lexical chunks can help the readers establish the links between sentences and paragraphs. Nattinger and DeCarrico (1992) proposed the term "macro-organizers", which "refer to the markers of the overall direction of discourse since they signal the organization of high-level information: marking topics, shifts in topic, a summary of a topic, exemplification, relationships between topics, evaluations, qualifications, and asides" (p. 90). They further divide macro-organizers into two types: global or coordinate, and local or subordinate. Global macro-organizers are those which signal the introduction, shift, and summary of a topic. Local macro-organizers do so at specific points; in other words, they are served as development and support for the topics. The categories that list below show the differences

between the two types of markers. Table 2.5 shows the global macro-organizers, and Table 2.6 shows the local macro-organizers.

Table 2.5 Global/Co-ordinate Macro-organizers
(Nattinger & DeCarrico, 1992, p. 95)

Topic markers	What I mainly want to discuss is, the first thing is
Topic shifters	That reminds me of, however
Summarizers	in summary, in conclusion

Table 2.6 Local/Subordinate Macro-organizers
(Nattinger & DeCarrico, 1992, pp. 95–96)

Exemplifiers	in other words, for example
Relators	not only...but also..., the other thing is...
Evaluators	I think/don't think that, as far as I know
Qualifiers	It depends on, it doesn't mean that...
Asides	Where was I? I guess I got off the track here.

These organizers help readers to figure out the relationship between sentences and sentences, paragraphs and paragraphs more clearly, which assists students in understanding a text better.

2.4 The Framework for Designing Teaching Activities

In the study, the framework for designing teaching activities is adapted from Lewis (1997a) and Richards and Rodgers (2014). The core of the lexical approach is lexical chunks, and it aims to develop students' awareness of lexical chunks and use them to improve their reading comprehension ability. Hence, the teaching activities are organized based on lexical chunks. The activities, noticing - identifying the lexical chunks and consciousness-raising - classifying the lexical chunks are originated from Lewis (1997a). In addition, memory-enhancing of lexical chunks - elaboration, and retelling activities are from Richards and Rodgers (2014). Moreover, it supplements other activities, e.g., understanding details, cloze, role-play, words evaluation, dictation,

and quiz. These teaching activities form a complete teaching process and facilitate the application of the lexical approach to reading teaching. Figure 2.1 shows the framework for designing the teaching activities based on the lexical approach.

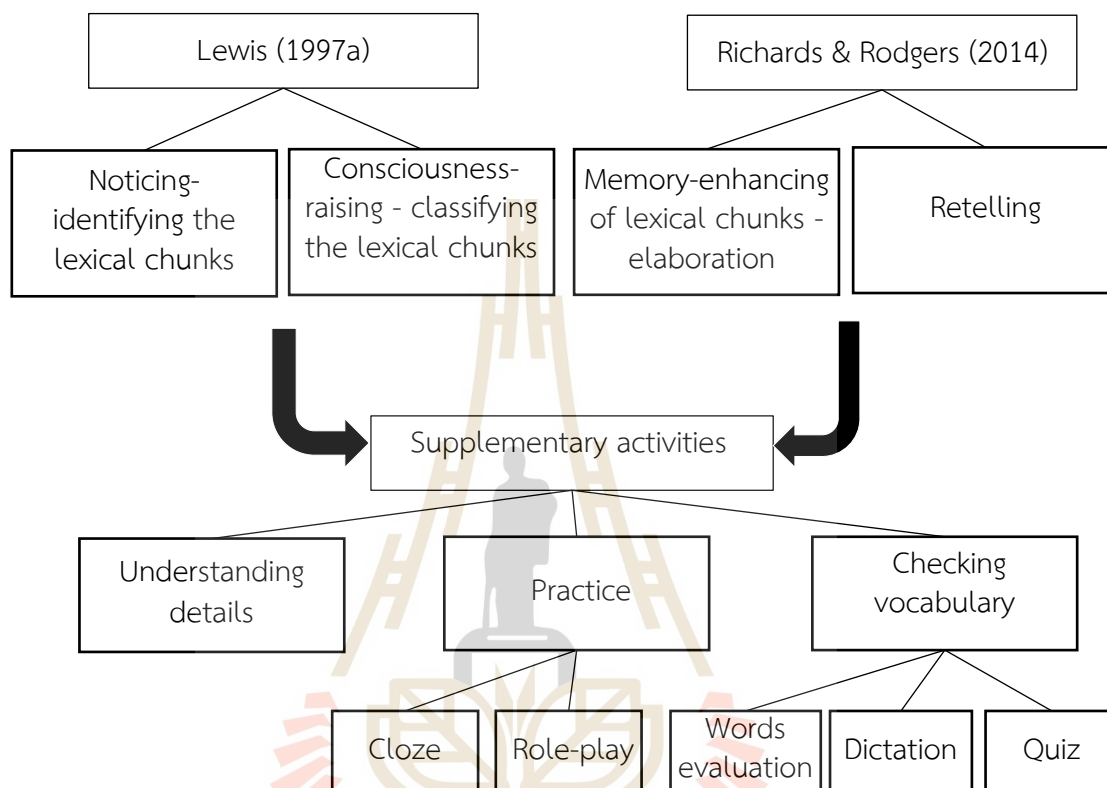


Figure 2.1 The Framework for Designing Teaching Activities

Lewis (1997a) proposed that conscious learning exerts a key influence on language acquisition; moreover, formal instruction plays a significant role in facilitating learning, and teaching contributes to transforming the input into intake. Input can be defined as “the linguistic data that learners are exposed to” (Wong, 2018, p. 1). Intake refers to “the linguistic data processed from the input and held in working memory for further processing” (VanPatten, 2002, p. 757), as Chi (2016) pointed out that intake is a selected part of the input that is processed. Therefore, noticing - identifying the lexical chunks activity helps students pay attention to the lexical chunks. In this activity, when reading a text, students are required to highlight the lexical chunks that are useful and important to them. Lewis (1997a) put forward that identifying chunks correctly is an

essential skill that can help learners translate better, avoid making word selection mistakes, and achieve language accuracy.

In addition, the activity, consciousness-raising - classifying the lexical chunks, is to further increase students' awareness of lexical chunks. Through this activity, learners are expected to seek patterns from the language data, make hypotheses about how language works, draw conclusions, record the findings in the lexical notebook, and finally use them in communication. This process is consistent with what Lewis (1997a) proposed "observe-hypothesize-experiment" teaching model. In such a case, learners can improve their communicative competence. These two teaching activities are intended to heighten the learners' awareness of lexical chunks.

Memory-enhancing of lexical chunks - elaboration, and retelling activities are used for "enhancing the remembering of chunks" (Richards & Rodgers, 2014, p. 220). Elaboration can be defined as a broad term for various mental operations, and learners attach importance to the form and meaning of words and phrases rather than simple noticing (Boers & Lindstromberg, 2009). Through this activity, learners are supposed to learn a word from diverse aspects, including pronunciation, spelling, definition, synonyms or antonyms, co-text, collocations, grammatical usage, and derivatives. Retelling activity helps students use and consolidate the newly learned chunks.

As to the supplementary activities, understanding details activity helps students learn a text elaborately with guidance from the teacher. Cloze, retelling, and role-play are used as practicing activities to check whether the students understand the contents and help them review and consolidate the newly learned lexical chunks. The words evaluation and dictation activities are used to help students check and consolidate the new lexical chunks.

In summary, all the activities aim to assist students to have a better understanding of the text. Next section will introduce the theoretical foundations of the lexical approach.

2.5 Theoretical Foundations of the Lexical Approach

Theoretical foundations are indispensable to any research work to direct and validate a study. This study selects chunking theory, capacity theory, and language acquisition theory as the theoretical foundations. Chunking theory and capacity theory explain why lexical chunks are of importance to reading comprehension. Language acquisition theory describes the natural process that native speakers acquire a language, and it further validates the necessity of lexical chunks in language learning.

2.5.1 Chunking Theory

According to Mayer (1981), an information processing system consists of three components: sensory storage memory, short-term memory, and long-term memory. Sensory storage memory plays an important role in language activities, which holds information from the outside within a very short time. Short-term memory, also called working memory, can retain the data for a few seconds. Long-term memory can be defined that information decoded or processed successfully stored in the brain for a long time, which is highly structured and organized, or sometimes referred to as schemas. One of the earliest findings of memory research is from Miller (1956) who conducted a quantitative study on short-term memory capacity and found out that it holds a stable number of units, that is five to nine units of information. According to Miller (1956), although the brain's short-term memory capacity is rather small which can only retain fragmentary information, people can enlarge short-term memory information and promote the information code become quickly and effectively through the chunks strategy to make it become bigger and meaningful chunks stored in the brain. Xu (2016) proposed that single letters represent pieces of information and each letter occupies a slot, when these letters form a word, that is, chunked into a word unit which also takes up a slot in the short-term memory. Therefore, the capacity of memory is expanded through coding letters into word units. This way is not only conducive to the expansion of people's memory, which converts short-term memory into long-term memory to a great extent, but also useful for retrieval. Chunking, which codes individual units into large units increases memory capacity. This is the chunks' effect on memory. Just as Xu (2016) claimed, "for Miller, chunking appeared to be 'the very lifeblood of the thought process'" (p. 120). As it related to reading, it is possible

that reading through chunks rather than individual words will increase reading speed. Moreover, it helps readers construct a mental representation of a text; hence, they might have a better understanding of it. It can be concluded that the lexical approach based on chunking theory is conducive to memory in enlarging the breadth and improving the effectiveness of memory. Besides, Paris and Hamilton (2009) pointed out that comprehending a text demands the learners to integrate the meaning among words, sentences, and passages, and working memory plays a critical role during this process, which mainly reflects from three aspects: word level, sentence level, and text level. As to the word level, learners need to decode and retrieve the words' meaning; from the sentence level, learners are required to combine the syntactic information with semantic information to understand each sentence; in terms of the text's level, learners are expected to incorporate and synthesize these pieces of information to form a coherent idea. Furthermore, multitudes of studies have proven that there is a strong and positive connection between working memory and reading comprehension (Arrington et al., 2014; Nouwens et al., 2017; Peng et al., 2018).

2.5.2 Capacity Theory

The capacity theory is proposed by Just and Carpenter (1992). According to the theory, working memory capacity constrains language comprehension, and both processing and storage of working memory are mediated by activation. However, the total amount of available activation in working memory varies among individuals. Based on this theory, "working memory for language refers to a set of processes and resources that perform language comprehension" (Just & Carpenter, 1992, p. 123). "Capacity can be expressed as the maximum amount of activation available in working memory to support the storage and processing functions" (Just & Carpenter, 1992, p. 123). Nevertheless, the readers' processing resources are limited. In other words, the total amount of activation that a reader has is limited. It is a normal phenomenon that readers tend to forget the representations constructed in the previous sentences as they process a text continually. As to the two functions of working memory, both storage and processing are fueled by the same commodity: activation. In reading comprehension, information becomes activated through decoding text contents and retrieving the existed knowledge from the long-term memory. When the activated

information reaches a minimum threshold, it participates in various understanding processes of the brain and becomes part of working memory. On the contrary, when the amount of activation is less than the capacity required to complete the understanding process, the information is deallocated, leaving some components forgotten. Linking capacity to chunking, as claimed by Xu (2016), “chunking cannot happen until some information in long-term memory is stimulated” (p. 120). That is to say, the new coming data should be matched to the information in the long-term memory. Therefore, it can be deduced that as a person grows older and accumulates more knowledge, the working memory will become more effective and have a greater capacity owing to the person’s broader background knowledge.

What can be learned from the theory is that readers need to expand memory capacity and achieve the maximum activation of working memory during the reading process. Lexical chunks possess textual and contextual functions; therefore, when readers read a text in chunks, it is possible to decrease processing difficulty and increase the reading speed.

2.5.3 Language Acquisition Theory

Liu (2006) stated that both children and adults have experience in using abundant unanalyzed language chunks in certain language environments during the process of first and second language acquisition, to make up for the lack of linguistic knowledge and finally help them complete communicative tasks. People store and retrieve these chunks as a whole and learn syntactic rules in the subsequent analysis. These syntactic structures exceed their current linguistic competence. For instance, when children learn the sentence pattern “What is that?”, they might use the three morphemes as a single and unsegmented item. Put it differently, they do not analyze the item but store and recall it as a whole, and treat it like any single word in their vocabulary. When they respond to the question, they may use “This is an X” as a whole unit in the same way. Later, they will acquire the grammatical pattern “What is/are...?”, and they know the slot part should be filled with pronouns or nouns. As Bannard and Matthews (2008) proposed, plentiful accounts indicate that “children acquire the grammar of their native language (or languages) simply by observing patterns and generalizations in the input” (p. 241). In consonance with the view,

Theakston and Lieven (2017) put forward that “a child’s lexicon might initially contain a frozen phrase such as *Where’s Daddy?* before adding *Where’s PERSON?* and then *Where’s PERSON/OBJECT?* ending up with *Where’s NP?*” (p. 589).

Many researchers have verified that lexical chunks play a pivotal role in early childhood English language learning (Arnon & Clark, 2011; Bannard & Matthews, 2008; Peters, 1983). Peters (1983) conducted a study of children’s both first and second language acquisition, which asked the children to retrieve what they heard from a speech, finding out that most of the units that they retrieved were unanalyzed. What can be concluded is that formulaic speech occupies a special status in a child’s language. These unanalyzed units are conducive to the process of analysis and rule formation, which will ultimately culminate in adult competence. Additionally, Bannard and Matthews (2008) carried out an empirical study and corroborated that the children remembered utterances that they heard and drew generalizations over these stored examples. Moreover, Arnon and Clark (2011) conducted a study to examine the impacts of linguistic context on children’s speech. They assumed that children focused more on larger phrases from the input and used them in production. They assessed the role of linguistic context by comparing irregular plurals elicited with a general question, (e.g., *What are all these?*) versus a lexically specific frequent frame (e.g., *Three blind ___*). The findings revealed that children output more correct irregular plurals after lexically specific frequent frames than a general question. Apart from that, they confirmed that children’s sensitivity to the relationship between particular words and phrases, and their word production was influenced by the chunks from the input. It shows that lexical chunks impinge on young children’s language production.

Furthermore, a body of evidence proves that adults store myriad lexical chunks and use them in comprehension and production (Arnon et al., 2017; Arnon & Snider, 2010). Arnon and Clark (2011) pointed out that many studies show that adults’ one-word utterances only occupy 10% of their speaking, and “most of the time adults use the words children hear embedded in larger utterances” (p. 108). With the development and popularity of technology, considerable researchers use computational models to verify that lexical chunks occupy a large proportion of children and adults’ language comprehension and production (Jones, 2012; McCauley

& Christiansen, 2014, 2017, 2019; Solan et al., 2005). As supported by Lewis (1997a), “Much of what we say, and a significant proportion of what we write, consists of prefabricated multi-word items” (p. 11). Indeed, those who store abundant lexical chunks in their brain tend to have the ability to produce language quickly and accurately in language production. In short, lexical chunks are of great importance in language acquisition.

2.6 Related Studies of the Application of the Lexical Approach to Reading Teaching

Many researchers have conducted studies from both quantitative and qualitative aspects to implement the lexical approach to reading teaching and explored its effects.

Chen (2007) carried out a quasi-experimental study to probe into the effects of the lexical approach on English reading teaching at a senior high school for 8 weeks. The experimental group (EG) included 49 students who received the lexical approach, and the control group (CG) consisted of 50 students who followed the traditional teaching method. The reading materials were based on the textbook. The results of the tests and survey showed that the EG made better reading achievement than the CG. Zhong (2009) also conducted a similar study like Chen (2007) except for using the newspapers as the reading materials, and the results were consistent.

Han (2013) also took in a study of applying the lexical approach to reading teaching in a senior high school. The researcher adopted the same instruments as Chen (2007) and Zhong (2009) but extended the results, finding that the approach could improve students’ reading efficiency, including reading speed and reading ability; it helped develop students’ reading strategies, and they had a positive attitude to reading. These experiments revealed that the lexical approach was effective in facilitating reading ability in senior high schools.

Nishida (2013) conducted a study in Japan to investigate the influence of chunking on reading comprehension. One hundred and twenty-two non-English major Japanese students who were classified into three groups participated in the study for 14 weeks. The EG 1 consisted of 37 students who learned chunk reading and knowledge of

phrase/syntactic structure; the EG 2 was made up of 41 students who were taught with the chunk reading alone; the CG comprised 44 students who received no instruction on either aspect. The instruments included a chunking test and a reading test. The results showed that the teaching of chunking facilitated learners' reading comprehension ability, but it was more helpful when integrated with the phrase/syntactic structure instruction.

Sample (2014) implemented the lexical approach into the researcher's teaching context at a public elementary school in South Korea. It was not a real experiment; therefore, it offered no statistical results. However, the researcher provided elaborate descriptions of how to apply the approach to language teaching incorporating reading, listening, and speaking practices, and made some changes to the teaching techniques based on students' responses. It implicated that recording and recycling the language promoted by Lewis (1997a) was quite successful, particularly the formats used to record lexical chunks. Moreover, using the corpus may be inappropriate for lower-level learners, for they would get bored and dizzy of too many sentences on the screen; hence, the researcher suggested preselecting a limited number of sentences to focus on.

Ördem and Paker (2016) undertook a quasi-experimental study in Turkey to investigate whether teaching collocations by applying the lexical approach in a reading course would contribute to retention and use of English. Sixty first-year English major students participated in the study. The EG was taught collocations through the lexical approach using ten different kinds of activities for ten weeks, while the CG was taught in a traditional way that focused on words' learning, including definitions, synonyms, antonyms, and guessing from a text. The results showed that the EG outperformed the CG in all three instruments which include pretest and posttest, guided writing tasks, and retention judgment test. In addition, participants in the EG could remember and produce the collocations more appropriately than the CG. The study indicated that the lexical approach contributed to memory retention and the production of collocations in learners' reading comprehension.

Ma and Li (2016) carried out a case study in a university to investigate the impacts of the lexical chunk theory on reading fluency. The study lasted two years and was

divided into three consecutive periods. The first period lasted half a year when the researcher demonstrated how the lexical chunks were identified and classified. The second stage also lasted half a year, during which the subjects demonstrated how to read with the lexical chunks. The third stage centered around the subjects' preparation for the extensive reading of the Test of English as a Foreign Language (TOEFL). The researcher used extensive reading practice to help students apply what they had learned about lexical chunks. Data came from class observations, questionnaires, in-depth interviews, and five test scores (one CET-4, two CET-6, two TOEFL). The findings revealed that the action research resorting to the lexical chunk theory had a positive impact on improving students' reading speed, reading accuracy, and the recognition of lexical chunks.

Zhao (2017) probed into the lexical approach from different angles. The study explored the current situations of college English teachers' awareness of the lexical approach to the reading instruction, the impacts of the approach on non-English major students' English reading proficiency, and students' attitudes towards the approach. The findings showed that the lexical approach had not drawn the vast attention of teachers and had not been applied to reading instruction on a large scale. Moreover, participants who received the lexical approach performed better than students in the CG in detailed reading, fast reading, and banked cloze. Furthermore, the results showed that the lexical approach better helped the intermediate and lower-level students.

Xia (2018) conducted an experiment to implement the lexical approach to the researcher's class. The experiment lasted 4 months. Two parallel first-year non-English major groups took part in the experiment. One group was engaged in chunking activities while the other group followed the traditional teaching method. The findings showed that compared to the CG, the EG made significant progress in remembering the lexical chunks, identifying the connotative meanings in listening, and expressing ideas more precisely in writing.

In conclusion, although the lexical approach has been studied extensively in China and abroad, the previous studies mainly focus on high school students and non-English major students and few are English major students. From the researcher's knowledge, rare research has been conducted to apply the lexical approach to the IEC in China.

Therefore, this study will employ the lexical approach to reading teaching, where the participants are English major students in a Normal University in China. Moreover, another different point from previous studies is that the current study will use various instruments to obtain the results, including a questionnaire, tests, a semi-structured interview, and reflective journals. Furthermore, previous studies focus on the direct teaching of chunks that occur most frequently in the texts. In these studies, the teacher pays more attention to asking students to memorize chunks rather than teaching them practical strategies to learn chunks. The current study aims to provide learners with strategies for recognizing, classifying, organizing, storing, and using chunks. Finally, as to the drawbacks of the lexical approach that some scholars are concerned about, which has been mentioned previously, including lacking specific teaching guidelines and activities, being inappropriate for beginning learners, not having adequate understanding of grammar functions. This study will try to solve these problems.

This chapter presents a review of the literature related to the current study. It starts with the description of reading, which involves definitions of reading and reading comprehension, factors that affect the reading comprehension ability, reading process, reading strategies, and reading assessment. Then it introduces three reading teaching methods. After that, it presents the basic concepts of lexical chunks. Furthermore, it describes the framework for designing the teaching activities. The next part comes to the theoretical foundations of the lexical approach. The final part presents the related studies of applying the lexical approach to reading teaching. The next chapter will discuss the research design and methodology implemented in the present study.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter discusses the research methodology of the present study. It starts with the research design, then describes the research contexts and the participants. Following this is the treatment, and then is the research instruments which include reading comprehension tests, a questionnaire, a semi-structured interview, and electronic reflective journals. After that, it depicts the procedures of data collection and data analysis, and finally comes to the pilot study based on the research design.

3.1 Research Design

In terms of the purposes of the present study, which aimed to investigate the effects of the lexical approach on Chinese English major students' reading comprehension ability and examine students' opinions of the approach, the study adopted a quasi-experimental and a mixed method design. A quasi-experimental design is an empirical study used to estimate the causal impact of an intervention on the target population; different from the true experimental design, it lacks random assignment (White & Sabarwal, 2014). Seliger and Shohamy (1989) put forward that the quasi-experimental study is conducted under conditions where many variables are not easy to be controlled. White and Sabarwal (2014) further pointed out that it is appropriate to use the quasi-experimental design "when it is not possible to randomize individuals or groups to treatment and control groups" (p. 2). For the present study, it is a challenge to randomize the samples in a natural university setting. Therefore, the study employs the triangulation method to validate the results. The triangulation method is used frequently in social research by cross-checking data from various sources to enhance the validity and reliability of a study (O'Donoghue & Punch, 2003; Stavros & Westberg, 2009) and to saturate the data (Fusch & Ness, 2015). There are four types of triangulations, including data, investigator, theory, and methodological

triangulations (Denzin, 2009; Flick, 2014; Patton, 1999). Data triangulation refers to the use of different data sources to confirm the consistency of information within the same method, which involves collecting data at different times, in different places, and investigating different people (Denzin, 2009; Flick, 2014; Patton, 1999). Investigator triangulation means involving two or more people in a study to collect and analyze data (Flick, 2014). Theory triangulation can be described as employing multiple theories to “extend the possibilities for producing knowledge” (Flick, 2014, p. 183). Methodological triangulation denotes that using various methods to collect data about the same phenomenon (Polit & Beck, 2017). Theory triangulation and methodological triangulation are utilized for the present study. The present study is based on the chunking theory, capacity theory, and language acquisition theory to support the findings. In addition, it uses quantitative and qualitative methods to collect data.

Moreover, this study employed a mixed method design which can be defined as combining qualitative and quantitative research to achieve an understanding of the breadth and depth of the acquired data (Johnson et al., 2007). Creswell and Creswell (2018) maintained that a mixed method design helps subdue the limitations of either quantitative or qualitative design, and it assists the researcher to “develop a stronger understanding of the research problem or questions” (p. 294). Moreover, Johnson and Onwuegbuzie (2004) described that the mixed method research aids the researchers to have solid evidence for the conclusion via converging and corroborating the findings, and it contributes to generalizing the results.

3.2 Research Contexts and Participants

The present study was carried out in Hunan First Normal University, located in Changsha city of Hunan province, China. This university is founded in 1903, which aims to cultivate teachers for the country.

The participants of the study were 88 first-year undergraduate English major students from two intact classes. Class 2 was the experimental group (EG) which included 45 students, and class 3 was the control group (CG) which consisted of 43 students. Since there are six classes of first-year undergraduate English majors, class 2

and class 3 were taught by the same teacher, and they agreed to participate in the study. Hence, they were chosen to be the participants of this study. The study used the convenience sampling method to select the participants, which means “the respondents are chosen based on convenience and availability” (Creswell & Creswell, 2018, p. 212). This method has a limitation that not every person of the population owns an equal chance to be chosen as the sample; hence, the results of the study may not be generalizable. Nevertheless, as claimed by Creswell (2014), “in many experiments, however, only a convenience sample is possible because the investigator must use naturally formed groups (e.g., a classroom, an organization, a family unit) or volunteers” (p. 168). Moreover, Etikan et al. (2016) contended that convenience sampling can be used “when the researcher has limited resources, time, and workforce” (p. 1). Therefore, using intact classes to conduct the study is more accessible to the researcher. Table 3.1 shows the participants’ demographic information.

Table 3.1 Participants’ Demographic Information

Participants	Gender	Average age	Scores of NMET	Sig.
EG (N = 45)	Male = 4	18	M=123.87/150	.633
	Female = 41			
CG (N = 43)	Male = 4	18	M=123.27/150	
	Female = 39			

It can be observed that both classes have similar features in the ratio of male to female, age, and English proficiency level. Their English proficiency came from the NMET which is used to screen out students for universities annually; therefore, this test has high validity and reliability. By using the independent samples t-test of Statistical Package for the Social Sciences (SPSS) to analyze their scores, it showed that there was no significant difference between the two classes since the p-value was 0.633, which was much higher than 0.05. Therefore, these two classes are suitable to be chosen as the participants for the present study.

There are two reasons to select the first-year English major students to experiment. The first reason is related to the purpose of this study, which is to explore

the effects of the lexical approach on Chinese English major students' reading comprehension ability, since the core of the approach is chunks, which means that by using the lexical approach to teach reading, the first step is that students are supposed to change their reading methods, namely, reading a passage chunk by chunk rather than word by word. This new reading method challenges students' traditional one to a great extent, and they may need a long time to change the previous method. However, once they develop a good reading method from the beginning, it can significantly benefit their future learning; therefore, choosing the first-year English major students as the participants is reasonable. The second reason is that the lexical approach may help students better prepare for TEM-4 and TEM-8. These two standard tests are set by the MOE for the English major students to measure their comprehensive English competence. Every student must take the TEM-4 in the second semester of the second academic year. The TEM-8 is optional for students and they should take it in the second semester of the fourth academic year. Unlike other tests in which once students fail for the first time or want to have a better grade the next time, they can take the test several times. For English major students, they can only take these two tests twice. In other words, if they fail the tests for the first time, they only have one chance to pass them. Moreover, TEM-4 and TEM-8 certificates are of great importance for students to seek a cushy and ideal job in the future. The lexical approach is likely to assist students to form a good reading method and contribute to improving their reading comprehension ability. In conclusion, choosing the first-year undergraduate English major students as the participants is a feasible choice.

3.3 Treatments of the Study

Both groups took the Integrated English Course (IEC) and were taught by the same teacher. Integrated English Course is an integrated skills course that aims to improve students' comprehensive language competence. According to the *ETSEM* (2000), this course aims to enable students to gradually improve their reading comprehension ability through basic language training and discourse analysis of the texts, to aid them to understand the writing styles and characteristics of various English genres, to expand

their vocabulary, and to help them familiarize with common English sentence patterns. The teaching materials used in the study were based on the textbook, *An Integrated English Course 2* written by He and Zhang (2020). It is one of a series of textbooks designed for college English major students. The textbook has 12 units in total. Every unit consists of two long texts which have around 1000 words, and they are excerpted from the classical works written by native English speakers. Therefore, these texts are hard to understand, and it is impossible to teach all the units in one semester. Hence, the English Teaching and Research Group selected five units to teach. For this textbook, the teacher taught units 1, 2, 3, 4, and 5. The current study chose the last four units to do the experiment because of the time arrangement. Since it is a comprehensive course that covers listening, speaking, reading, and writing, and the study aimed to investigate students' reading comprehension ability; therefore, the treatment only concentrated on teaching reading and other skills followed the same teaching procedures as the CG. Table 3.2 shows the teaching contents and teaching periods of the present study.

Table 3.2 Teaching Contents and Teaching Periods

Teaching Skill	Reading
Teaching Textbook	<i>An Integrated English Course 2</i>
Teaching Contents	Unit 2 Fourteen Steps Unit 3 The Virtues of Growing Older Unit 4 Letter to a B Student Unit 5 Focus on Global Warming
Teaching Duration	6 hours for each unit

Based on the teaching plan, the teacher divided each unit into three parts. The first part was listening and speaking, which concentrated on introducing the background information of a text and the author's related literary works, and this part occupied 1.5 hours. The second part was reading, which centered on the content and was the treatment of the study. This part took up 6 hours. The final part was writing, which targeted writing training, including sentences extension, paragraph development, cohesive devices, and so forth, and it occupied 1.5 hours. Both groups had the same

amount of learning time. Except for the reading part, both groups were taught the same teaching procedures. In other words, as to teaching listening, speaking, and writing parts, both groups followed the same teaching steps. In terms of teaching reading, the CG followed the current teaching method which mixed GTM and TBLT, and the lesson plans were designed by the teacher, while the EG was taught with the lexical approach and the lesson plans were designed by the researcher. To guarantee that the teacher followed the plans, the researcher had training with the teacher to introduce the lexical approach and about how to apply the teaching activities, and then took a video of how to teach each unit based on the lesson plans. The following part takes unit 2 as an example to present the teaching procedures for both groups.

3.3.1 The Control Group

For the treatment of the CG, the teacher used the current teaching method which mixed two teaching methods: GTM and TBLT. Before teaching a new unit, the teacher uploaded a file that included new words and expressions to let students learn in advance. This was the same for both groups as the pre-class learning part. When it came to teaching the reading part, to begin with, the teacher asked students to play the crossword puzzle game to check whether they grasped the spelling and meaning of the new words. Then the teacher introduced background information of the text. After this part, the teacher asked students to have a fast reading of the text to build the framework by drawing the tree diagram, to let them have a better understanding of the structure and catch the main idea of the text. Then the teacher guided students to understand the details of the text part by part. Meanwhile, the teacher also taught the language points, involving explaining the new words and phrases, and analyzing the long and complex sentences by asking students to paraphrase and translate them. These were the regular activities of teaching each part of a text. After teaching two parts of the text, there would be a dictation to check the new words' spelling and meaning. After teaching the whole unit, the teacher organized a quiz to assess whether students mastered the words of the text, which was in the form of multiple-choice questions. Figure 3.1 presents the main teaching activities of the CG.

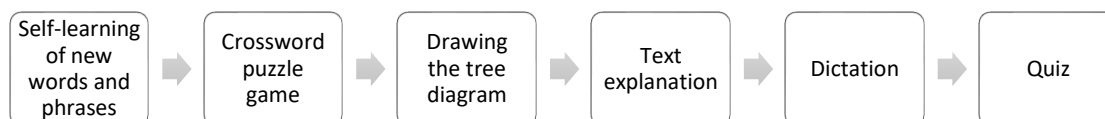


Figure 3.1 Main Teaching Activities of CG

Table 3.3 shows a sample lesson plan of the first class of unit 2.

Table 3.3 A Sample Lesson Plan of the First Class of Unit 2 for CG

Teaching Objectives			
1. Students can have a clear comprehension of the structure of the text.			
2. Students can grasp new words and their related expressions in this class and learn to translate and paraphrase difficult sentences.			
Approx. Time (min)	Activity	Materials	Purposes
15	Crossword puzzle game The teacher distributes the worksheets to each group, and students work in groups to finish the puzzle.	Paper and pencil	To check vocabulary
10	Introduction to the text's background information	PPT slides	To activate and expand students' background knowledge
15	Drawing the tree diagram After reading the text, students work in groups to draw the tree diagram of the text.	Paper and pencil	To help students figure out the structure and catch the main idea of the text
25	Understanding details The teacher explains the text part by part in detail.	PPT slides	To guide students to comprehend the text
20	Learning language points The teacher teaches new words and phrases and analyzes sentences.	PPT slides	To help students grasp new words and phrases and interpret difficult sentences
5	Wrap-up and homework	PPT slides	To help students review what learned

3.3.2 The Experimental Group

The treatment of the EG can be divided into two phases. The first phase was the training session in which the teacher introduced the basic concepts of lexical chunks, discourse organizers, and the lexical approach. The second phase was the application of the lexical approach to the IEC. The framework for designing teaching activities was adapted from Lewis (1997a) and Richards and Rodgers (2014). Table 3.4 presents the main teaching activities of the EG.

Table 3.4 Main Teaching Activities of EG

Training session (week 2)
Students learn the definitions, features, classification, and functions of lexical chunks, and how to record them. After that, they do some exercises to check understanding.
Students learn the definition and classification of discourse organizers, and learn the key concepts of the lexical approach.
Application of the lexical approach to the IEC (weeks 3–10)
1. Read the text in chunks and divide it by using discourse organizers
2. Noticing: identify the chunks
3. Awareness-raising: classify the chunks
4. Understanding details
5. Memory-enhancing of lexical chunks
6. Practice activities (cloze/retelling/role-play)
7. Words evaluation
8. Dictation
9. Quiz

As it shows, when teaching a text, firstly, the teacher asked students to read the text in chunks and divide it into several parts by using the discourse organizers. It aimed to assist students in forming a good reading method and having a clear understanding of the text's structure. Then the teacher taught the text part by part based on the division. In each part, there were several activities. The first activity was noticing lexical chunks, which was asking students to identify the lexical chunks independently. When reading the text, students were required to underline the lexical chunks that were new and important to them. This activity aimed to improve students'

awareness of lexical chunks. The second activity was awareness-raising of lexical chunks, namely, asking students to classify the lexical chunks, and then discussed in groups. When reading the text, they were required to differentiate different kinds of lexical chunks by marking symbols, e.g., individual words (W), polywords (P), collocations (C). This activity was intended to strengthen students' awareness of lexical chunks and helped them accumulate the lexical chunks in a logical and organized way. The third activity was understanding details. Before teaching each part, the teacher showed the relevant reading comprehension questions of this part on the screen. When students read the text, they were expected to think about these questions. Additionally, this activity attempted to instruct students with reading strategies by recognizing the relationship between the lexical chunks in the question and lexical chunks of the answer located in the text. The fourth activity was memory-enhancing of lexical chunks. In this part, the teacher taught new words from multiple aspects by elaboration, including definition, synonym, antonym, co-text, collocations, grammatical functions, and association, especially focusing on the co-text to let students pay attention to the usage of the words at the sentential level rather than simply learning the form and meaning of individual words. Hence, when the teacher imparted a new word, she pointed out the position of the word in the text to raise students' awareness of the context and co-text. As to easily confusing words, the teacher emphasized them and let students made comparison. Besides, the teacher guided students to analyze the long and complex sentences by using chunks and sense groups. Furthermore, the teacher emphasized the rhetorical devices as well. This activity purported to aid students in interpreting and memorizing the new lexical chunks. The third and fourth activities were always carried out simultaneously and without strict order. Subsequently, it came to the various practice activities, which covered cloze, retelling, and role-play. Cloze helped students check and consolidate the newly learned lexical chunks, and aided them to familiarize the content of the text. Retelling and role-play were used to check whether students understood the content of the text, meanwhile, to help them review the lexical chunks. Selecting which activity depends on the content of the text. Students were expected to apply what they learned through these activities, aiming to consolidate the newly learned

knowledge. Furthermore, after the teacher finished teaching every two parts of the text, there would be a vocabulary evaluation list to assess the newly learned lexical chunks and it required cooperation among students. The list is based on Nation's (2001) view of "what is involved in knowing a word" (p. 27). In addition, there would be a dictation to help students consolidate them again. As a result, these teaching activities helped students master the lexical chunks, and they would have a better understanding of the text. Table 3.5 shows a sample lesson plan of the first class of Unit 2 for the EG.

Table 3.5 A Sample Lesson Plan of the First Class of Unit 2 for EG

Teaching Objectives			
1. Students can have a clear comprehension of the structure of the text.			
2. Students can identify and grasp lexical chunks learned in this class, and learn how to analyze difficult sentences by using lexical chunks and sense groups.			
Approx.			
Time (min)	Activity	Materials	Purposes
5	Revision The teacher guides students to review the basic concepts of lexical chunks, discourse organizers, and the lexical approach.	PPT slides	To help students apply the knowledge to better understand the text
8	Introduction to the text's background information	PPT slides	To activate and expand students' background knowledge
10	Read and divide the text 1. Students read the text chunk by chunk. 2. Students divide the text by using the macro-organizers.	Paper and pencil	To help students develop the chunk-by-chunk reading method, figure out the structure, and catch the main idea of the text
7	Noticing: identify the lexical chunks	PPT slides	To increase students' chunks awareness
8	Awareness-raising: classify the lexical chunks	PPT slides	To strengthen students' awareness of lexical chunks and record them in an organized way

Table 3.5 A Sample Lesson Plan of the First Class of Unit 2 for EG (Continued)

20	Understanding details The teacher guides students to understand the text by using reading comprehension questions.	PPT slides	To help students master reading strategies and comprehend the text
15	Memory-enhancing of lexical chunks The teacher teaches new words and phrases, and guides students to deal with complex sentences.	PPT slides	To help students expand vocabulary and cope with long and complex sentences
15	Cloze The teacher assigns the worksheets to the students, and they are required to fill in the blanks.	Paper and pencil	To check and consolidate the newly learned lexical chunks
2	Wrap-up and homework	PPT slides	To help students review what learned

3.3.3 Main Differences of the Two Groups

Table 3.6 shows the main differences of teaching methods and activities between the two groups.

Table 3.6 Main Differences of Teaching Methods and Activities Between CG and EG

	CG (GTM+TBLT)	EG (The Lexical Approach)
Topics	Activities	Activities
Checking Vocabulary	Crossword puzzle game, dictation (individual words), quiz	Words evaluation list, dictation (lexical chunks), quiz
Building Frameworks	Draw the tree diagram	Use discourse organizers
Understanding Details	Read and answer questions	Noticing, consciousness-raising of lexical chunks, read and answer questions
Learning Language Points	Explanation	Memory-enhancing of lexical chunks (elaboration)
Practice	/	Cloze/retelling/ role-play

As is shown from the table, the CG mixed two teaching methods: GTM and TBLT. The activity, drawing the tree diagram, was a pedagogical task that required students to transform the content of the text into a diagram, which was used to check whether students understood the structure of the text, and it helped them better straighten out the development of the text as well. In terms of the explanation of the text, the teacher used the GTM. When teaching language points, for example, as to teaching new words, the teacher taught English definitions, Chinese meanings, and frequent collocations, then let students make sentences. As to the difficult sentences, the teacher explained them in detail, which focused on grammar analysis and then let students paraphrase and translate the sentences. By teaching this way, the teacher imparted knowledge rather than teaching strategies and skills. Therefore, when students read a new passage, they have difficulty dealing with unknown words and long sentences.

The EG was taught with the lexical approach. Different from the CG, the teacher focused more on the lexical chunks. Firstly, as to the reading method, the teacher guided the students to read a text through chunks. In addition, in terms of teaching language points, the teacher emphasized the relationship between a word and other words. When teaching new words, the teacher instructed students to learn a word from various aspects, such as its definitions, synonyms, antonyms, collocations, co-text, context, and associations. Moreover, the teacher illustrated the strategies about how to cope with long and difficult sentences; that is, breaking the sentence into several parts by using lexical chunks and sense groups, then understand each part first and the whole sentence later by combining grammatical knowledge. Besides, the teacher trained students to employ the discourse organizers to understand a text, especially those contrastive markers that signal the transition, e.g., on the contrary, nevertheless; those elaborative markers that indicate the explanation of the former sentence or idea, e.g., alternatively, correspondingly; those inferential markers, e.g., hence, as a conclusion, and those attitudinal markers, e.g., luckily, unfortunately. Furthermore, the teacher taught reading strategies as well. In consequence, employing the lexical approach to reading instruction not only enables students to obtain knowledge; but more importantly, they possess essential strategies and skills to handle problems that may encounter when reading a passage whether for everyday learning or taking an exam.

3.4 Research Instruments

The instruments used in the present study were reading comprehension tests, a questionnaire, a semi-structured interview, and electronic reflective journals. The results from the tests were used to answer the first research question, and the findings from the questionnaire, interview, and journals were used to answer the second research question. Table 3.7 shows the research questions and corresponding research instruments.

Table 3.7 Research Questions and Research Instruments

Research Questions	Research Instruments
To what extent does the lexical approach affect Chinese English major students' reading comprehension ability?	Reading comprehension tests
What are students' opinions of using the lexical approach to learn reading?	Questionnaire, semi-structured interview, electronic reflective journals

3.4.1 Reading Comprehension Tests

In the present study, reading comprehension tests were adopted from the CET-4. CET-4 includes oral and written tests, of which the written test involves four parts: writing, listening, reading, and translation. The present study only chose the reading part.

There are several reasons to choose the CET-4 as the reading comprehension test. First, it is one of the standard tests for non-English major college students to take, which not only reflects the students' English proficiency but also serves to improve the English teaching quality of higher education. In addition, it is closely related to finding a good job in some fields. With the widespread use of English, many working fields have demands for English proficiency. This test has been recognized by society and has become one of the criteria for recruiting graduates by personnel departments at all levels. Therefore, this test has high validity and reliability. In this university, English major students are not required to take CET-4; hence, it can be guaranteed that participants are unknown of the content of the test.

In addition, regarding the difficulty level of the test, it is appropriate to measure participants' reading comprehension ability. The total score of the CET-4 is 710, of which the reading part accounts for 35% with 249 scores. Students must finish this part within 40 minutes. CET-4 requires students to possess 4500 words and 700 phrases. Additionally, as stated in the *Syllabus for the NMET* issued by the MOE in 2020, the vocabulary requirement is 3500 words. When the university enrolls these students, it sets a threshold. Based on *Item 11 of the Admission Regulations of Hunan First Normal University in 2020*, students' English scores must be over 115 (total is 150). Moreover, conforming to the *ETSEM (2000)*, at the end of the first academic year, students are expected to possess 4000–5000 receptive words, of which they can use 2000–2500 words and the related collocations. It can be estimated that for most first-year English major students, their vocabulary storage is probably between 3500–4500. Therefore, it is appropriate to use CET-4 to measure participants' reading comprehension ability.

Moreover, the measuring content of the test is consistent with the treatment of the study. The topics of the learning texts and the tests are similar, which involve ethics, society, education, and the environment. Table 3.8 shows the topics of the texts in the treatment and the tests.

Table 3.8 Topics Matching Between the Treatment and Tests

Treatment		Pretest	Posttest
Teaching Texts	Topic	Topic	Topic
Unit 2 Fourteen steps	Ethics	(Section F, passage two) Artificial intelligence and ethical issues	(Section F, passage two) Self-driving vehicles and ethical issues
Unit 3 The virtues of growing older	Society	(Section C, passage two) Reevaluate how women handle conflict at work	(Section C, passage one) Aging and biological age
Unit 4 Letter to a B student	Education	(Section B) Do in-Class exams make students study harder?	(Section A) An afterschool program and STEM course
Unit 5 Focus on global warming	Environment	(Section D) Air pollution	(Section E) Is it really OK to eat food that's fallen on the floor?

Furthermore, the measuring formats of the test and the treatment are similar. The test includes three sections. Section A is a cloze that gives a passage with ten blanks, and participants are supposed to choose appropriate words from 15 options for each blank. It mainly assesses participants' vocabulary and morphological knowledge. As to the treatment of the EG, one of the practice activities is the cloze that requires students to fill in the blanks with key lexical chunks. Additionally, there are words evaluation, dictation, and quizzes to check and help students consolidate the vocabulary. Regarding the CG, there are crossword puzzle games, dictations, and quizzes activities. Moreover, there are similar exercises in the textbook. Section B is the long passage reading which gives a passage with ten statements, and participants are supposed to match each statement with the corresponding paragraph. In the treatment, all the participants learn four long reading texts which have around 1000 words, and there are true or false judgment questions behind the texts. Section C is the detailed reading which includes two passages, and each passage is followed with five multiple-choice questions. Based on the *Syllabus for College English Test - Band 4 and Band 6* administered by the National College English Testing Committee in 2016, the reading comprehension part assesses students' ability to obtain written information through reading, including grasping the main idea, understanding important facts and details, interpreting the implicit meaning, and evaluating the author's views and attitudes. In particular, it evaluates students' reading skills in understanding a text with language features, involving guessing the meaning of words and phrases based on the context, understanding inter-sentential relationships, e.g., cause and effect, comparing, conditioning, and employing cohesive devices to interpret the relationship between paragraph and paragraph. All these measuring aspects are in line with the treatment of the study. In summary, selecting CET-4 as the reading test is a reasonable choice.

The reading pretest is used to measure students' reading comprehension ability to see whether there are significant differences between the two groups; in addition, the results of the test are also as the baseline before the treatment. The reading posttest is intended to examine whether the lexical approach benefits students' English reading comprehension ability. For fear of the result from one test paper cannot assess students' reading comprehension ability; therefore, both the

reading pretest (see Appendix B) and posttest (see Appendix C) required students to finish two test papers within 90 minutes. Normally, CET-4 is held twice a year, in June and December. To prevent students from cheating, there are three sets of test papers at a time; thus, students in the same testing room will get different test papers. In the current study, after comparing 18 test papers within three years (2017–2019) by comparing the types of questions and topics, it selected the first paper in December 2017, and the first paper in December 2018 as the reading pretest; the second paper in December 2017, and the third paper in December 2018 as the reading posttest. Han (2017) pointed out, to guarantee that two tests have a similar level of readability, the topics of the text should be matched. As to the selected reading pretest and posttest, the level of difficulty, topics, and types of questions are similar (see Appendix A). As a result, choosing the CET-4 as the reading comprehension test is feasible for the study.

3.4.2 Questionnaire

The questionnaire is a widely used and convenient instrument used to collect data. It can be defined as any written format which consists of a sequence of questions or statements and is given to the respondents to respond either by expressing their own opinions or choosing from the existing answers (Brown, 2001). According to Mackey and Gass (2013), researchers can obtain information through the questionnaires that reflect learners' views and attitudes. In the present study, the questionnaire (see Appendix E) is used to investigate students' opinions of the effects of the lexical approach on their reading comprehension ability after applying it to reading instruction. It has two parts. The first part is the five-point Likert Scale with 11 items, and they are enough "to accurately reflect the intention of the questionnaire" (Steyn, 2017, p. 3), for it aims to examine whether the lexical approach helps the participants increase their reading interest and confidence, change their reading method, improve their reading speed, enhance their awareness of lexical chunks, expand vocabulary, handle long and difficult sentences, and better understand the structure of a text. The second part includes two open-ended questions used to elicit students' opinions deeply. The questionnaire was adapted from a couple of researchers in China (Li, 2017; Sun, 2010; Wang, 2014; Wang, 2017), for they carried out empirical studies of applying the lexical approach to reading instruction, and they used

the questionnaire as one of the instruments to collect data. Among the 11 items, item 1 and items 6 to 8 were written by the researcher. Items 2 and 11 were adapted from Wang (2017); item 3 was adapted from Wang (2014); items 4, 9, and 10 were adapted from Li (2017), and item 5 was adapted from Sun (2010), for these items conform to the aims of the study which intends to explore students' opinions of using the lexical approach to learn reading, including reading method, reading speed, reading interest and confidence, overall reading comprehension ability, and awareness of lexical chunks.

The validity and reliability of the questionnaire were checked. Four experts were invited to do the content validity of the questionnaire through item objective congruence (IOC), and the result was 0.909 (see Appendix F). According to Rovinelli and Hambleton (1976), if four experts are used to assess a couple of items, then an acceptable value might be a minimum of 0.75. Therefore, the questionnaire has high content validity. Concerning the reliability, it was measured by the Cronbach Alpha reliability test of SPSS. The alpha value of the questionnaire was 0.867. Based on George and Mallery (2010), the alpha value is higher than 0.8 shows that the questionnaire is good. Therefore, this questionnaire can be used in the study. The questionnaire was conducted in Chinese, and it was distributed to the EG after the reading posttest. The interpretation of the results of the questionnaire is based on Ketkham's (2004) criteria, which is shown in Table 3.9.

Table 3.9 The Criteria for Interpreting the Questionnaire's Results
(Ketskham, 2004, p. 74)

Mean score	Degree of agreement
1.00 – 1.80	Strongly disagree
1.80 – 2.60	Disagree
2.61 – 3.40	Undecided
3.41 – 4.20	Agree
4.21 – 5.00	Strongly agree

3.4.3 Semi-structured Interview

As stated by Burgess (1984), an interview has been described as a “conversation with a purpose” (p. 102). Kvale (2008) held a similar view and proposed that interview is a “professional conversation” (p. 5). The interview as an important data collection method is used to explore the subjects’ opinions, beliefs, and feelings about phenomena and situations. As Richards (2009) pointed out, the interview helps researchers probe into people’s experiences and ideas in different ways. Therefore, the interview is invaluable to the social research due to its peculiarity, which makes it possible to compensate for the shortcomings of the questionnaire, for it yields information at a surface level, while using the interview can tell the researcher why they think so and helps the researcher delve into the questions more deeply. According to Richards (2009), the interview can be divided into three types, “structured interview, open interview, and semi-structured interview” (pp. 184–185). The present study selected the semi-structured interview to collect data, which can be defined as an interviewer has a clear idea in mind of which topics need to be covered, prepares in advance, and then guides the interviewees to express their opinions in unexpected directions to offer new insights for the researcher (Richards, 2009), and it is based on an interview guide which “is a written list of questions and topics that need to be covered in a particular order” (Bernard, 2013, p. 182). Though some questions are prepared in advance, the interviewer is likely to modify the formats or questions during the interview process. In the current study, the semi-structured interview (see Appendix G) consists of six questions, to explore the participants’ opinions of using the lexical approach to learn reading. As to the sample size of the semi-structured interview, there is a popular phenomenon in qualitative research called “data saturation” (Glaser & Strauss, 1999) which will attain when there is enough data, themes, information, and coding to replicate a study (Guest et al., 2006). Put it differently, data saturation will reach when additional participants cannot provide new insights and ideas. However, this concept fails to define the levels of saturation (Guest et al., 2006). In other words, the size and depth of data are not specified. Just as Fusch and Ness (2015) pointed out, “when and how one reaches those levels of saturation will vary from study design to study design” (p. 1409). Moreover, some scholars put forward that instead of only

thinking about the sample size, what matters most is the richness and thickness of the data (Burmeister & Aitken, 2012; Dibley, 2011). Burmeister and Aitken (2012) stated that neither a large nor a small sample size can guarantee that a study will reach saturation. Therefore, researchers should consider all the facets, including the sample size and the richness and thickness of the data. The final goal is to seek information richness (Patton, 2015). Although the sample size is a vague concept and there are no unified standards of an interview, some researchers recommend appropriate numbers of a sample size based on their experiments. Guest et al. (2006) employed a non-probabilistic, purposive sampling approach to have an in-depth interview with 60 participants, to explore women's opinions and perceptions about sex in two West African countries, Nigeria and Ghana, finding that 12 of 60 interviewees in a homogenous group were enough to reach data saturation as there was little new information can be identified from the samples. It is in line with the viewpoint of Latham (2013), who did a qualitative, multiple case study, and had an in-depth interview with 15 participants, finding that saturation occurred around 11 participants. In addition, Malterud et al. (2016) put forward the concept "information power", and they mentioned that 10 participants for an interview could be a cautious appraisal. Furthermore, Mason (2010) explored the sample size and saturation of qualitative interviews in 560 Doctor of Philosophy studies, and the results showed that sample sizes were multiples of 10 when the saturation occurred. As to the present study, to attain data saturation, the sample size of the semi-structured interview is 15. Participants of the EG were divided into high, moderate, and low groups based on their reading posttest scores, and five participants were randomly chosen from each group. The interview was conducted in Chinese to allow students to express their opinions better.

3.4.4 Electronic Reflective Journals

Thorpe (2004) defined reflective journals as written documents that record students' opinions of different concepts, events, and interactions to improve their self-awareness and learning. In addition, Harada (2002) described journal writing as "a method that encourages reflection and metacognitive practice" (p. 1). In conclusion, a reflective journal entry is a record of students' work in progress, which reflects their

learning experiences. There are multiple types and formats of journals, e.g., learning journals, diaries, memoirs, etc. The current study adopted the learning journals as the research instrument, for they can help the learners record their learning process and reflections; therefore, they can learn from their experiences. Hiemstra (2001) stated that a learning journal is a tool for tracking opinions, thoughts, and feelings in the educational context. McGuinness and Brien (2007) put forward that journal-keeping enhances learning from the following aspects. Firstly, it helps students organize their thoughts and focus on the task at hand. In addition, it promotes deep rather than surface learning. In other words, students not just receive static information but with more critical evaluation and reflection. Through journal writing, students are more likely to be aware of and understand their learning styles. Finally, it allows students to explore ideas and organize thoughts in a free and expressive manner. Furthermore, Nishida (2013) maintained that using study records aids the teachers to identify problems that students encounter during reading instruction, and it enables students to discern their reading problems as well. Students in the EG were supposed to write an electronic reflective journal entry after learning a unit, which included what they acquired and what difficulties they met when taught with the lexical approach. Counting the journal entry of the training session, they were expected to write five journal entries in total. The journal entries do not have words requirements, and participants could write either in Chinese or English. In addition, there were guided questions to lead them to express their opinions and thoughts.

3.5 Procedures of Data Collection

The experiment was conducted in a Normal University in China, which aimed to explore the effects of the lexical approach on Chinese English major students' reading comprehension ability. Two intact classes participated in the study, one was the CG and the other was the EG. The study lasted 11 weeks, which was carried out in the second semester of the 2020 academic year. It used quantitative and qualitative methods to collect data. During the experiment, quantitative data were collected through a questionnaire and tests, and qualitative data were gathered through a semi-

structured interview and electronic reflective journals. The following are the steps to collect the data.

1) In week 1, the researcher distributed the consent forms to both groups to guarantee that they agreed to participate in the experiment. After collecting the consent forms, the researcher conducted the reading pretest to see whether the two groups had significant differences, and it was also as a baseline to be compared with the posttest to see whether the participants improved their reading comprehension ability.

2) From week 2 to week 10, the EG was taught with the lexical approach to learn four long reading texts through the IEC; meanwhile, the CG was taught with the GTM and TBLT. As the paper mentioned before, IEC is an integrated course that purports to enhance students' comprehensive English skills. Except for the reading part, the EG followed the same teaching procedures with the CG to learn other English skills. The length of learning each unit lasted around two weeks. Before applying the lexical approach to the IEC, the EG had a training session where the teacher introduced the basic concepts of lexical chunks, discourse organizers, and the lexical approach. Then from week 3 to week 10, participants in the EG were supposed to write an electronic reflective journal entry after learning a unit to record what they gained and what difficulties they encountered when taught with the approach.

3) In week 11, the reading posttest was given to both groups. Then the post-questionnaire was administered to the EG, to probe into students' opinions about the effects of the lexical approach on their reading comprehension ability. After collecting the data of the post-questionnaire, the researcher conducted a semi-structured interview.

3.6 Data Analysis

This section describes different methods for data analysis in the present study. The current study used a mixed method to collect data. The data from the reading comprehension tests and questionnaire were presented through quantitative analysis. The data from the semi-structured interview and electronic reflective journals were presented through qualitative analysis.

3.6.1 Quantitative Data Analysis

This subpart analyzed the data from the reading comprehension tests through independent samples t-test and paired samples t-test of SPSS, and the data from the questionnaire were analyzed via descriptive statistics of SPSS.

3.6.1.1 Independent Samples T-test

Independent samples t-test is used to analyze whether there is a statistically significant difference between the CG and EG in terms of the reading pretest and posttest scores.

3.6.1.2 Paired Samples T-test

Paired samples t-test is used to analyze whether there is a statistically significant difference between the reading pretest and posttest scores of the CG and EG. Based on the results, the researcher can see whether the lexical approach contributes to students' reading comprehension ability.

3.6.1.3 Descriptive Statistics

Descriptive statistics are used to analyze the data from the questionnaire, to find out the general proportion of the Likert Scale, and finally help the researcher identify students' opinions of the effects of the lexical approach on their reading comprehension ability.

3.6.2 Qualitative Data Analysis

Data collected from the semi-structured interview and electronic reflective journals were analyzed through thematic analysis. According to Braun and Clarke (2006), "thematic analysis is a method for identifying, analyzing, and reporting patterns (themes) within data" (p. 79), and they further claimed that a theme reflects the significant part of the data related to the research question and symbolizes some patterned response or meaning within the data set. Neuendorf (2019) pointed out that

salient themes emerge after the investigator scrutinizes the texts recursively and as the codes are developed. Joffe and Yardley (2004) remarked that these codes usually form a hierarchy of categories. Braun and Clarke (2006) put forward that there are six phases for thematic analysis. The first phase is to be familiar with the data through reading repeatedly. The second phase is creating initial codes which represent the important features of the data and can be used to answer the research questions. The third phase is searching for themes by sorting and combining different themes into latent themes which can embody broad patterns of meaning. The fourth phase is reviewing themes. In this stage, the researcher may discard, combine, or refine the themes and determine which themes are strongly convincing to answer the research questions. The fifth phase is defining and naming themes. At this stage, the researcher manages to have an elaborate analysis of each theme. The final phase is producing the report which shows a thorough, concise, coherent, and logical account of the story that the data tells. In the study, the semi-structured interview scripts and journal entries were analyzed manually by following these steps, to have an in-depth understanding of the students' opinions about the effects of the lexical approach on their reading comprehension ability to compensate for the drawbacks of the questionnaire.

3.7 The Pilot Study

A pilot study can be considered as a “small scale version, or trial run, done in preparation for the major study” (Polit et al., 2001, p. 467). It plays a significant role in conducting good research, as Teijlingen and Hundley (2002) pointed out, though a pilot study cannot guarantee the success of the main study, it increases the likelihood greatly. Moreover, Mackey and Gass (2013) proposed that the significance of conducting the pilot study is to test, modify, and finally apply the materials and methods to the main study. It might signal the warnings in advance where the main research may exist problems, including measuring whether the materials are appropriate, whether the instruments are proper, and whether the sampling framework and techniques are effective. As de Vaus (2002) stated, “do not take the risk. Pilot test first” (p. 52).

Therefore, it is essential to carry out the pilot study before conducting the main study. The pilot study lasted 7 weeks, a one-week holiday during this period was not included.

3.7.1 Participants

The participants of the pilot study were 68 six-year college education from junior high (English direction) sophomores. Although they were the second-year English major students, participants of the main study were the first-year English major students, both had an intermediate English proficiency level. The reason why the participants of the main study were at the intermediate level has been illustrated before (see 1.1). For the participants of the pilot study, these students did not participate in the NMET, and they were enrolled by the university after graduating from junior high schools. These students first learned two years in the university's old campus. Then they took a comprehensive English test, and those who passed the test could come to the new campus to study another four years like those students in the main study who were enrolled by taking the NMET. They had the same learning years as the first-year English major students.

Two intact classes were selected to conduct the pilot study. Class one was the CG which had 40 students, including three males and 37 females. However, four students were absent from the reading pretest and two students missed the reading posttest. As a result, in total, 34 students participated in the experiment. Class two was the EG which had 39 students, including four males and 35 females. As the situation in class one, three students were absent from the reading pretest and two students missed the reading posttest; therefore, altogether 34 students participated in the experiment. They were selected based on convenience and availability. The reasons why the researcher chose them as the participants are as follows. 1) The two classes were taught by the same teacher and they were the same English field, a six-year college education from junior high (English direction), since the Department of Foreign Language of the university includes four subparts: teacher-oriented major, non-teacher-oriented major, translation, and six-year college education from junior high (English direction). The English proficiency of these two classes was close to equal. 2) Since they had the same teacher, they used the same textbook and were taught with

the same teaching method. The two classes were randomly assigned into the CG or EG.

3.7.2 Procedures

The following shows the procedures to collect the data for the pilot study.

1) After selecting the participants, the researcher distributed the consent forms to them, and then conducted the reading pretest to measure their reading ability.

2) After that, the treatment began. The instructional design has been specified before (see 3.3). The pilot study is slightly different from the main study. Because the participants of the pilot study are different from the main study; accordingly, the teaching material is not the same textbook as the main study, but they are the same series of books. Except for the contents of the texts are different, others are the same, including the format, the length, and the difficulty level. Both classes were taught two units, unit 1 and unit 2 of the textbook - *An Integrated English Course 3*, with different teaching methods. The EG was taught with the lexical approach which was the same as the main study. Participants in the EG were supposed to write an electronic reflective journal entry after learning a unit and submitted it to the researcher by email. Counting the journal entry of the training session, they were expected to write three journal entries in total. Nevertheless, the teaching method of the CG was a bit different from the main study due to different teachers. The CG was taught with GTM rather than the GTM and TBLT in the main study. The basic teaching procedures of the two units would be like this. Before teaching a unit, the teacher would send the audio of the text to the students, and let them preview it to have a basic understanding and look up the new words. This was the pre-learning part. When teaching a text, the teacher would explain the text from general to details. At first, students gave a presentation to introduce relevant background information of the text. Then the teacher extended and supplemented some knowledge. After that, the teacher let students read the text and divide it into several parts. Then the teacher would teach the text part by part. During the teaching process, the teacher used the GTM to teach. For each paragraph, there were some leading comprehension questions to let students answer. Then the teacher would explain every sentence in detail. As

to teaching a sentence, the teacher would first pick up important words and phrases, then analyzed the sentence structure, including the grammatical functions of each part. Besides, the teacher would also mention the rhetorical devices of the sentence. After that, the teacher would ask students to paraphrase and translate the sentence. This was how the teacher usually teach a long sentence. In terms of teaching new words and phrases, the teacher would show the English definitions, Chinese meanings, and frequent collocations, and asked students to make sentences. The whole teaching process paid much attention to the language points explanation, including the new words and phrases, and the teaching of grammar, such as sentence components, and clauses.

3) After the treatment, all the participants took the reading posttest. Next, participants in the EG filled in the questionnaire. After collecting the questionnaire, the researcher randomly chose 15 participants from the EG to conduct the semi-structured interview to explore whether the lexical approach benefited students' reading comprehension ability.

3.7.3 Results

The results of the pilot study are presented in the following sections. The first section shows a quantitative comparison of the scores of the reading pretest and posttest for the CG and EG. The second section describes the analysis of the questionnaire. The third and fourth sections reported the qualitative analysis of the semi-structured interview and electronic reflective journals respectively.

3.7.3.1 Results of the Reading Comprehension Tests

The data of the reading pretest and posttest were analyzed by independent samples t-test via SPSS. As the results showed in Table 3.10, the mean scores of the CG and EG were 48.29 ($M = 48.29$) and 47.26 ($M = 47.26$) respectively. In addition, the p-value was 0.692, which was higher than 0.05 ($p = 0.692 > 0.05$); therefore, it could be deduced that there was no statistically significant difference between the two groups at the value of 0.692 ($p = 0.692 > 0.05$) in terms of the reading pretest. Moreover, as shown in Table 3.11, as to the scores of the posttest, the mean score of the EG ($M = 57.34$) was much higher than the CG ($M = 51.95$). Furthermore,

there was a statistically significant difference between the two groups at the p-value of 0.048 ($p = 0.048 < 0.05$).

Table 3.10 A Comparison of the Reading Pretest Scores of CG and EG

Test	Group	N	Mean	Std. Deviation	Sig.
Pretest	CG	34	48.2941	12.22585	.692
	EG	34	47.2647	8.87219	

Table 3.11 A Comparison of the Reading Posttest Scores of CG and EG

Test	Group	N	Mean	Std. Deviation	Sig.
Posttest	CG	34	51.9559	13.10642	.048
	EG	34	57.3382	8.47342	

As shown in Table 3.12, through the paired samples t-test analysis, as to the CG, the mean scores of the pretest and posttest were 48.29 ($M = 48.29$) and 51.95 ($M = 51.95$) respectively. Additionally, the p-value was 0.018, which was lower than 0.05 ($p = 0.018 < 0.05$), showing that there was a statistically significant difference of the scores between the two tests at the value of 0.018 ($p = 0.018 < 0.05$). Regarding the EG, the mean scores of the pretest and posttest were 47.26 ($M = 47.26$) and 57.34 ($M = 57.34$) respectively. Furthermore, there was a statistically significant difference of the scores between the two tests at the p-value of 0.000 ($p = 0.000 < 0.05$). The results showed that both groups made progress; however, participants in the EG had more improvement than the participants in the CG.

Table 3.12 A Comparison Between the Two Test Scores of CG and EG

Group	Tests	N	Mean	Std. Deviation	Sig. (2-tailed)
CG	Pretest	34	48.2941	12.22585	.018
	Posttest	34	51.9559	13.10642	
EG	Pretest	34	47.2647	8.87219	.000
	Posttest	34	57.3382	8.47342	

To recapitulate, the results of the reading pretest and posttest indicated that the participants in the EG improved a lot in reading comprehension ability, which demonstrated that applying the lexical approach to reading instruction had positive effects on Chinese English major students' reading comprehension ability. As a result, using this approach to teach reading in the main study is feasible.

3.7.3.2 Results of the Questionnaire

The questionnaire was used to explore the participants' opinions about the effects of the lexical approach on their reading comprehension ability. Based on the descriptive analysis of the data through SPSS elicited from participants' questionnaire, in general, all the participants held positive attitudes towards the approach, because all of them reported that the lexical approach helped them improve their English reading comprehension ability. As shown in Table 3.13, all the students agreed that the lexical approach changed their previous word-by-word reading method, and they improved their reading speed as well (Items 2 and 10). In addition, all the students expressed the view that this approach helped them better understand the structure of a text (Item 5). Moreover, all the students showed that this approach expanded their vocabulary, and they knew how to guess the meaning of new words in reading (Items 6 and 7). Furthermore, all the students reported that they knew how to deal with long and difficult sentences in reading (Item 8). A great number of students indicated that they would consciously pay attention to the lexical chunks and highlighted them when reading a text (Item 11).

Table 3.13 Results of the Questionnaire on the Likert Scale (N=34)

Items	SD	D	UN	A	SA
	%	%	%	%	%
1. Through the training session, I have known the basic knowledge of lexical chunks, discourse organizers, and the lexical approach.	0	0	0	23.5	76.5
2. The lexical approach changes my previous 'word by word' reading method.	0	0	0	11.8	88.2
3. The lexical approach increases my reading interest.	0	0	8.8	20.6	70.6
4. The lexical approach builds up my reading confidence.	0	0	5.9	32.4	61.8

Table 3.13 Results of the Questionnaire on the Likert Scale (N=34) (Continued)

Items	SD	D	UN	A	SA
	%	%	%	%	%
5. The lexical approach helps me better understand the structure of the text.	0	0	0	14.7	85.3
6. The lexical approach expands my vocabulary.	0	0	0	11.8	88.2
7. After learning the lexical approach, I know how to guess the meaning of new words in reading.	0	0	0	5.9	94.1
8. After learning the lexical approach, I know how to understand long and difficult sentences in reading.	0	0	0	26.5	73.5
9. The lexical approach is helpful in improving my English reading comprehension ability.	0	0	0	23.5	76.5
10. The lexical approach helps me improve my reading speed.	0	0	0	32.4	67.6
11. After learning the lexical approach, I will consciously pay attention to the lexical chunks and highlight them in reading.	0	0	2.9	26.5	70.6

Note: SD = Strongly Disagree; D=Disagree; UN=Uncertain; A=Agree; SA= Strongly Agree.

3.7.3.3 Analysis of the Semi-structured Interview

To have an in-depth understanding of participants' opinions of applying the lexical approach to reading instruction, 15 students were randomly chosen to attend the interview. Overall, all the interviewees expressed positive opinions towards the implementation of the lexical approach. All of them mentioned that the lexical approach was new to them, and they mastered the basic concepts of lexical chunks and the lexical approach. When expressing their understanding of lexical chunks and the lexical approach, the words that frequently appeared were "connections/connected, associated, as a whole, multi-word unit". For example, one of the interviewees stated that:

These two concepts are new to me. In my opinion, a lexical chunk is a set of words and phrases, and the lexical approach is a teaching method which focuses on vocabulary, phrases, and collocations." Another interviewee reported, *"Previously I thought that words exist individually and have their meanings, now I do not think that they exist independently, but there is a connection between words. These connected words make up of lexical chunks. A lexical chunk is a multi-word*

unit that brings words together and has its structure and meanings. The lexical approach is a teaching method of which the core is lexical chunks.

In addition, all of them agreed that the lexical approach was suitable for their reading learning. Ten of them described that when reading a text, they would pay more attention to the relationship between words, and would consciously highlight lexical chunks. Moreover, most of them proposed that they knew how to learn a word from multiple aspects rather than simply learning a word's form and Chinese meaning. Only one interviewee said that it was hard for her to change the concept. Furthermore, all the participants agreed that the lexical approach helped them improve their reading comprehension ability to some extent, which mainly reflected in these aspects: changing the word-by-word reading method, increasing reading speed, enhancing reading accuracy, expanding vocabulary, and understanding long and difficult sentences better. However, one interviewee also pointed out that she had some improvement but not too much, because she needed long-term training. As to the difficulties that they encountered during the learning process, four of them showed that it was difficult for them to identify the lexical chunks; three of them reported that it was not easy to classify the lexical chunks; two interviewees expressed that they could identify the lexical chunks but sometimes could not recognize the meanings of them, and others stated that it was easy to forget lexical chunks. Finally, they also put forward some suggestions. Many of them remarked that for the training session part, they had trouble in understanding the concepts, and they hoped it could be more specific and add more Chinese translation and examples to have a better understanding. Additionally, they expected the teacher could impart some strategies about how to retain the lexical chunks entrenched in the long-term memory.

3.7.3.4 Analysis of the Electronic Reflective Journals

To obtain more information about the effects of the lexical approach on students' reading comprehension ability, the EG was required to write three English journal entries. However, these students had many classes to take and assignments to finish; hence, they were quite busy with their own learning tasks. Therefore, some students were reluctant to write the journals. As a result, only 23 participants wrote the journal entries, and the researcher received 32 journal entries. As a whole, all the

journal entries reflected that the lexical approach was practical and useful. Except for the findings from the questionnaire and semi-structured interview, the journal entries presented the following new information. Some students had difficulty accumulating lexical chunks. Some students lacked background knowledge. For example, one student described, *“I know little about the political, economic, scientific and cultural aspects of social life, so I also had difficulty in understanding the reading texts.”* A few students reported that they had difficulty classifying the lexical chunks, especially differentiating polywords and collocations. One student claimed, *“Frankly, it’s such a difficult thing to differentiate polywords and collocations. It may cost extra time to categorize the words when inputting them as a whole.”* Another student described, *“In the first class, I was confused with many categories of lexical chunks and proper nouns. As I learned more, I became familiar with them, but it was still difficult to distinguish them.”* Some students showed that for EFL learners, it was a normal phenomenon that they always recite words but were unable to use them fluently and accurately in speaking and writing. However, the lexical approach helped them strengthen the memory of lexical chunks and improved their comprehensive competence. For instance, one student wrote that:

“I think we recite words every day, and although we have mastered a certain amount of vocabulary, we are still at the stage of understanding some words. In practice, we cannot communicate correctly and fluently in speaking and writing. This teaching method can strengthen our memory of vocabulary, phrases, and fixed collocations, and help us be more comfortable with various English expressions. I feel that learning this method improves my reading and writing skills”.

I think this teaching method is very practical, it makes those isolated words enter the students’ vision and mental impression in the form of chunks, so that students can better understand the grammatical thinking of English, and can further avoid the situation of Chinglish. I feel less bored and dizzy when using this method to learn reading.”

Many students reflected that the evaluation activity was fun and useful, and they would use this activity in future learning to check whether they mastered the lexical chunks. For example, one student depicted, *“when we assess*

the newly lexical chunks with our partner by asking different aspects of the words, I feel very excited and this way helps me deepen impression of chunks.”

3.7.4 Limitations and Implications

To make the main study more coherent and reliable, the pilot study was used to implement all the processes involved in the main study and provide suggestions for it. The pilot study mainly has three limitations. Firstly, there are few males in the two classes; therefore, the researcher could not obtain thorough information about the opinions of the lexical approach from the male’s perspective. Secondly, due to the time frame, it only piloted two units; therefore, some teaching activities such as role-play were not involved in the pilot study. Thirdly, some students are not willing to write reflective journal entries; as a result, the researcher could not know all the participants’ opinions about the lexical approach. When conducting the main study, this problem has been solved by providing the guided questions, allotting some time to students to write, giving feedbacks to every journal entry, and having no language requirements.

Despite the limitations, the pilot study generated the following implications: 1) the lexical approach had positive effects on Chinese English major students’ reading comprehension ability and it could be applied to the main study; 2) the instruments used in the pilot study, the reading comprehension tests, the questionnaire items, the interview guidelines, and the electronic reflective journals were generally valid and reliable, which could be implemented in the main study.

Based on the findings from the semi-structured interview and electronic reflective journals, the research will make the following changes in the main study: 1) increase one period of the training session, and adds more specific examples and Chinese translations to the PowerPoint (PPT); 2) although the participants will read the consent form that includes the things that they need to do during the experiment, the researcher will ask them again before the experiment to confirm that they are willing to write the journal entries. If they are still unwilling to do it, the researcher will ask them to take turns to write the journal entries to lessen their burdens or give some prizes to the participants to increase their motivation.

In summary, this chapter discusses the research methodology employed in the present study. It begins with the research design. Then the research contexts, participants, and treatments of the study are expounded. After that are the instruments used in the experiment, including reading comprehension tests, a questionnaire, a semi-structured interview, and electronic reflective journals. Next is the data collection and analysis, t-test and descriptive analysis are used to analyze the data from the reading comprehension tests and the questionnaire, and the data from the semi-structured interview and electronic reflective journals are analyzed through qualitative analysis. It ends with a description of the pilot study.



CHAPTER 4

RESULTS AND DISCUSSION

This chapter elaborately presents the results and discussions of the study. It includes two parts, the first part reports the results and findings obtained from the reading comprehension tests, questionnaire, semi-structured interview, and electronic reflective journals, and the second part is the discussion. All the results are used to answer the following two research questions:

- 1) To what extent does the lexical approach affect Chinese English major students' reading comprehension ability?
- 2) What are students' opinions of using the lexical approach to learn reading?

The results of the reading comprehension tests are to answer the first research question, and the findings from the questionnaire, semi-structured interview, and electronic reflective journals are used to answer the second research question.

4.1 Results

This section reveals the results of the study at length, which consists of two subparts. The first part demonstrates the effects of the lexical approach on students' reading comprehension ability. The second part illustrates students' opinions of using the lexical approach to learn reading.

4.1.1 Effects of the Lexical Approach on Students' Reading Comprehension Ability

The scores of the reading pretest and posttest were used to answer the first research question. The reading pretest was conducted in the first week, which was employed to reveal whether the CG and the EG were homogenous, and it was also used as the baseline. The reading posttest was administered in week 11, to examine whether the lexical approach had any effects on students' reading comprehension

ability. Forty-five participants from the EG and 43 participants from the CG took part in the reading comprehension tests. The results are shown as follows.

4.1.1.1 Results of the Reading Pretest of the CG and EG

The data of the reading pretest of two groups were analyzed through an independent samples t-test via SPSS. The results are shown in Table 4.1.

Table 4.1 A Comparison of the Reading Pretest Scores Between CG and EG

Test	Group	N	Mean	Std. Deviation	Sig. (2-tailed)
Pretest	CG	43	65.44	13.01	.762
	EG	45	66.30	13.48	

As it was shown in Table 4.1, the mean score of the CG ($M = 65.44$) was slightly lower than the EG ($M = 66.30$). The p-value was 0.762, which was higher than 0.05 ($p = 0.762 > 0.05$); hence, regarding the reading pretest, it can be inferred that there was no statistically significant difference between the two groups at the value of 0.762 ($p = 0.762 > 0.05$). It showed that the two groups were statistically equivalent and the study could be moved forward.

4.1.1.2 Results of the Reading Posttest of the CG and EG

The data of the reading posttest of the two groups were also analyzed through an independent samples t-test via SPSS. The results are shown in Table 4.2.

Table 4.2 A Comparison of the Reading Posttest Scores Between CG and EG

Test	Group	N	Mean	Std. Deviation	Sig. (2-tailed)
Posttest	CG	43	65.97	11.20	.047
	EG	45	70.77	11.19	

According to Table 4.2, the mean score of the EG ($M = 70.77$) was higher than the CG ($M = 65.97$). Moreover, the p-value was 0.047, which was lower than 0.05 ($p = 0.047 < 0.05$). Therefore, the reading posttest demonstrated that there was a statistically significant difference between the two groups at the value of 0.047 ($p = 0.047 < 0.05$), and the EG performed much better than the CG.

4.1.1.3 Results of the Two Reading Tests of the CG and EG

A paired samples t-test was conducted to find out whether the two groups had any improvement after the treatment and how much they had improved. Table 4.3 presents the results of the two reading tests of the two groups.

Table 4.3 A Comparison of the Reading Pretest and Posttest Scores Between CG and EG

Group	Tests	N	Mean	Std. Deviation	Sig. (2-tailed)
CG	Pretest	43	65.44	13.01	.637
	Posttest	43	65.97	11.20	
EG	Pretest	45	66.30	13.48	.000
	Posttest	45	70.77	11.19	

Based on Table 4.3, comparing the scores of the two reading tests, the CG made little progress after the treatment, of which the mean score of the reading posttest ($M = 65.97$) was marginally higher than the pretest ($M = 65.44$). In addition, the p-value was 0.637, which was higher than 0.05 ($p = 0.637 > 0.05$); therefore, it showed that there was no statistically significant difference between the two tests scores for the CG at the value of 0.637 ($p = 0.637 > 0.05$). On the contrary, the EG had more improvement since the average score increased by 4.47, which was much higher than the CG with 0.53. Furthermore, there was a statistically significant difference between the scores of the two reading tests at the value of 0.000 ($p = 0.000 < 0.05$).

In summary, the results showed that the participants of the EG who were taught with the lexical approach performed much better in reading comprehension than the students in the CG who learned with the GTM and TBLT. It can be implicated that the lexical approach had positive effects on students' reading comprehension ability, and this approach contributed to enhancing their reading comprehension ability.

4.1.2 Students' Opinions of Using the Lexical Approach to Learn Reading

To answer the second research question about students' opinions of using the lexical approach to learn reading, the data gathered from the questionnaire, semi-structured interview, and electronic reflective journals were explored. Since one

research instrument fails to disclose rich and adequate data thoroughly, these three research instruments are employed to triangulate and validate the data, and finally, the researcher could obtain reliable and comprehensive data. The results are presented below.

4.1.2.1 Results of the Questionnaire

The questionnaire includes two parts. Part one is the five-point Likert Scale used to elicit the students' responses about implementing the lexical approach to learn reading, and part two is the open-ended questions to explore students' opinions deeply. It was distributed to the participants in the EG after the reading posttest. Forty-five valid questionnaires were returned. The data were analyzed quantitatively by descriptive statistics of SPSS. Table 4.4 shows the results of the five-point Likert Scale.

Table 4.4 Results of the Questionnaire on the Likert Scale (N=45)

No.	Items	Mean	Interpretation
1	Through the training session, I have known the basic knowledge of lexical chunks, discourse organizers, and the lexical approach.	4.04	Agreed
2	The lexical approach changes my previous 'word by word' reading method.	3.40	Undecided
3	The lexical approach increases my reading interest.	3.47	Agreed
4	The lexical approach builds up my reading confidence.	3.64	Agreed
5	The lexical approach helps me better understand the structure of the text.	3.89	Agreed
6	The lexical approach expands my vocabulary.	3.67	Agreed
7	After learning the lexical approach, I know how to guess the meaning of new words in reading.	3.67	Agreed
8	After learning the lexical approach, I know how to understand long and difficult sentences in reading.	3.71	Agreed
9	The lexical approach is helpful in improving my English reading comprehension ability.	3.91	Agreed
10	The lexical approach helps me improve my reading speed.	3.76	Agreed
11	After learning the lexical approach, I will consciously pay attention to the lexical chunks and highlight them in reading.	3.64	Agreed
Total		3.71	Agreed

Table 4.4 presents the statistical summary of the first part of the questionnaire, which is about the participants' opinions of using the lexical approach to learn reading. It can be observed that the highest item is (1) Through the training session, I have known the basic knowledge of lexical chunks, discourse organizers, and the lexical approach, which scores $M = 4.04$. It means that students show agreement to this item. On the contrary, the lowest item is (2) The lexical approach changes my previous 'word by word' reading method, which scores $M = 3.40$. It indicates that students are uncertain about this statement. In general, students held a positive attitude towards the lexical approach since the mean score of the questionnaire ($M = 3.71$) goes to the "agreed" interpretation, which is between 3.41–4.20.

The second part of the questionnaire consists of two open-ended questions. One question is to explore which aspect that students benefit most after using the lexical approach to learn reading, and the other one is to ascertain their readiness to use this approach to learn reading in the future. The findings of the first question can be categorized into three themes: (1) changes in reading methods, (2) improvement of reading efficiency, and (3) enhancement of vocabulary learning.

(1) Changes in Reading Methods

Nearly two thirds of students (64.4%) expressed that the lexical approach helped them change their reading methods, replacing the previous word-by-word reading method with the chunk-by-chunk reading method gradually. Since the previous reading method is deep-rooted and the new one is a convert; therefore, some students claimed that it is hard for them to change.

(2) Improvement of Reading Efficiency

A great number of students (57.8%) reported that the lexical approach assisted them in improving their reading efficiency and reading comprehension ability. This can be reflected in the following aspects: a. this approach increased their reading speed; b. they could better understand the structure of a text; c. they could catch key information and understand the meaning of a passage quickly; d. they knew some strategies to guess the meaning of unknown words and handle long and complicated sentences; e. they could remember the content of a text better.

(3) Enhancement of Vocabulary Learning

Nearly half of students (48%) reported that they changed their way to learn and memorize words after learning the lexical approach. Now they would learn in chunks rather than individual words. Instead of simply learning the pronunciation, spelling, and Chinese meaning of a word, they would focus on English definitions, synonyms, antonyms, collocations, grammatical usage, and derivatives. In addition, they mastered some word formation methods, which helped them expand their vocabulary.

The second question was to ask the students' willingness to use the lexical approach to learn reading in the future. Of 45 responses, only two students indicated refusal; one was uncertain; the rest students showed that they were willing to continue employing the lexical approach to learn reading. The reason why the two students were reluctant to use the lexical approach was that the previous reading method was hard to change, and they were not accustomed to using the chunk-by-chunk reading method. The student who exhibited uncertainty expressed that it depends on the difficulty level of a passage; if it is difficult, he or she would use it. In terms of the reasons why students agreed to keep using this approach, except for the benefits that have been listed in the first part of the questionnaire, other aspects are as follows. Firstly, they stated that this approach was useful for their English learning and developing their learning ability; in addition to reading, it was conducive to improving their speaking and writing ability. Moreover, they remarked that the lexical approach was an effective method to read and learn a passage, especially in handling long and complicated sentences; thus, they wanted to see the long-term effects. The following section presents the findings from the semi-structured interview.

4.1.2.2 Results of the Semi-structured Interview

The semi-structured interview is used to obtain thorough and exhaustive data of students' opinions about using the lexical approach to learn reading. Based on the results of previous experiments (Guest et al., 2006; Latham, 2013; Mason, 2010), to attain data saturation, the sample size of the semi-structured interview of the present study is 15. Fifteen students (14 females, 1 male) in the EG participated in the interview. They were selected based on the scores of the reading

posttest. All the students in the EG were classified into three levels: low, moderate, and high, and five students were chosen from each group to be the interviewees. The total score of the reading posttest is 100. Students who got scores between 80 and 100 were the high level (H), who got scores between 60 and 79.5 were the moderate level (M), and whose scores below 60 were the low level (L). To put it simply, of the 15 participants, five students who were the high-level group that are labeled from student 1 (St.1) to student 5 (St.5); five students who were the moderate-level group that are labeled from St.6 to St.10; five students who were the low-level group that are labeled from St.11 to St.15. Six questions are predetermined. The major findings are as follows. Firstly, all the students understood the basic concepts of the lexical chunks and the lexical approach. Secondly, most students (86.7%) expressed that the lexical approach was suitable for learning reading. Thirdly, they had a new understanding of learning vocabulary, and the lexical approach helped them expand their vocabulary. This finding is consistent with the questionnaire. Fourthly, nearly all the students conveyed that the lexical approach contributed to improving their reading comprehension ability. The findings of the difficulties that students confronted when using the lexical approach to learn reading and the suggestions about applying this approach to reading instruction are similar with the results of the reflective journals. Therefore, they are combined with the findings of the journals and reported later (see 4.1.2.3). In addition, similar findings from other questions are also presented together with the journals.

Two original themes are gained from the interview, one is about whether the lexical approach was suitable for students to learn reading, and the other is the suggestions put forward by the participants to facilitate the application of the lexical approach to teach reading.

(1) Suitability of the Lexical Approach for Learning Reading

Thirteen out of 15 students (86.7%) said that it was suitable, and two students showed uncertainty. As to the positive views, they reported that when reading a passage, the lexical approach could help them find key information quickly and accurately, better understand the structure and sentences of a passage, and improve their reading speed and reading accuracy. In addition, they attached

importance to the relationships of words in a sentence, which was conducive to understanding a text. Some quotes are presented below.

St.3 (H): *“Suitable. It can help me find key information quickly and improve my reading speed and reading accuracy”*.

St.10 (M): *“It is suitable. It can help me divide a text more clearly... I will base on lexical chunks and the context to guess the meaning of new words... I increase my reading speed as well”*.

St.15 (L): *“Suitable. It assists me in improving my reading comprehension ability and reading efficiency to a great extent. I always read a text word by word before and pay little attention to the relationship between one word and other words. But now I use the chunk-by-chunk reading method to read a passage, which helps me understand easier”*.

However, two students said that they were unable to use this approach skillfully. One student revealed that *“in the process of using the lexical approach to read a text, I will forget to use it automatically and still use the previous word-by-word reading method. I enhanced my chunks awareness, but I haven't formed the habit of using the chunk-by-chunk reading method to read a text”* (St.1, H). Another student voiced a similar opinion, *“I used to employ the word-by-word reading method, and the lexical approach is new to me; hence, it is challenging to change my previous reading method. I have to remind myself of using the chunk-by-chunk reading method occasionally; otherwise, I will still go back to the previous word-by-word reading method”* (St.8, M).

(2) Suggestions on Applying the Lexical Approach to Language

Teaching

a. Increase Extra Reading Materials

In addition to teaching the texts of the textbook, the teacher is supposed to distribute other reading materials related to the topic of the texts for further training. During the training, the teacher can guide the students to use the slash to divide the text to strengthen their awareness of chunks. Only in this way can they succeed in changing the previous ingrained word-by-word reading method and

improving their reading comprehension ability. Some quotes from the participants of the interview are presented below.

St.5 (H): *“It would be better if the teacher increases extracurricular reading materials, and then lets us read and divide the texts, in order to cultivate our awareness of lexical chunks and form the chunk-by-chunk reading method”*.

St.15 (L): *“Appropriately increase the difficulty of reading materials, and let us read them in chunks”*.

b. Give Simpler and More Interesting Examples

Some students suggested that the teacher can give more easy-to-understand and appealing examples when imparting the lexical chunks. The teacher can make use of the words, phrases, and sentences that appear in the books and movies which are familiar to the students. Apart from that, the explanation of long and difficult sentences should be clearer, and the teacher should assign more exercises and tasks to the students to let them apply what they learned in the class. Some quotes from the participants of the interview are shown below.

St.9 (M): *“The explanation of key sentence patterns needs to be clearer and should increase more practice”*.

St.12 (L): *“It is a little boring to talk about how to divide the sentence monotonously. The effect may be better if it becomes more interesting”*.

c. Cultivate the English Beginners’ Awareness of Lexical Chunks

Several students implied that English learners should be trained to develop their consciousness of lexical chunks from an early stage. Because it is rather difficult for them to change their previous flawed reading method once it is situated. The following are some quotes from the participants.

St.6 (M): *“This method can be used when learners start to learn English to develop their consciousness of lexical chunks”*.

St.11 (L): *“This method should be used frequently, and children should be trained to read in this way from an early age”*.

4.1.2.3 Results of the Electronic Reflective Journals

Students in the EG were expected to write an electronic reflective journal entry after the training session and learning each unit to express what they gained from the lessons and the difficulties that they met during the process of using the lexical approach to learn reading, five journal entries in total. The instructor provided guided questions to direct the students to write each journal entry and gave feedback to them. However, only a few students kept writing a journal entry persistently. In the end, 133 journal entries were collected from 45 students of the EG. Next, all the journal entries were numbered. They were labeled based on the students' identification number (No.) and journal entries (JN), such as No.1JN1, No.1JN2, No.1JN3..., No.2JN1, No.2JN2, No.3JN2..., etc. For example, code No.1JN1 means the number one student's first journal entry; code No.1JN2 means the number one student's second journal entry; code No.2JN1 means the number two student's first journal entry.

The major findings of students' journal entries are shown as follows. Firstly, after the first week's training session, most students expressed that they had a basic understanding of lexical chunks, discourse organizers, and the lexical approach. Secondly, they described that they benefited considerably from the lexical approach, involving improving vocabulary learning, enhancing reading comprehension ability, obtaining strategies of dealing with unknown words and long and difficult sentences, etc. Thirdly, they realized the drawbacks that existed in their reading learning and the things that they need to do to enhance their reading comprehension ability. Fourthly, they also mentioned their reading problems, including unknown words, long and complicated sentences, slow reading speed, failing to grasp the main idea, etc. The similar findings of journals and interview are presented after this part (see 4.1.2.4). Two themes are different from the interview, one is students' self-awareness awakening in the process of learning reading, and the other is their reading problems.

(1) Self-awareness Awakening in Learning Reading

During the process of using the lexical approach to learn reading, many students realized the drawbacks that existed in their reading learning and what they need to do to enhance their reading comprehension ability. First and foremost,

they recognized the disadvantages of the word-by-word translation reading method, such as the slow reading speed, inaccurate understanding of a sentence and a text, and so on.

“Previously I thought that I was not the one who read a passage word by word. This idea is wrong. It turns out that I was also one of them” (No.12JN1).
“When doing the reading exercises in the past, I often read the texts word by word, which led to the slow reading speed, low reading accuracy, and an incorrect understanding of a text” (No.18JN1).

“I realize that I should read in chunks instead of individual words, no wonder that I can’t understand a sentence” (No.32JN1).

In addition, they identified the reasons why they had a small vocabulary size and could not master words well, and they felt that they needed to enlarge their vocabulary.

“Through today’s course, I realized some of my problems... When memorizing a word, I just memorize the meaning, not the word combinations; hence, I don’t the word’s usage and collocation” (No.6JN1).

“I find the reason why I cannot memorize words. I just learn a word’s pronunciation, spelling, and Chinese meaning, and don’t master a word thoroughly. I will learn a word from different aspects, and this is the correct way to learn words” (No.18JN2).

Moreover, they sensed that accumulating more lexical chunks especially collocations and sentence patterns are essential to better use the lexical approach to learn reading.

“We don’t have adequate fixed collocations and idiomatic expressions, so we need to learn more to better use the lexical approach to read” (No.5JN5).

(2) Reading Problems

Students expounded their reading problems in the journal entries. Firstly, 20 out of 26 students (76.9%) stated that unknown words and phrases were the major problems when reading a passage. Secondly, 18 out of 26 students (69.2%) reported that long and complicated sentences were impediments to them.

For instance, one student wrote, *“I am afraid of long and complicated sentences and feel heady, and even more confused when encountering obscure and unfamiliar words”* (No.4JN3). One student put forward, *“new words and long sentences are the main causes of an incorrect understanding of the structure and logic of a passage”* (No.15JN3). Another student expressed that, *“I lack adequate vocabulary, when reading an article, I often meet unfamiliar words which interfere with my reading. Additionally, I fail to analyze the structure of the long and complicated sentences correctly”* (No.19JN2).

Thirdly, 11 out of 26 students (42.3%) disclosed that slow reading speed was an obstacle to reading. For example, one student revealed, *“The reading speed affects my performance and English learning to a large extent”* (No.36JN3). Several students added that it was difficult to balance the reading speed and reading accuracy. One student reported, *“sometimes to pursue the reading speed, I will not read an article very carefully; therefore, the reading accuracy is not very high”* (No.5JN3).

Finally, failing to grasp the main idea and making sense of the purposes of a passage were the main reading problems for some students, and finding key information was also difficult for them.

“Getting the general idea of a text is one of my major reading problems, especially the argumentative passages and topics related to science, technology, and philosophy. After reading such a passage, I don’t know what it talks about” (No.15JN3).

“Some information of an article often misleads me to do the reading questions. At this moment, I am so confused and not sure which one is the correct answer” (No.30JN3).

4.1.2.4 Overlapping Findings from the Semi-structured Interview and Electronic Reflective Journals

Some similar findings of the semi-structured interview and electronic reflective journals can be combined and summarized as follows.

(1) Gains from the Lexical Approach

Firstly, quite a few students know little about lexical chunks before. But now nearly all the students had a basic understanding of lexical chunks, the lexical approach, and discourse organizers. They knew how to use them to improve their English ability. Through the interview, when the participants talked about the lexical chunks, frequently occurring key phrases were “several words”, “fixed meaning”, “not alone”, “remember as a whole”, “read better”, “retain conveniently”. In terms of the lexical approach, they expressed that the core of it is lexical chunks, but both vocabulary and grammar are important. Some representative examples of each group through the interview are illustrated below.

St.1 (H): *“A lexical chunk is viewing a common fixed expression as a unit. The core of the lexical approach is lexical chunks, which helps us read better”.*

St.10 (M): *“A lexical chunk is a group of words, not isolated, but as a whole. The lexical approach is a teaching method whose center is the lexical chunks, but both vocabulary and grammar are important”.*

St.13 (L): *“A lexical chunk is not individual words but some meaningful words are combined to make them easier for us to remember. The lexical approach is a method that cultivates our awareness of lexical chunks and we read a text chunk by chunk”.*

Some quotes from students’ journal entries are displayed as follows.

“I have a basic understanding of lexical chunks, the lexical approach, and discourse organizers from this lesson. It seemed to open a new window for me to learn reading and English” (No.25JN1).

“The way of accumulating lexicalized grammar enlightened me a lot” (No.27JN1).

“This is my first time to touch the term lexical chunks, and I have a preliminary understanding of it and hope to learn more in the subsequent courses” (No.43JN1).

Secondly, in terms of vocabulary learning, at first, they learned what it meant to learn a word. Instead of simply learning a word's pronunciation, spelling, and Chinese meaning, they needed to explore more, including its English definitions, synonyms, antonyms, collocations, co-text, grammatical usage, and derivatives. They put more emphasis on the relationships among words, and they believed that it was beneficial to their vocabulary retention. Additionally, they enriched their vocabulary, especially the derivatives of the words. Some quotes from the participants through the interview are presented below.

St.3 (H): *"When I learned a new word before, I would look up its synonyms and antonyms, but just had a glimpse rather than taking efforts to remember them. Now after learning the lexical approach, I will spend time exploring a word's composition, e.g., root, affix, and suffix, and will also learn its collocations and grammatical usage. Moreover, I use the chunk-by-chunk reading method to read a text and will concentrate on the relationships among words during the process of reading"*.

St.8 (M): *"I deepen my understanding of learning new words, what I learned is not only that individual word, but I will associate it with other relevant words, which fosters my divergent thinking ability to learn vocabulary"*.

St.14 (L): *"When learning a passage, I used to remember the meaning of new words first and then read the passage, and I thought this is the correct order to learn a text. Now when I learn a passage, I will focus on the word's co-text, that is, the relationship between this word and other adjacent words. This will make it faster to remember words, and it will accelerate reading speed. Previously I would learn a word in this way. Take the word 'different' for an example, firstly, I learn its spelling, 'd-i-f-f-e-r-e-n-t', by pronouncing it letter by letter; then read it by segment based on the phonetic symbols, 'di-ff-rent', and recite the Chinese meaning; after that I read the passage, and then I would have a vague meaning of that word. However, if I meet it in other contexts, I could not grasp an accurate meaning because I simply remember a single meaning in Chinese and I just have a rough impression of it. I must admit that learning a new word from many aspects is very useful"*.

Some quotes from students' journal entries are displayed as follows.

"I don't think the more we remember vocabulary, the better our English ability will be, but we should know the correct and appropriate usage of a word" (No.16JN2).

"I grasp the words of unit 2 more thoroughly. Although this learning method is a bit time-consuming, it is helpful for the long-term effects" (No.18JN2).

"Properly extends the explanation of new words can enrich my vocabulary" (No.26JN2).

Thirdly, the lexical approach was conducive to students' English reading comprehension ability in diversified aspects. To begin with, it increased their reading speed. In the interview, 13 students conveyed that this approach increased their reading speed. Two students supported this view by using their personal experiences.

St.7 (M): *"When I did the mock test of TEM-4 by using the word-by-word reading method, I just finished it in time. On the contrary, when I use the chunk-by-chunk reading method, I have adequate time to check the answers"*.

St.14 (L): *"In the extensive reading class, we are required to read several passages and then finish the exercises followed them within limited time. I found that there is a huge difference between the word-by-word and chunk-by-chunk reading methods. I used to read a text word by word and could not complete the tasks within the constraint of time. Now, I read a text chunk by chunk, I can fulfill the reading tasks within the allotted time and have extra time to check the answers, and I improve the accuracy of reading exercises as well"*.

Some quotes from students' journal entries are shown as follows.

"Reading through chunks greatly speeds up my reading speed" (No.3JN5).

"...I get rid of my previous reading method and read chunk by chunk as a substitute. I... improved my reading speed..." (No.24JN3).

“...This reading method helps me increase the reading speed”
(No.38JN5).

Then it helped them better understand the structure and grasp the meaning of a text. Some comments from the students are presented below.

St.4 (H): *“I can better grasp the general idea of the text. I think this approach is very useful for my reading comprehension”.*

St.6 (M): *“It is very helpful in ... and understanding the text”.*

St.13 (L): *“I used to read a text word by word, which leads to a waste of time, and I found that the more I read the text, the less I could understand it. Now I read a text word by word, which assists me in improving reading speed and understanding the structure and meaning of a text”.*

Some quotes from students’ journal entries are reflected as follows.

“The lexical approach makes it easier for me to understand an article and improves the quality of reading” (No.3JN5).

“The discourse organizers help me figure out the structure of a text” (No.22JN5).

Moreover, they obtained some strategies about how to guess an unknown word’s meaning and how to analyze and interpret long and difficult sentences. Some quotes from the interview are shown below.

St.2 (H): *“I can understand the long and complex sentences better”.*

St.6 (M): *“I can better understand the long and complicated sentences.*

St.13 (L): *“I feel less fear of long and complicated sentences and can better understand them”.*

Some quotes from students’ journal entries are reflected as follows.

“I know that I can use the context and vocabulary knowledge such as root, prefix, and suffix to guess a new word’s meaning, and I think this is useful for me” (No.11JN3).

“With the awareness of lexical chunks, when dividing a long and difficult sentence, although I cannot understand it, I will not separate the sense groups that are originally connected” (No.13JN5).

Furthermore, based on the findings of the journal entries, several students had other surprising profits, such as improving language perception, writing ability, etc.

“The lexical approach may have a greater effect on helping me remember sentences and improve my writing ability” (No.1JN5).

“... I improve my language perception as well” (No.5JN2).

(2) Difficulties in Learning the Lexical Approach

Firstly, the biggest challenge for many students was to change their previous word-by-word reading method and use the chunk-by-chunk reading method to read texts. Some students reported that they were not used to using this method to read, because they had to make sure which words were associated, and this was hard for them. Some students revealed that they were incapable of utilizing this method automatically due to inadequate vocabulary storage and low reading ability. Others contended that they could not recognize the lexical chunks immediately and properly, and this caused the misinterpretation of long and complicated sentences. One quote from the interview is presented below.

St.3 (H): *“Incorrect division can easily lead to a deviation in understanding a sentence”.*

Some quotes from students' journal entries are shown as follows.

“Now I will consciously use the chunk-by-chunk reading method to read, but my previous reading method is not so easy to change” (No.16JN2).

“When reading a passage, although I know some words should be combined as a chunk, I always separate them when I read it for the first time, and I can't recognize a chunk automatically, so I always use the word-by-word reading method” (No.22JN3).

Secondly, as to the journal entries, 18 out of 25 students (72%) described that they had trouble in classifying the lexical chunks, especially the

differences between polywords and collocations. Participants of the interview also reflected this problem. Some quotes from students' journal entries are shown as follows.

"Distinguishing and memorizing lexical chunks are the main difficulties for me" (No.4JN4).

"The classification of the lexical chunks is unclear, especially the difference between polywords and collocations" (No.28JN4).

Thirdly, in terms of the journal entries, when learning the new words, 14 out of 25 students (56%) expressed that they failed to figure out the differences of words that are synonyms or look similar. Some quotes from students' journal entries are illustrated below.

"Words that look similar are very difficult to differentiate for me"
(No.6JN3).

"I can't figure out the differences between synonyms of a word"
(No.16JN3).

Lastly, 5 out of 15 (33.3%) had difficulty in remembering the lexical chunks. They reflected that it was easy to forget the newly learned chunks, and the more they accumulated, the more they were perplexed. As to the journal entries, 13 out of 25 students (52%) illustrated that they had this problem as well. Some quotes from students' journal entries are presented below.

"At this stage, I can't remember the lexical chunks very well and easily forget them" (No.21JN3).

"I have to review the lexical chunks frequently so as not to forget them" (No.32JN3).

In summary, the findings from the questionnaire, semi-structured interview, and reflective journals are reported to explore the students' opinions of applying the lexical approach to learn reading. The following section will be the discussion.

4.2 Discussion

This section expounds on the discussion about the effects of the lexical approach on students' reading comprehension ability and students' opinions of employing the lexical approach to learn reading, which are based on the two research purposes.

4.2.1 Discussion on the Effects of the Lexical Approach on Students'

Reading Comprehension Ability

The results of the present study showed that the lexical approach was effective to help first-year English major students improve their reading comprehension ability. This finding aligns with considerable previous studies (Li, 2017; Li, 2019; Ling, 2017; Long, 2014; Zeng, 2019; Zhang, 2014; Zhao, 2018). These researchers carried out empirical studies in the high schools in China to examine the impacts of the lexical approach on students' reading comprehension ability, and found out that students could improve their English reading comprehension ability by learning the lexical approach. Additionally, Rahimi et al. (2012) conducted a quasi-experimental study in Iran to investigate the effectiveness of the lexically-based language teaching on Iranian high-school students' English achievement which involved vocabulary, grammar, and reading skills. Sixty students took part in the study for 16 weeks, and they were assigned to the CG and EG randomly. It used two tests as the research instruments. This study revealed that students in the EG outperformed the CG in reading and vocabulary. However, the intervention had little influence on their grammar learning.

Moreover, the results of the present study conform to these studies as well (Sun, 2010; Wang, 2014; Zhao, 2017). They undertook research in universities in China to ascertain the application of the lexical approach to college English reading teaching, of which the participants were non-English major students, finding that students who received the lexical approach progressed significantly in reading ability. Aside from that, Nishida (2013) took in a study in Japan to explore the influence of chunking on students' reading comprehension ability, finding that teaching chunks improved learners' reading comprehension ability, but it was more helpful when integrated with the phrase or syntactic structure instruction.

The findings of the present study demonstrated that students who received the lexical approach instruction made higher achievements in reading ability than the

students who were taught with the GTM and TBLT. Two reasons might be used to explain the improvement of students' reading comprehension ability, which are (1) the chunk-by-chunk reading method and (2) learning activities. The discussion of each theme is shown below.

4.2.1.1 The Chunk-by-chunk Reading Method

Abundant studies have shown that reading in chunks facilitates reading comprehension (Hung & Huong, 2014; Iwahori, 2008; Kuhn & Stahl, 2003; Rasinski, 2003). In the current study, students in the EG read a text chunk by chunk. When they read in chunks, a group of words that have relationships is combined, which relieves the cognitive load. As Stubbs (2001) maintained that lexical content in chunks should not be simply viewed as a combination of individual words nor a haphazard list of words but as a gathering of interrelating networks of relations between words. In addition, reading through chunks will reduce eye fixation and increase information span, which results in a lower risk to skip key information and regress to read, and this brings about more efficient reading (Warschauer et al., 2011). As stated by Hung and Huong (2014), "by reading in phrases, the readers will expand the fixation zone, reduce the fixation time, then improve their reading speed" (p. 22). Therefore, the input information is expanded, which increases memory capacity and decreases processing time. As stated by Nation (2001), lexical chunks aid learners in alleviating the cognitive burden and saving processing time. To recapitulate, the chunk-by-chunk reading method helps students expand the visual breadth, quicken the processing speed, and finally improve their reading speed. This can be validated by empirical studies. For instance, Hung and Huong (2014) conducted a study to explore the impacts of phrase reading on EFL English majors' oral reading fluency and reading comprehension, and found out that students who received phrase reading instruction significantly improved their reading speed and facilitated their comprehension of the main idea and details of a text than students with no training.

Moreover, when students read a text in chunks, they have a better understanding of the text as "phrases provide context for comprehending the following phrases in a sentence" (Hung & Huong, 2014, p. 32). Letters cannot carry meaning, and they can be meaningful unless they are made up of words; individual

words cannot express ideas, only when groups of words form into logical sentences, ideas can be conveyed successfully. Therefore, ideas and concepts are not delivered through individual words, but rather through phrases and sentences. Nishida (2013) pointed out that “chunks form logical strings of meaning” (p. 180), which aid learners to comprehend the meaning of a sentence. As it is related to the chunking theory (see 2.5.1), when learners read a text through chunks by chunks, they process pieces of information relevant to a group, which expands the memory capacity. Then these connected groups form sentences according to the semantics and syntactic structures; afterwards, these sentences become paragraphs; finally, a coherent and cohesive article appears. Therefore, the chunk-by-chunk reading method not only helps students increase memory retention but also assists them to have a correct understanding of a text. As a result, as proposed by Rasinski and Samuels (2011), grouping words into grammatical and meaningful chunks is fundamental to fluent reading. Yamashita and Ichikawa (2010) showed agreement with this view and proposed that “the ability to group words into appropriate units is an important determinant of fluent reading” (p. 265).

By contrast, students in the CG deployed the word-by-word reading method to read a text, which impedes comprehension. By reading word by word, a learners’ eyes move from one word to the next and ignore the relationship between a word and other words. Therefore, they fail to build the connection between words and ideas, and easily forget what they have read before; thus, they need to go back to reread frequently to strengthen their memory. This is the reason that causes their slow reading speed and inaccurate understanding of a text. Just as Osborne (2009) put forward that one of students’ main reading problems is that they read a text by understanding every single word and fail to grasp the main idea from a passage. Moreover, Nichols et al. (2009) stated that “word-by-word reading is a major roadblock to successful fluent reading” (p. 7).

Many scholars suggest that learners should read by phrases or in chunks rather than individual words (Conklin & Schmitt, 2008; Liao, 2011; Rasinski et al., 2011). Yamashita and Ichikawa (2010) carried out a study in Japan to ascertain the relationship between chunking and English reading fluency and comprehension. Forty-

eight intermediate and advanced level Japanese EFL learners participated in the study. Participants read four text modes to see the effects on their reading proficiency, involving the whole-text, single word (word-by-word), meaningful chunks (chunk-by-chunk), and fragmented word-groups (fragment-by-fragment). As to the reading comprehension, for the advanced group, there was no significant difference among the four modes, while the intermediate group gained less improvement through reading the fragment mode. In terms of the reading speed, both levels of students read the slowest in the single word mode, and it is more noticeable for the advanced students. It can be seen that reading through chunks can facilitate both reading fluency and comprehension, while the word-by-word reading method will hinder these two aspects.

In conclusion, when learners use the word-by-word reading method to read a text, it is difficult to understand the meaning and catch the main idea. Nevertheless, when they employ the chunk-by-chunk reading method, not only it helps them save processing time and accelerate reading speed but also assists them to get a correct understanding of a text. Just as Thornbury (2019) put forward, “the possession of a memorized store of ‘chunks’ allows more rapid processing, not only for production but also for reception” (p. 7).

4.2.1.2 Learning Activities

Learning activities may have played a pivotal role in improving students’ reading comprehension ability. The teaching design was adapted from Lewis (1997a) and Richards and Rodgers (2014). First, students in the EG were instructed with the lexical approach which focuses on developing students’ awareness of lexical chunks, cultivating their ability to identify, classify, and accumulate chunks, and finally helping them enhance their reading ability, which is a big difference from the CG. When learning a passage, the first task that students needed to do was to read it chunk by chunk and to divide it by using discourse organizers. This activity helps students change their previously ingrained word-by-word reading method and form the chunk-by-chunk reading method. Hence, when reading a new passage, they are conscious of putting words that are relevant together, which become chunks, and then they understand the meaning of every sentence holistically. Additionally, discourse organizers help

them figure out the relationships among sentences and paragraphs, and they manage to unravel the structure of a passage. The macro-organizers can help students figure out the overall structure of a text, and the micro-organizers are useful in understanding the relations between adjacent sentences. Therefore, learners can clear out the structure of a text and get the main idea simultaneously; additionally, they can comprehend the relationships between sentences more easily. Grabe and Gardner (1995) asserted that discourse structures assist learners to better comprehend the logic of information presented in a text, get a general idea, and filter irrelevant information. Jiang's (2012) study supported that discourse structure graphic organizers could effectively improve students' discourse comprehension and reading ability.

The next two activities were identifying and highlighting the lexical chunks that were important and useful to students, and then categorized the chunks into different kinds to learn, remember, and retrieve them in an organized way. These activities assist them to notice the key lexical chunks, which will "increase participants' knowledge of chunks and chunking, resulting in a shift from the use of declarative to procedural memory" (Nishida, 2013, p. 179).

Another distinct point from the CG was the memory-enhancing of lexical chunks activity. Through this activity, students mastered what it meant to learn a new word. They not only grasped the words required by the curriculum, but greatly expanded their vocabulary through the learning of synonyms, antonyms, collocations, roots, affixes, and derivative words, especially the collocations. As claimed by Zhou and Yang (2015), to rich vocabulary, English learners are supposed to learn a word's collocations instead of its meanings since words usually appear in the form of collocations. Collocations are indispensable to language learning. Harmer (1991) put forward that choosing correct words plays a more important role than grammatical structures in some contexts. Additionally, Altuwairesh (2017) asserted that teaching collocations to EFL learners contributes to helping them achieve native-like proficiency. Apart from that, Ma and Lin (2015) carried out a study to examine the relationship between vocabulary knowledge and reading comprehension, and vocabulary knowledge includes vocabulary size, word association knowledge, collocation knowledge, and morphological knowledge. The participants were 124

Taiwanese college students. The results showed that depth of vocabulary knowledge, namely, word association knowledge, collocation knowledge, and morphological knowledge made more contributions to reading comprehension than vocabulary size. Moreover, among the three subparts of vocabulary depth, collocation knowledge played a more important role in facilitating reading comprehension.

Furthermore, they learned some useful strategies for handling long and complicated sentences which were an obstacle to reading comprehension that haunted many students (Li, 2015). They know that when reading such a sentence, they can break the sentence based on lexical chunks and sense groups, then understand the meaning of each part, and combine grammatical knowledge to understand it holistically. Therefore, they felt less worried and anxious about these long and complicated sentences to some extent.

Besides, practicing activities include cloze, retelling, and role-play help students familiarize and consolidate the lexical chunks and content of a text. According to Walker (2005), the purposes of the cloze activity are “1) determine students’ knowledge regarding reading; 2) encourage students to control the meaning of what they read, and 3) evaluate students’ lexicon and subject-matter knowledge” (p. 93). In the present study, after learning several paragraphs of a text, a worksheet would be distributed to the students who were expected to fill in the blanks with appropriate lexical chunks. By using this activity, students could review the lexical chunks and be more familiar with the text. Finally, the words evaluation activity helps them assess their learning and they further consolidate the newly learned words. Therefore, all these learning activities contribute to facilitating students’ reading comprehension ability.

To summarize, the enhancement of students’ reading comprehension ability might be credited to the chunk-by-chunk reading method and effective learning activities. The next subpart is the discussion based on the second research question.

4.2.2 Discussion on Students’ Opinions of the Lexical Approach

The findings gained from the questionnaire, semi-structured interview, and electronic reflective journals demonstrated that in general, students held positive

opinions about the lexical approach. The finding is consistent with the study conducted by Zhao (2017) who found that the lexical approach was suitable for students' reading learning, and they thought this approach was useful and feasible; therefore, they held a positive attitude towards the approach. Additionally, the study of Li (2019) also supported the result that students' satisfaction towards the reading teaching had improved and they were willing to recommend this approach to other students. Moreover, it is in line with the study carried out by Getie et al. (2020) who intended to explore the perceptions of intermediate EFL learners to the lexical instructional intervention in learning vocabulary and grammar, finding that students were enjoyable and felt interested in using this approach to learn vocabulary and grammar. Furthermore, it is consistent with many other studies as well (Lian & Zhu, 2017; Qu, 2015; Wang, 2017). Three themes might be explained why students had positive opinions of the lexical approach: (1) students favor the implementation of the lexical approach; (2) the lexical approach contributes to vocabulary learning; (3) the lexical approach helps improve reading comprehension ability. The final theme describes the difficulties that students encounter during the learning process.

(1) Students Favor the Implementation of the Lexical Approach

Students exhibited their favor with the lexical approach through the questionnaire, interview, and reflective journals. From the results of the questionnaire, many students showed that this approach was very helpful in enhancing their reading comprehension ability, and they were willing to keep using it to learn reading. According to the findings of the interview, most students expressed that the lexical approach was suitable for their reading learning. Based on the findings of the journals, many students noted that this approach was new and effective. In addition to being effective in reading, it impacts other aspects as well. For instance, it helped them recite a passage more quickly, which was good for retention. Aside from that, it improved their writing ability. They could reduce word selection mistakes and express beautiful and natural language.

(2) The Lexical Approach Contributes to Vocabulary Learning

Vocabulary is a determining factor for reading comprehension. Learners who possess a large vocabulary repertoire tend to have high reading comprehension

ability. According to the investigation that was conducted before this experiment and the results of many previous studies, it can be identified that for many EFL and ESL students, small vocabulary size is a major hindrance to reading comprehension (Duan & Yang, 2016; Li, 2015; Long, 2014; Perfetti et al., 2005; Wahid & Thais, 2020; Xia, 2011). When it comes to vocabulary learning, two aspects are often entwined, vocabulary size or breadth and depth. Ordonez et al. (2002) viewed “breadth and depth as two key dimensions of vocabulary knowledge” (p. 719). Vocabulary breadth refers to the number of words that a learner has (Qian, 1998), and vocabulary depth signifies a learner’s knowledge of a word’s various aspects such as spelling, pronunciation, meaning, and morphological features (Hudson, 2007; Qian, 1999). Both aspects are of vital importance to reading comprehension (Qian, 1999, 2002; Tannenbaum et al., 2006). Nevertheless, some studies revealed that vocabulary depth plays a relatively more significant part in reading comprehension than vocabulary breadth (Kang et al., 2012; Kieffer & Lesaux, 2008; Ma & Lin, 2015; Ouellette, 2006; Rashidi & Khosravi, 2010).

In the present study, the lexical approach aids students to learn vocabulary from both depth and breadth. At first, they establish a new and correct concept of what it means to learn a word through the training session. Then in the subsequent 8 weeks, the teacher demonstrated how to learn a word thoroughly. Before, students simply learn a word’s pronunciation, spelling, and Chinese meaning. Now, they increase many other aspects, including English definitions, synonyms, antonyms, collocations, co-text, context, grammatical usage, and derivatives, which help them deepen the depth of vocabulary learning and they can use vocabulary accurately and appropriately in different contexts. Learning collocations will reduce errors and word selection mistakes, and they can produce more natural and authentic language. Learning co-text helps them notice the usage of a word in context. Learning a word’s synonyms and antonyms, root, affix, and derivatives are conducive to expanding students’ vocabulary size. Moreover, by giving examples from the textbook, they learned mechanics of how to guess the meaning of unknown words, e.g., based on the context and background knowledge, vocabulary knowledge. Furthermore, they obtained some knacks for memorizing words, such as “spacing, personal organizing, imaging, and mnemonics” (Thornbury, 2002, pp. 24–25), which are beneficial to their

vocabulary retention. Finally, they learned how to accumulate lexical chunks by using a lexical notebook, which helps them review and retain lexical chunks. This can be supported by a series of empirical studies which proved that the lexical approach was conducive to vocabulary learning (Attya, et. al., 2018; Li, 2019; Lv, 2016; Ördem & Paker, 2016; Zhao, 2018). In addition, other studies applied the lexical approach to teach collocations and found that it was beneficial to teaching collocations as well (Ma & Li, 2016; Rahimi et al., 2012; Reza & Ashouri, 2016; Xia, 2018).

(3) The Lexical Approach Helps Improve Reading Comprehension Ability

The results of all the three research instruments indicated that the lexical approach enhanced students' reading comprehension ability. Firstly, many students expressed that this approach improved their reading speed. This result is in line with substantive studies (Hung & Huong, 2014; Li, 2019; Ling, 2017; Ma & Li, 2016; Nishida, 2013; Wang, 2014; Wang, 2017; Zeng, 2019; Zhao, 2018). Secondly, it helped them better understand the structure of a text. This finding concurs with a few studies (Long, 2014; Sun, 2010; Zhao, 2018). Thirdly, they could catch key information and understand the meaning of a passage quickly. This is consistent with several studies (Hung & Huong, 2014; Li, 2019; Zeng, 2019). Finally, they were less afraid of long and complicated sentences and knew how to handle them. This is backed up by Nishida's (2013) study which indicated that chunk reading and comprehension of sentences are reciprocal. In an aspect, chunk reading helps better understand sentences; in another aspect, a better apprehension of sentences facilitates texts understanding.

(4) Difficulties in Learning the Lexical Approach

The findings of the interview and reflective journals illustrated that when employing the lexical approach to learn reading, students met these difficulties: a). not accustomed to using the chunk-by-chunk reading method; b). could not identify the lexical chunks accurately; c). could not classify the lexical chunks, especially the difference between polywords and collocations; d). had difficulty in memorizing the lexical chunks. The first two problems are related, since some students cannot identify the lexical chunks correctly and quickly, they have trouble in using the chunk-by-chunk reading method. A possible reason might be their previous word-by-word reading method is so deep-rooted and the chunk-by-chunk reading method is disparate; hence,

it is very difficult for them to adjust to using this method within a short time. However, with the passage of time and guidance from the teacher, they form the chunk-by-chunk reading method gradually. In terms of the difficulty in identifying the lexical chunks, it might owe to the students' inadequate vocabulary knowledge and low automatic word identification ability. When reading a sentence, they cannot put the words that are relevant together automatically. In Li's (2019) and Nishida's (2013) studies, they identified that students had this problem as well. Therefore, students are supposed to improve their word recognition skills and chunking ability. Nishida (2013) suggested that "repetitive English reading exercises" (p. 179) could be helpful. Students in the interview and journals also reflected that it would be better to add extra reading materials to read and train their chunking ability. Regarding the difficulty in classifying the lexical chunks, Lewis (2002) claimed that the boundary of each type of lexical chunk sometimes could be vague, and it mainly aims to help learners record and accumulate the lexical chunks in an organized and convenient way. Hence, it would not be a big problem for learners, what more important is to develop their awareness of lexical chunks and chunking ability. Concerning the difficulty of memorizing the lexical chunks, it is a common problem for all language learners. In the treatment, the teacher taught some methods about how to retain lexical chunks, which might alleviate the burden to some extent.

To sum up, this chapter illustrated the results and discussions of the study. The effects of the lexical approach on students' reading comprehension ability and students' opinions of using the lexical approach to learn reading are explored thoroughly. The next chapter presents the conclusion, implications, and limitations of the study.

CHAPTER 5

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

This chapter consists of five sections. Firstly, it presents the main findings of the current study. Then, it describes the implications of the study. Next, it points out the limitations of the study and proposes the recommendations for further studies. Lastly, it comes to the conclusion of the study.

5.1 Findings

This study aimed to integrate the lexical approach to college English reading teaching in China, examine the effects of this approach on Chinese English major students' reading comprehension ability, and investigate their opinions of employing the lexical approach to learn reading. Based on the purposes, the study was conducted to answer the following research questions:

- 1) To what extent does the lexical approach affect Chinese English major students' reading comprehension ability?
- 2) What are students' opinions of using the lexical approach to learn reading?

To explore these questions, a mix method design was employed in the current study. The research instrument included reading comprehension tests, a questionnaire, a semi-structured interview, and reflective journals. The results of the tests and data of the first part of the questionnaire were analyzed quantitatively, to ascertain the impacts of the lexical approach on students' reading comprehension ability. The data obtained from the second part of the questionnaire, semi-structured interview, and reflective journals were analyzed qualitatively to delve into students' opinions about using the lexical approach to learn reading. The findings of the current study can be summarized as follows:

- 1) The scores of the reading pretest and posttest of the CG and EG were compared and analyzed through independent samples t-test and paired samples t-

test via SPSS. As to the reading pretest, both groups were at an equivalent level since the p-value was 0.762 ($p = 0.762 > 0.05$), and it showed that there was no statistically significant difference between the two groups. In terms of the reading posttest, the EG performed much better than the CG, because the mean score of the EG ($M = 70.77$) was higher than the CG ($M = 65.97$), and there was a statistically significant difference between the two groups since the p-value was 0.047 ($p = 0.047 < 0.05$). In addition, comparing the scores of two reading tests for the CG, it had little enhancement, since the mean score of the reading posttest ($M = 65.97$) was slightly higher than the pretest ($M = 65.44$), and there was no statistically significant difference between the two tests scores since the p-value was 0.637 ($p = 0.637 > 0.05$). By contrast, the EG made much more progress, of which the mean score of the reading posttest ($M = 70.77$) was higher than the pretest ($M = 66.30$), and there was a statistically significant difference between the two tests scores since the p-value was 0.000 ($p = 0.000 < 0.05$).

2) The results of the questionnaire, semi-structured interview, and reflective journals disclosed that students held positive opinions of the lexical approach. Most students thought this approach was useful and effective in improving their English reading ability; additionally, it was suitable and feasible, and they were willing to keep using it for future learning. Additionally, they suggested that English beginners should be trained to develop the awareness of lexical chunks.

In summary, integrating the lexical approach to college reading teaching helped improve students' reading comprehension ability and they had positive opinions of this approach.

5.2 Implications

This section expounds on the implications of the present study, which includes four aspects: (1) implication for the textbook designers, (2) implication for the curriculum developers, (3) pedagogical implication, and (4) theoretical implication.

(1) Implication for the Textbook Designers

When designing the textbooks for reading, vocabulary, or comprehensive English competence, lexical chunks that are frequently used in social life could be

highlighted or annotated, especially those that students are weak in, such as collocations, the differentiation between synonyms and look-alike words. Additionally, they may add diverse and meaningful exercises to help them master and consolidate these lexical chunks. Moreover, knowledge could be recycled since many students indicated that easily forgetting lexical chunks is a problem for them. One possible solution is to review the existing knowledge while learning new knowledge. Therefore, students could deepen their impressions and store knowledge for long-term memory.

(2) Implication for the Curriculum Developers

Through the interview and journals, some students suggested that the awareness of lexical chunks should be cultivated from an early age; otherwise, it is rather difficult to change once a reading method has existed for many years and become fixed. In addition, based on the language acquisition theory, children acquire abundant lexical chunks rather than individual words in the early language learning phase. Hence, this study might bring about some significance for the curriculum developers. The whole English curriculum could accentuate the importance of lexical chunks in language learning, embracing the four basic skills, especially for elementary school students.

(3) Pedagogical Implication

The study revealed the effectiveness of the lexical approach in improving Chinese English major students' reading comprehension ability and the values of the lexical chunks in reading. Some implications for English reading teaching are illustrated as follows.

Firstly, teachers are expected to emphasize the importance of lexical chunks, cultivate students' awareness of lexical chunks, and help them use the chunk-by-chunk reading method. To begin with, teachers should introduce relevant theories of lexical chunks such as chunking theory, and explain basic knowledge of lexical chunks, involving definitions, main features, classifications, and functions. In the process of explanation, teachers should try to enumerate examples that students are familiar with and supplement exercises to strengthen students' understanding. Regarding the identification of lexical chunks, teachers can guide the students to recognize them from phrases, then to sentences, and to paragraphs, and finally expand to a passage.

At the initial stage, when teaching a new passage, the teacher should demonstrate how to read a passage by using the chunk-by-chunk reading method, e.g., using dashes to divide the passage, illustrate the key principles to identify the lexical chunks, and how to classify them. Later, let the students identify and classify the chunks by themselves. Moreover, the teacher should increase extra reading passages related to the topic to let the students read, to facilitate their consciousness of lexical chunks, and gradually develop their chunk-by-chunk reading method. If students can truly understand the significance of lexical chunks in language learning and their convenience in input and output, then students' enthusiasm for learning English can be fully mobilized.

Secondly, as to the explanation of lexical chunks, teachers should pick out new, useful, and important lexical chunks to explain and let the students accumulate and memorize them. In addition, based on the findings of the present study, students have trouble in figuring out collocations, synonyms, and words that look similar. However, these are the key assessing aspects of TEM-4. Hence, teachers should pay more attention to these facets and try to find effective tactics to help them overcome these difficulties. They are supposed to give explicit instruction to the students about how to accumulate collocations and how to distinguish synonyms and look-alike words. For instance, concerning the collocations, students can use diverse formats to record them, e.g., tables, graphs, pictures, etc. These visual representations are conducive to their memory. In terms of the synonyms and look-alike words, teachers should encourage the students to explore them independently by using online resources, such as online dictionaries and corpora, and tell them to pay attention to their definitions, frequent collocations, and usages.

Thirdly, teachers are expected to change students' traditional mindset and instruct them to learn vocabulary from depth and breadth. Vocabulary is a headache for many language learners. One possible reason is the incorrect way to learn vocabulary. For considerable English learners in China, vocabulary learning means using mobile phone applications or printed books to do rote learning, simply learning a word's spelling, pronunciation, and Chinese meaning, which is ineffective in expanding vocabulary and they may lose interest in learning English due to this mechanical and

monotonous learning method. The findings of the semi-structured interview confirmed this fact. Therefore, it is the teachers' responsibility to subdue such a phenomenon and aid the students to jump over the hurdle. They are expected to find the students' salient problems of vocabulary learning, then integrate relevant vocabulary theories and knowledge to teaching, and finally alleviate the problem. Instead of simply teaching a word's spelling, pronunciation, and Chinese meaning, other key aspects such as definitions, synonyms, antonyms, co-text, collocations, grammatical usage, and derivatives should be taken into consideration as well. Only in this way, students can master a word comprehensively, use it correctly and appropriately in different contexts, and enlarge their vocabulary.

Fourthly, the teaching activities of the present study could be applied to reading instruction. Moreover, the knacks of how to guess an unknown word's meaning and the strategies about how to handle long and complicated sentences are proved to be effective in the study.

Finally, though the lexical approach was proved to be useful in contributing to reading comprehension, only adopting a single approach to teaching is unfeasible. It should be integrated with other practical approaches to facilitate teaching reading together.

(4) Theoretical Implication

The present study displayed the effectiveness of the lexical approach in enhancing English major students' reading comprehension ability, and they expressed positive opinions of this approach. Researchers may design different activities based on the students' levels, needs, and problems. Besides, this study solely focused on reading, other researchers may explore which English skill benefits most from this approach.

5.3 Limitations

Limitations of the study are described as follows.

The first limitation is the generalizability. The study was carried out in a Normal University and two intact classes with 88 first-year English major students participated

in the study. The findings of this study may not be generalizable due to the demography of participants and the setting of the study. Moreover, the number of males and females is unequal, where most participants were females and only 8 students were males.

The second limitation is the time duration. The current study only lasted 11 weeks. Several students reflected that they made some progress in reading but not very apparent, and it might need a longer time to see its effects.

The third limitation is that although many students reflected that they improved reading speed by applying the lexical approach to learn reading, it lacks experiment to prove their improved speed.

5.4 Recommendations

This study raised several interesting questions that further studies could take into account when conducting any research relevant to the lexical approach.

To begin with, further studies might explore the teachers' attitudes or opinions of the lexical approach. They could delve into teachers' views about this approach and the common problems that they encounter in the teaching process. It can better impel the implementation of the lexical approach in language teaching and learning.

Another possible aspect is the integration with the corpora into the lexical approach. Corpora play an important role in helping students identify and learn the lexical chunks. With the advancement of technology, this aspect needs to be explored further.

Besides, although the current study exhibited that the lexical approach was useful in accelerating students' reading, it is based on the students' feelings and experiences and lacks experiments to confirm it. In consequence, future research can carry out experiments on measuring students' reading speed.

5.5 Conclusions

This study purported to integrate the lexical approach to the IEC to teach reading in a Normal University, then to explore its effects on Chinese English major students' reading comprehension ability and ascertain their opinions of using this approach to learn reading. Two intact classes with 88 first-year English major students took part in the study for 11 weeks. In the study, class two was the EG which was instructed with the lexical approach and class three was the CG taught with the GTM and TBLT. Reading pretest and posttest scores were analyzed to see whether they had any improvement after the treatment. The results showed that students in the EG outperformed students in the CG. The questionnaire, semi-structured interview, and reflective journals were utilized to investigate students' opinions of using the lexical approach to learn reading. The data gathered from these instruments indicated that most students held positive opinions of the lexical approach and few students expressed negative opinions for they have difficulty in changing their previous reading methods. Therefore, it is feasible to apply the lexical approach to English reading instruction in higher education in China.

In summary, there are no such impeccable teaching methods, and language is constantly changing and updating with the development of the society. Hence, the teachers should be aware of the shortcomings of the lexical approach, combine a variety of other teaching methods, use appropriate teaching strategies and techniques, and finally facilitate the application of the lexical approach in foreign language teaching.

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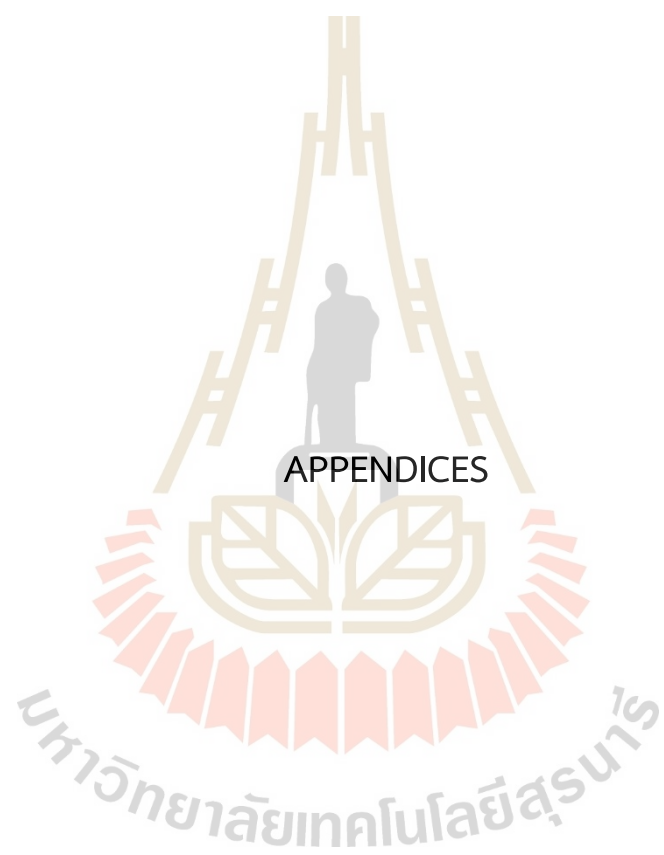
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APPENDIX A

A Comparison of Topics and Types of Questions Between the Reading Pretest and Posttest

Tests	Papers	Topics (Detailed Reading)	Types of Questions	Items of questions
Pretest	The first paper in December, 2017	Sleeping — “first-night” effect; Reevaluation of women’ conflict at work	Understanding the details	46–50, 52, 54, 55
			Understanding the author’s or other people’s views and attitudes	51
			Deducing and inferring	53
	The first paper in December, 2018	Ethnical problems of artificial intelligence; Deep water reserves to solve the drought problem	Understanding the details	46, 48, 50, 51, 53
			Understanding the author’s or other people’s views and attitudes	49, 50, 52, 55
			Deducing and inferring	47, 54
Posttest	The second paper in December, 2017	Aging; Implicit gender bias of female applicants to postdoctoral positions in geosciences	Understanding the details	46, 47, 52, 53, 54, 55
			Understanding the author’s or other people’s views and attitudes	48, 50
			Deducing and inferring	49, 51
	The third paper in December, 2018	In-born understanding of laws of physics of cats; new technologies self-driving vehicles	Understanding the details	48, 49, 51, 52, 53, 54
			Understanding the author’s or other people’s views and attitudes	55
			Deducing and inferring	46, 47, 50

APPENDIX B

Reading Pretest

Name: _____ Group: _____

Directions: *The test includes six sections, in total 60 items, and the full score is 100. You are required to answer all the questions within 90 minutes.*

Section A

Directions: In this section, there is a passage with ten blanks. You are required to select one word for each blank from a list of choices given in a word bank following the passage. Read the passage through carefully before making your choices. Each choice in the bank is identified by a letter. Please mark the corresponding letter for each item on the **Answer Sheet**. You may not use any of the words in the bank more than once.

Questions 1 to 10 are based on the following passage.

A rat or pigeon might not be the obvious choice to tend to someone who is sick, but these creatures have some 1 skills that help the treatment of human diseases.

Pigeons are often seen as dirty birds and an urban 2, but they are just the latest in a long line of animals that have been found to have abilities to help humans. Despite having a brain no bigger than the 3 of your index finger, pigeons have a very impressive 4 memory. Recently it was shown that they could be trained to be as accurate as humans at detecting breast cancer in images.

Rats are often 5 with spreading disease rather than 6 it, but this long-tailed animal is highly 7. Inside a rat's nose are up to 1,000 different types of *olfactory receptors* (嗅觉感受器), whereas humans only have 100 to 200 types. This gives rats the ability to detect 8 smells. As a result, some rats are being put to work to detect TB (肺结核). When the rats detect the smell, they stop and rub their legs to 9 a sample is infected.

Traditionally, a hundred samples would take lab technicians more than two days to 10, but for a rat it takes less than 20 minutes. This rat detection method doesn't

rely on specialist equipment. It is also more accurate — the rats are able to find more TB infections and, therefore, save more lives.

- | | |
|----------------|---------------|
| A) associated | I) slight |
| B) examine | J) specify |
| C) indicate | K) superior |
| D) nuisance | L) suspicious |
| E) peak | M) tip |
| F) preventing | N) treated |
| G) prohibiting | O) visual |
| H) sensitive | |

Section B

Directions: In this section, you are going to read a passage with ten statements attached to it. Each statement contains information given in one of the paragraphs. Identify the paragraph from which the information is derived. You may choose a paragraph more than once. Each paragraph is marked with a letter. Answer the questions by marking the corresponding letter on the **Answer Sheet**.

Do In-Class Exams Make Students Study Harder?

Research suggests they may study more broadly for the unexpected rather than search for answers.

[A] I have always been a poor test-taker. So it may seem rather strange that I have returned to college to finish the degree I left undone some four decades ago. I am making my way through Columbia University, surrounded by students who quickly supply the verbal answer while I am still processing the question.

[B] Since there is no way for me to avoid exams, I am currently questioning what kind are the most taxing and ultimately beneficial. I have already sweated through numerous in-class midterms and finals, and now I have a professor who issues take-home ones. I was excited when I learned this, figuring I had a full week to do the research, read the texts, and write it all up. In fact, I was still rewriting my midterm the morning it was due. To say I had lost the thread is putting it mildly.

[C] As I was suffering through my week of anxiety, overthinking the material and guessing my grasp of it, I did some of my own polling among students and professors. David Eisenbach, who teaches a popular class on U.S. presidents at Columbia, prefers the in-class variety. He believes students ultimately learn more and encourages them to form study groups. “That way they socialize over history outside the class, which wouldn’t happen without the pressure of an in-class exam,” he explained, “Furthermore, in-class exams force students to learn how to perform under pressure, and essential work skill.”

[D] He also says there is less chance of cheating with the in-class variety. In 2012, 125 students at Harvard were caught up in a scandal when it was discovered they had cheated on a take-home exam for a class entitled “*Introduction To Congress.*” Some colleges have what they call an “honor code,” though if you are smart enough to get into these schools, you are either smart enough to get around any codes or hopefully, too ethical to consider doing so. As I sat blocked and clueless for two solid days, I momentarily wondered if I couldn’t just call an expert on the subject matter which I was tackling, or someone who took the class previously, to get me going.

[E] Following the Harvard scandal, Mary Miller, the former dean of students at Yale, made an impassioned appeal to her school’s professors to refrain from take-home exams. “Students risk health and well-being, as well as performance in other end-of-term work, when faculty offers take-home exams without clear, time-limited boundaries,” she told me. “Research now shows that regular quizzes, short essays, and other assignments over the course of a term better enhance learning and retention.”

[F] Most college professors agree the kind of exam they choose largely depends on the subject. A quantitative-based one, for example, is unlikely to be sent home, where one could ask their older brothers and sisters to help. Vocational-type classes, such as computer science or journalism, on the other hand, are often more research-oriented and lend themselves to take-home testing. Chris Koch, who teaches “History of Broadcast Journalism” at Montgomery Community College in Rockville, Maryland, points out that reporting is about investigation rather than the memorization of minute details. “In my field, it’s not what you know — it’s what you know how to find out,”

says Koch. “There is way too much information, and more coming all the time, for anyone to remember. I want my students to search out the answers to questions by using all the resources available to them.

[G] Students’ test-form preferences vary, too, often depending on the subject and course difficulty. “I prefer take-home essays because it is then really about the writing, so you have time to edit and do more research,” says Elizabeth Dresser, a junior at Barnard. Then there is the stress factor. Francesca Haass, a senior at Middlebury, says, “I find the in-class ones are more stressful in the short term, but there is immediate relief as you swallow information like mad, and then you get to forget it all. Take-homes require thoughtful engagement which can lead to longer term stress as there is never a moment when the time is up.” Meanwhile, Olivia Rubin, a sophomore at Emory, says she hardly even considers take-homes true exams. “If you understand the material and have the ability to *articulate* (说出) your thoughts, they should be a breeze.”

[H] How students ultimately handle stress may depend on their personal test-taking abilities. There are people who always wait until the last minute, and make it much harder than it needs to be. And then there those who, not knowing what questions are coming at them, and having no resources to refer to, can freeze. And then there are we rare folks who fit both those descriptions.

[I] Yes, my advanced age must factor into the *equation* (等式), in part because of my inability to access the information as quickly. As another returning student at Columbia, Kate Marber, told me, “We are learning not only all this information, but essentially how to learn again. Our fellow students have just come out of high school. A lot has changed since we were last in school.”

[J] If nothing else, the situation has given my college son and me something to share, When I asked his opinion on this matter, he responded, “I like in-class exams because the time is already reserved, as opposed to using my free time at home to work on a test,” he responded. It seems to me that a compromise would be receiving the exam questions a day or two in advance, and then doing the actual test in class the ticking clock overhead.

[K] Better yet, how about what one Hunter College professor reportedly did recently for her final exam: She encouraged the class not to stress or even study, promising that, “It is going to be a piece of cake.” When the students came in, sharpened pencils in hand, there was not a bluebook in sight. Rather, they saw a large chocolate cake and they each were given a slice.

11. Elderly students find it hard to keep up with the rapid changes in education.
12. Some believe take-home exams may affect students’ performance in other courses.
13. Certain professors believe in-class exams are ultimately more helpful to students.
14. In-class exams are believed to discourage cheating in exams.
15. The author was happy to learn she could do some exams at home.
16. Students who put off their work until the last moment often find the exams more difficult than they actually are.
17. Different students may prefer different types of exams.
18. Most professors agree whether to give an in-class or a take-home exam depends on type of course being taught.
19. The author dropped out of college some forty years ago.
20. Some students think take-home exams will eat up their free time.

Section C

Directions: There are 2 passages in this section. Each passage is followed by some questions or unfinished statements. For each of them there are four choices marked A), B), C) and D). You should decide on the best choice and mark the corresponding letter on the **Answer Sheet**.

Passage One

Questions 21 to 25 are based on the following passage.

That people often experience trouble sleeping in a different bed in unfamiliar surroundings is a phenomenon known as the “first-night” effect. If a person stays in the same room the following night they tend to sleep more soundly. Yuka Sasaki and her colleagues at Brown University set out to investigate the origins of this effect.

Dr. Sasaki knew the first-night effect probably has something to do with how humans evolved. The puzzle was what benefit would be gained from it when performance might be affected the following day. She also knew from previous work conducted on birds and dolphins that these animals put half of their brains to sleep at a time so that they can rest while remaining alert enough to avoid *predators* (捕食者). This led her to wonder if people might be doing the same thing. To take a closer look, her team studied 35 healthy people as they slept in the unfamiliar environment of the university's Department of Psychological Sciences. The participants each slept in the department for two nights and were carefully monitored with techniques that looked at the activity of their brains. Dr. Sasaki found, as expected, the participants slept less well on their first night than they did on their second, taking more than twice as long to fall asleep and sleeping less overall. During deep sleep, the participants' brains behaved in a similar manner seen in birds and dolphins. On the first night only, the left hemispheres (半球) of their brains did not sleep nearly as deeply as their right hemispheres did.

Curious if the left hemispheres were indeed remaining awake to process information detected in the surrounding environment, Dr. Sasaki re-ran the experiment while presenting the sleeping participants with a mix of regularly timed *beep* (蜂鸣声) of the same tone and irregular beeps of a different tone during the night. She worked out that, if the left hemisphere was staying alert to keep guard in a strange environment, then it would react to the irregular beeps by stirring people from sleep and would ignore the regularly timed ones. This is precisely what she found.

21. What did researchers find puzzling about the first-night effect?

- A) To what extent it can trouble people.
- B) What role it has played in evolution.
- C) What circumstances may trigger it.
- D) In what way it can be beneficial.

22. What do we learn about Dr. Yuka Sasaki doing her research?

- A) She found birds and dolphins remain alert while asleep.
- B) She found birds and dolphins sleep in much the same way.
- C) She got some idea from previous studies on birds and dolphins

- D) She conducted studies on birds' and dolphins' sleeping patterns.
23. What did Dr. Sasaki do when she first did her experiment?
- A) She monitored the brain activity of participants sleeping in a new environment.
 - B) She recruited 35 participants from her Department of Psychological Sciences.
 - C) She studied the differences between the two sides of participants' brains.
 - D) She tested her findings about birds and dolphins on human subjects.
24. What did Dr. Sasaki do when re-running her experiment?
- A) She analyzed the negative effect of irregular tones on brains.
 - B) She recorded participants' adaptation to changed environment.
 - C) She exposed her participants to two different stimuli.
 - D) She compared the responses of different participants.
25. What did Dr. Sasaki find about the participants in her experiment?
- A) They tended to enjoy certain tones more than others.
 - B) They tended to perceive irregular beeps as a threat.
 - C) They felt sleepy when exposed to regular beeps.
 - D) They differed in their tolerance of irregular tones.

Passage Two

Questions 26 to 30 are based on the following passage.

It's time to reevaluate how women handle conflict at work. Being overworked or over-committed at home and on the job will not get you where you want to be in life. It will only slow you down and hinder your career goals.

Did you know women are more likely than men to feel exhausted? Nearly twice as many women than men ages 18–44 reported feeling “very tired” or “exhausted”, according to a recent study.

This may not be surprising given that this is the age range when women have children. It's also the age range when many women are trying to balance careers and home. One reason women may feel exhausted is that they have a hard time saying “no.” Women want to be able to do it all volunteer for school parties or cook delicious meals - and so their answer to any request is often “Yes, I can.”

Women struggle to say “no” in the workplace for similar reasons, including the desire to be liked by their colleagues. Unfortunately, this inability to say “no” may be hurting women’s health as well as their career.

At the workplace, men use conflict as a way to position themselves, while women often avoid conflict or strive to be the peacemaker, because they don’t want to be viewed as aggressive or disruptive at work. For example, there’s a problem that needs to be addressed immediately, resulting in a dispute over should be the one to fix it. Men are more likely to face that dispute from the perspective of what benefits them most, whereas women may approach the same dispute from the perspective of what’s the easiest and quickest way to resolve the problem - even if that means doing the boring work themselves.

This difference in handling conflict could be the deciding factor on who gets promoted to a leadership position and who does not. Leaders have to be able to delegate and manage resources wisely - including staff expertise. Shouldering more of the workload may not earn you that promotion. Instead, it may highlight your inability to delegate effectively.

26. What does the author say is the problem with women?
- A) They are often unclear about the career goals to reach.
 - B) They are usually more committed at home than on the job.
 - C) They tend to be over-optimistic about how far they could go.
 - D) They tend to push themselves beyond the limits of their ability.
27. Why do working women of child-bearing age tend to feel drained of energy?
- A) They struggle to satisfy the demands of both work and home.
 - B) They are too devoted to work and unable to relax as a result.
 - C) They do their best to cooperate with their workmates.
 - D) They are obliged to take up too many responsibilities.
28. What may hinder the future prospects of career women?
- A) Their unwillingness to say “no”.
 - B) Their desire to be considered powerful.
 - C) An underestimate of their own ability.
 - D) A lack of courage to face challenges.

29. Men and woman differ in their approach to resolving workplace conflicts in that _____.
- A) women tend to be easily satisfied
 - B) men are generally more persuasive
 - C) men tend to put their personal interests first
 - D) women are much more ready to compromise
30. What is important to a good leader?
- A) A dominant personality.
 - B) The ability to delegate.
 - C) The courage to admit failure
 - D) A strong sense of responsibility.

Section D

Directions: In this section, there is a passage with ten blanks. You are required to select one word for each blank from a list of choices given in a word bank following the passage. Read the passage through carefully before making your choices. Each choice in the bank is identified by a letter. Please mark the corresponding letter for each item on the **Answer Sheet**. You may not use any of the words in the bank more than once.

Questions 31 to 40 are based on the following passage.

Millions die early from air pollution each year. Air pollution costs the global economy more than \$5 trillion annually in welfare costs, with the most serious 31 occurring in the developing world.

The figures include a number of costs 32 with air pollution. Lost income alone amounts to \$225 billion a year.

The report includes both indoor and outdoor air pollution. Indoor pollution, which includes 33 like home heating and cooking, has remained 34 over the past several decades despite advances in the area. Levels of outdoor pollution have grown rapidly along with rapid growth in industry and transportation.

Director of Institute for Health Metrics and Evaluation Chris Murray 35 it as an “urgent call to action.” “One of the risk factors for premature deaths is the air we breathe, over which individuals have little 36,” he said.

The effects of air pollution are worst in the developing world, where in some places lost-labor income 37 nearly 1% of GDP. Around 9 in 10 people in low-and middle-income countries live in places where they 38 experience dangerous levels of outdoor air pollution.

But the problem is not limited 39 to the developing world. Thousands die prematurely in the U.S. as a result of related illnesses. In many European countries, where *diesel* (柴油) 40 have become more common in recent years, that number reaches tens of thousands.

- | | |
|----------------|----------------|
| A) ability | I) exclusively |
| B) associated | J) innovated |
| C) consciously | K) regularly |
| D) constant | L) relates |
| E) control | M) sources |
| F) damage | N) undermine |
| G) described | O) vehicles |
| H) equals | |

Section E

Directions: In this section, you are going to read a passage with ten statements attached to it. Each statement contains information given in one of the paragraphs. Identify the paragraph from which the information is derived. You may choose a paragraph more than once. Each paragraph is marked with a letter. Answer the questions by marking the corresponding letter on the **Answer Sheet**.

Food-as-Medicine Movement Is Witnessing Progress

[A] Several times a month, you can find a doctor in the aisles of Ralph’s market in Huntington Beach, California, wearing a white coat and helping people learn about food. On one recent day, this doctor was Daniel Nadeau, wandering the cereal aisle with Allison Scott, giving her some idea on how to feed kids who persistently avoid anything that is healthy. “Have you thought about trying fresh juices in the morning?” he asks her. “The frozen oranges and apples are a little cheaper, and fruits are really

good for the brain. Juices are quick and easy to prepare, you can take the frozen fruit out the night before and have it ready the next morning.”

[B] Scott is delighted to get food advice from a physician who is program director of the nearby Mary and Dick Allen Diabetes Center, part of the St. Joseph Hoag Health alliance. The center’s ‘Shop with Your Doc’ program sends doctors to the grocery store to meet with any patients who sign up for the service, plus any other shoppers who happen to be around with questions.

[C] Nadeau notices the pre-made *macaroni* (通心粉) -and-cheese boxes in Scott’s shopping cart and suggests she switch to whole grain macaroni and real cheese. “So I’d have to make it?” She asks, her enthusiasm fading at the thought of how long that might take, just to have her kids reject it. “I’m not sure they’d eat it. They just won’t eat it.”

[D] Nadeau says sugar and processed foods are big contributors to the rising diabetes rates among children. “In America, over 50 percent of our food is processed food,” Nadeau tells her. “And only 5 percent of our food is plant-based food. I think we should try to reverse that.” Scott agrees to try more fruit juices for the kids and to make real macaroni and cheese. Score one point for the doctor, zero for diabetes.

[E] Nadeau is part of a small revolution developing across California. The food-as-medicine movement has been around for decades, but it is making progress as physicians and medical institutions make food a formal part of treatment, rather than relying solely on *medications* (药物). By prescribing nutritional changes or launching programs such as ‘Shop with your Doc’, they are trying to prevent, limit or even reverse disease by changing what patients eat. “There’s no question people can take things a long way toward reversing diabetes, reversing high blood pressure, even preventing cancer by food choices,” Nadeau says.

[F] In the big picture, says Dr. Richard Afable, CEO and president of ST. Joseph Hoag Health, medical institutions across the state are starting to make a philosophical switch to becoming a health organization, not just a health care organization. That feeling echoes the beliefs of the Therapeutic Food Pantry program at Zuckerberg San Francisco General Hospital, which completed its pilot phase and is about to expand on an ongoing basis to five clinic sites throughout the city. The program will offer

patients several bags of food prescribed for their condition, along with intensive training in how to cook it. “We really want to link food and medicine, and not just give away food,” says Dr. Rita Nguyen, the hospital’s medical director of Healthy Food Initiatives. “We want people to understand what they’re eating, how to prepare it, the role food plays in their lives.”

[G] In Southern California, Loma Linda University School of Medicine is offering specialized training for its resident physicians in Lifestyle Medicine - that is a formal specialty in using food to treat disease. Research findings increasingly show the power of food to treat or reverse diseases, but that does not mean that diet alone is always the solution, or that every illness can benefit substantially from dietary changes. Nonetheless, physicians say that they look at the collective data and a clear picture emerges: that the salt, sugar, fat and processed foods in the American diet contribute to the nation’s high rates of obesity, diabetes and heart disease. According to the World Health Organization, 80 percent of deaths from heart disease and stroke are caused by high blood pressure, tobacco use, elevated cholesterol and low consumption of fruits and vegetables.

[H] “It’s a different *paradigm* (范式) of how to treat disease,” says Dr. Brenda Rea, who helps run the family and preventive medicine residency program at Loma Linda University School of Medicine. The lifestyle medicine specialty is designed to train doctors in how to prevent and treat disease, in part, by changing patients’ nutritional habits. The medical center and school at Loma Linda also has a food cupboard and kitchen for patients. This way, patients not only learn about which foods to buy, but also how to prepare them at home.

[I] Many people don’t know how to cook, Rea says, and they only know how to heat things up. That means depending on packaged food with high salt and sugar content. So teaching people about which foods are healthy and how to prepare them, she says, can actually transform a patient’s life. And beyond that, it might transform the health and lives of that patient’s family. “What people eat can be medicine or poison,” Rea says. “As a physician, nutrition is one of the most powerful things you can change to reverse the effects of long-term disease.”

[J] Studies have explored evidence that dietary changes can slow *inflammation* (炎症), for example, or make the body inhospitable to cancer cells. In general, many lifestyle medicine physicians recommend a plant-based diet - particularly for people with diabetes or other inflammatory conditions.

[K] “As what happened with tobacco, this will require a cultural shift, but that can happen,” says Nguyen. “In the same way physicians used to smoke, and then stopped smoking and were able to talk to patients about it, I think physicians can have a bigger voice in it.”

41. More than half of the food Americans eat is factory-produced.
42. There is a special program that assigns doctors to give advice to shoppers in food stores.
43. There is growing evidence from research that food helps patients recover from various illnesses.
44. A healthy breakfast can be prepared quickly and easily.
45. Training a patient to prepare healthy food can change their life.
46. One food-as-medicine program not only prescribes food for treatment but teaches patients how to cook it.
47. Scott is not keen on cooking food herself, thinking it would simply be a waste of time.
48. Diabetes patients are advised to eat more plant-based food.
49. Using food as medicine is no novel idea, but the movement is making headway these days.
50. Americans’ high rates of various illnesses result from the way they eat.

Section F

Directions: There are 2 passages in this section. Each passage is followed by some questions or unfinished statements. For each of them there are four choices marked A), B), C) and D). You should decide on the best choice and mark the corresponding letter on the **Answer Sheet**.

Passage One

Questions 51 to 55 are based on the following passage.

California has been facing a drought for many years now, with certain areas even having to pump freshwater hundreds of miles to their distribution system. The problem is growing as the population of the state continues to expand. New research has found deep water reserves under the state which could help solve their drought crisis. Previous drilling of wells could only reach depths of 1,000 feet, but due to new pumping practices, water deeper than this can now be *extracted* (抽取). The team at Stanford investigated the *aquifers* (地下蓄水层) below this depth and found that reserves may be triple what was previously thought.

It is profitable to drill to depths more than 1,000 feet for oil and gas extraction, but only recently in California has it become profitable to pump water from this depth. The aquifers range from 1,000 to 3,000 feet below the ground, which means that pumping will be expensive and there are other concerns. The biggest concern of pumping out water from this deep is the gradual settling down of the land surface. As the water is pumped out, the vacant space left is compacted by the weight of the earth above.

Even though pumping from these depths is expensive, it is still cheaper than *desalinating* (脱盐) the ocean water in the largely coastal state. Some desalination plants exist where feasible, but they are costly to run and can need constant repairs. Wells are much more reliable sources of freshwater, and California is hoping that these deep wells may be the answer to their severe water shortage.

One problem with these sources is that the deep water also has a higher level of salt than shallower aquifers. This means that some wells may even need to undergo desalination after extraction, thus increasing the cost. Research from the exhaustive

study of groundwater from over 950 drilling logs has just been published. New estimates of the water reserves now go up to 2,700 billion cubic meters of freshwater.

51. How could California's drought crisis be solved according to some researchers?
- A) By building more reserves of groundwater.
 - B) By drawing water from the depths of the earth.
 - C) By developing more advanced drilling devices.
 - D) By upgrading its water distribution system.
52. What can be inferred about extracting water from deep aquifers?
- A) It was deemed vital to solving the water problem.
 - B) It was not considered worth the expense.
 - C) It may not provide quality freshwater.
 - D) It is bound to gain support from the local people.
53. What is mentioned as a consequence of extracting water from deep underground?
- A) The sinking of land surface.
 - B) The harm to the ecosystem.
 - C) The damage to aquifers.
 - D) The change of the climate.
54. What does the author say about deep wells?
- A) They run without any need for repairs.
 - B) They are entirely free from pollutants.
 - C) They are the ultimate solution to droughts.
 - D) They provide a steady supply of freshwater.
55. What may happen when deep aquifers are used as water sources?
- A) People's health may improve with cleaner water.
 - B) People's water bills may be lowered considerably.
 - C) The cost may go up due to desalination.
 - D) They may be exhausted sooner or later.

Passage Two

Questions 56 to 60 are based on the following passage.

The AlphaGo program's victory is an example of how smart computers have become.

But can artificial intelligence (AI) machines act ethically, meaning can they be honest and fair?

One example of AI is driverless cars. They are already on California roads, so it is not too soon to ask whether we can program a machine to act ethically. As driverless cars improve, they will save lives. They will make fewer mistakes than human drivers do. Sometimes, however, they will face a choice between lives. Should the cars be programmed to avoid hitting a child running across the road, even if that will put their passengers at risk? What about making a sudden turn to avoid a dog? What if the only risk is damage to the car itself, not to the passengers?

Perhaps there will be lessons to learn from driverless cars, but they are not super-intelligent beings. Teaching ethics to a machine even more intelligent than we are will be the bigger challenge.

About the same time as AlphaGo's triumph, Microsoft's 'chatbot' took a bad turn. The software, named Taylor, was designed to answer messages from people aged 18–24. Taylor was supposed to be able to learn from the messages she received. She was designed to slowly improve her ability to handle conversations, but some people were teaching Taylor racist ideas. When she started saying nice things about Hitler, Microsoft turned her off and deleted her ugliest messages.

AlphaGo's victory and Taylor's defeat happened at about the same time. This should be a warning to us. It is one thing to use AI within a game with clear rules and clear goals. It is something very different to use AI in the real world. The unpredictability of the real world may bring to the surface a troubling software problem.

Eric Schmidt is one of the bosses of Google, which own AlphaGo. He thinks AI will be positive for humans. He said people will be the winner, whatever the outcome. Advances in AI will make human beings smarter, more able and "just better human beings."

56. What does the author want to show with the example of AlphaGo's victory?
- A) Computers will prevail over human beings.
 - B) Computers have unmatched potential.
 - C) Computers are man's potential rivals.
 - D) Computers can become highly intelligent.
57. What does the author mean by AI machines acting ethically?
- A) They are capable of predicting possible risks.
 - B) They weigh the gains and losses before reaching a decision.
 - C) They make sensible decisions when facing moral dilemmas.
 - D) They sacrifice everything to save human lives.
58. What is said to be the bigger challenge facing humans in the AI age?
- A) How to make super-intelligent AI machines share human feelings.
 - B) How to ensure that super-intelligent AI machines act ethically.
 - C) How to prevent AI machines doing harm to humans.
 - D) How to avoid being over-dependent on AI machines.
59. What do we learn about Microsoft's "chatbot" Taylor?
- A) She could not distinguish good from bad.
 - B) She could turn herself off when necessary.
 - C) She was not made to handle novel situations.
 - D) She was good at performing routine tasks.
60. What does Eric Schmidt think of artificial intelligence?
- A) It will be far superior to human beings.
 - B) It will keep improving as time goes by.
 - C) It will prove to be an asset to human beings.
 - D) It will be here to stay whatever the outcome.

Answer Keys to the Reading Pretest**Section A**

1-5 K D M O A

6-10 F H I C B

Section B

11-15 I E C D B

16-20 H G F A J

Section C

21-25 D C A C B

26-30 D A A C B

Section D

31-35 F B M D G

36-40 E H K I O

Section E

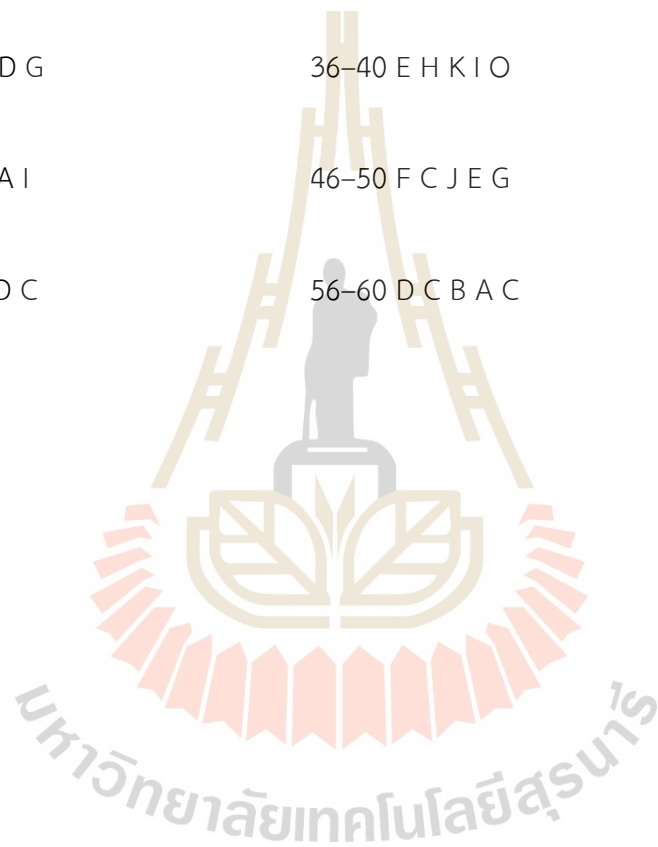
41-45 D B G A I

46-50 F C J E G

Section F

51-55 B B A D C

56-60 D C B A C



APPENDIX C
Reading Posttest

Name: _____ Group: _____

Directions: *The test includes six sections, in total 60 items, and the full score is 100. You are required to answer all the questions within 90 minutes.*

Section A

Directions: In this section, there is a passage with ten blanks. You are required to select one word for each blank from a list of choices given in a word bank following the passage. Read the passage through carefully before making your choices. Each choice in the bank is identified by a letter. Please mark the corresponding letter for each item on the **Answer Sheet**. You may not use any of the words in the bank more than once.

Questions 1 to 10 are based on the following passage.

We all know there exists a great void (空白) in the public educational system when it comes to 1 to STEM (Science, Technology, Engineering and Mathematics) courses. One educator named Dori Roberts decided to do something to change this system. Dori taught high school engineering for 11 years. She noticed there was a real void in quality STEM education at all 2 of the public educational system. She said, "I started Engineering For Kids (EFK) after noticing a real lack of math, science and engineering programs to 3 my own kids in."

She decided to start an afterschool program where children 4 in STEM-based competitions. The club grew quickly and when it reached 180 members and the kids in the program won several state 5, she decided to devote all her time to cultivating and 6 it. The global business EFK was born.

Dori began operating EFK out of her Virginia home, which she then expanded to 7 recreation centers. Today, the EFK program 8 over 144 branches in 32 states within the United States and in 21 countries. Sales have doubled from \$5 million in 2014 to \$10 million in 2015, with 25 new branches planned for 2016. The EFK website states, "Our nation is not 9 enough engineers. Our philosophy is to inspire kids at a young age to understand that engineering is a great 10."

A) attracted	I) feeding
B) career	J) graduating
C) championships	K) interest
D) degrees	L) levels
E) developing	M) local
F) enroll	N) operates
G) exposure	O) participated
H) feasible	

Section B

Directions: In this section, you are going to read a passage with ten statements attached to it. Each statement contains information given in one of the paragraphs. Identify the paragraph from which the information is derived. You may choose a paragraph more than once. Each paragraph is marked with a letter. Answer the questions by marking the corresponding letter on the **Answer Sheet**.

Why Aren't You Curious About What Happened?

A) "You suspended Ray Rice after our video," a reporter from TMZ challenged National Football League Commissioner Roger Goodell the other day. "Why didn't you have the curiosity to go to the casino (赌场) yourself?" The implication of the question is that a more curious commissioner would have found a way to get the tape.

B) The accusation of incuriosity is one that we hear often, carrying the suggestion that there is something wrong with not wanting to search out the truth. "I have been bothered for a long time about the curious lack of curiosity," said a Democratic member of the New Jersey legislature back in July, referring to an insufficiently inquiring attitude on the part of an assistant to New Jersey Governor Chris Christie who chose not to ask hard questions about the George Washington Bridge traffic scandal. "Isn't the mainstream media the least bit curious about what happened?" wrote conservative writer Jennifer Rubin earlier this year, referring to the attack on Americans in Benghazi, Libya.

C) The implication, in each case, is that curiosity is a good thing, and a lack of curiosity is a problem. Are such accusations simply efforts to score political points for one's party? Or is there something of particular value about curiosity in and of itself?

D) The journalist Ian Leslie, in his new and enjoyable book *Curious: The Desire to Know and Why Your Fatter Depends on It*, insists that the answer to that last question is 'Yes.' Leslie argues that curiosity is a much-overlooked human virtue, crucial to our success, and that we are losing it.

E) We are suffering, he writes, from a "serendipity deficit." The word "serendipity" was coined by Horace Walpole in an 1854 letter, from a tale of three princes who "were always making discoveries, by accident, of things they were not in search of," Leslie worries that the rise of the Internet, among other social and technological changes, has reduced our appetite for aimless adventures. No longer have we the inclination to let ourselves wander through fields of know ledges, ready to be surprised. Instead, we seek only the information we want.

F) Why is this a problem? Because without curiosity we will lose the spirit of innovation and entrepreneurship. We will see unimaginative governments and dying corporations make disastrous decisions. We will lose a vital part of what has made humanity as a whole so successful as a species.

G) Leslie presents considerable evidence for the proposition that the society as a whole is growing less curious. In the U.S. and Europe, for example, the rise of the Internet has led to a declining consumption of news from outside the reader's borders. But not everything is to be blamed on technology. The decline in interest in literary fiction is also one of the causes identified by Leslie. Reading literary fiction, he says, make us more curious.

H) Moreover, in order to be curious, "you have to be aware of a gap in your knowledge in the first place." Although Leslie perhaps paints a bit broadly in contending that most of us are unaware of how much we don't know, he's surely right to point out that the problem is growing: "Google can give us the powerful illusion that all questions have definite answers."

I) Indeed, Google, for which Leslie expresses admiration, is also his frequent whipping body (替罪羊). He quotes Google co-founder Larry Page to the effect that

the “perfect search engine” will “understand exactly what I mean and give me back exactly what I want.” Elsewhere in the book, Leslie writes: “Google aims to save you from the thirst of curiosity altogether.”

J) Somewhat nostalgically (怀旧地), he quotes John Maynard Keynes’s justly famous words of praise to the bookstore: “One should enter it vaguely, almost in a dream, and allow what is there freely to attract and influence the eye. To walk the rounds of the bookshops, dipping in as curiosity dictates, should be an afternoons entertainment.” If only!

K) Citing the work of psychologists and cognitive (认知的) scientists, Leslie criticizes the received wisdom that academic success is the result of a combination of intellectual talent and hard work. Curiosity, he argues, is the third key factor--and a difficult one to preserve. If not cultivated, it will not survive: “Childhood curiosity is a collaboration between child and adult. The surest way to kill it is to leave it alone.”

L) School education, he warns, is often conducted in a way that makes children incurious. Children of educated and upper-middle-class parents turn out to be far more curious, even at early ages, than children of working class and lower class families. That lack of curiosity produces a relative lack of knowledge, and the lack of knowledge is difficult if not impossible to compensate for later on.

M) Although Leslie’s book isn’t about politics, he doesn’t entirely shy away from the problem. Political leaders, like leader of other organizations, should be curious. They should ask questions at crucial moments. There are serious consequences, he warns, in not wanting to know.

N) He presents as an example the failure of the George W. Bush administration to prepare properly for the after-effects of the invasion of Iraq. According to Leslie, those who ridiculed former Defense Secretary Donald Rumsfeld for his 2002 remark that we have to be wary of the “unknown unknowns” were mistaken. Rumsfeld’s idea, Leslie writes, “wasn’t absurd- it was smart.” He adds, “The tragedy is that he didn’t follow his own advice.”

O) All of which brings us back to Goodell and the Christie case and Benghazi. Each critic in those examples is charging, in a different way, that someone in authority is intentionally being incurious. I leave it to the reader’s political preference to decide

which, if any, charges should stick. But let's be careful about demanding curiosity about the other side's weaknesses and remaining determinedly incurious about our own. We should be delighted to pursue knowledge for its own sake--even when what we find out is something we didn't particularly want to know.

11. To be curious, we need to realize first of all that there are many things we don't know.
12. According to Leslie, curiosity is essential to one's success.
13. We should feel happy when we pursue knowledge for knowledge's sake.
14. Political leaders' lack of curiosity will result in bad consequences.
15. There are often accusations about politicians' and the media's lack of curiosity to find out the truth.
16. The less curious a child is, the less knowledge the child may turn out to have.
17. It is widely accepted that academic accomplishment lies in both intelligence and diligence.
18. Visiting a bookshop as curiosity leads us can be a good way to entertain ourselves.
19. Both the rise of the Internet and reduced appetite for literary fiction contribute to people's declining curiosity.
20. Mankind wouldn't be so innovative without curiosity.

Section C

Directions: There are 2 passages in this section. Each passage is followed by some questions or unfinished statements. For each of them there are four choices marked A), B), C) and D). You should decide on the best choice and mark the corresponding letter on the **Answer Sheet**.

Passage One

Questions 21 to 25 are based on the following passage.

Aging happens to all of us, and is generally thought of as a natural part of life. It would seem silly to call such a thing a “disease.”

On the other hand, scientists are increasingly learning that aging and biological age are two different things, and that the former is a key risk factor for conditions such as heart disease, cancer and many more. In that light, aging itself might be seen as something treatable, the way you would treat high blood pressure or a vitamin deficiency.

Biophysicist Alex Zhavoronkov believes that aging should be considered a disease. He said that describing aging as a disease creates incentives to develop treatments.

“It unties the hands of the pharmaceutical (制药的) industry so that they can begin treating the disease and not just the side effects,” he said.

“Right now, people think of aging as natural and something you can’t control,” he said. “In academic circles, people take aging research as just an interest area where they can try to develop interventions. The medical community also takes aging for granted, and can do nothing about it except keep people within a certain health range.”

But if aging were recognized as a disease, he said, “It would attract funding and change the way we do health care. What matters is understanding that aging is curable.”

“It was always known that the body accumulates damage,” he added. “The only way to cure aging is to find ways to repair that damage. I think of it as preventive medicine for age-related conditions.”

Leonard Hayflick, a professor at the University of California, San Francisco, said the idea that aging can be cured implies the human lifespan can be increased, which some researchers suggest is possible. Hayflick is not among them.

“There’re many people who recover from cancer, stroke, or heart disease. But they continue to age, because aging is separate from their disease,” Hayflick said. “Even if those causes of death were eliminated, life expectancy would still not go much beyond 92 years.”

21. What do people generally believe about aging?
 - A) It should cause no alarm whatsoever.
 - B) They just cannot do anything about it.
 - C) It should be regarded as a kind of disease.
 - D) They can delay it with advances in science.
22. How do many scientists view aging now?
 - A) It might be prevented and treated.
 - B) It can be as risky as heart disease.
 - C) It results from a vitamin deficiency.
 - D) It is an irreversible biological process.
23. What does Alex Zhavoronkov think of “describing aging as a disease”?
 - A) It will prompt people to take aging more seriously.
 - B) It will greatly help reduce the side effects of aging.
 - C) It will free pharmacists from the conventional beliefs about aging.
 - D) It will motivate doctors and pharmacists to find ways to treat aging.
24. What do we learn about the medical community?
 - A) They now have a strong interest in research on aging.
 - B) They differ from the academic circles in their view on aging.
 - C) They can contribute to people’s health only to a limited extent.
 - D) They have ways to intervene in people’s aging process.
25. What does Professor Leonard Hayflick believe?
 - A) The human lifespan cannot be prolonged.
 - B) Aging is hardly separable from disease.
 - C) Few people can live up to the age of 92.

D) Heart disease is the major cause of aging.

Passage Two

Questions 26 to 30 are based on the following passage.

Female applicants to postdoctoral positions in geosciences were nearly half as likely to receive excellent letters of recommendation, compared with their male counterparts. Christopher Intagliata reports.

As in many other fields, gender bias is widespread in the sciences. Men score higher starting salaries, have more mentoring (指导), and have better odds of being hired. Studies show they're also perceived as more competent than women in STEM (Science, Technology, Engineering, and Mathematics) fields. And new research reveals that men are more likely to receive excellent letters of recommendation, too.

“Say, you know, this is the best student I’ve ever had,” says Kuheli Dutt, a social scientist and diversity officer at Columbia University’s Lamont campus. “Compare those excellent letters with a merely good letter: ‘The candidate was productive, or intelligent, or a solid scientist or something that’s clearly solid praise,’ but nothing that singles out the candidate as exceptional or one of a kind.”

Dutt and her colleagues studied more than 1,200 letters of recommendation for postdoctoral positions in geoscience. They were all edited for gender and other identifying information, so Dutt and her team could assign them a score without knowing the gender of the student. They found that female applicants were only half as likely to get outstanding letters, compared with their male counterparts. That includes letters of recommendation from all over the world, and written by, yes, men and women. The findings are in the journal *Nature Geoscience*.

Dutt says they were not able to evaluate the actual scientific qualifications of the applicants using the data in the files. But she says the results still suggest women in geoscience are at a potential disadvantage from the very beginning of their careers starting with those less than outstanding letters of recommendation.

“We’re not trying to assign blame or criticize anyone or call anyone conscious sexist. Rather, the point is to use the results of this study to open up meaningful dialogues on implicit gender bias, be it at a departmental level or an institutional level

or even a discipline level.” Which may lead to some recommendations for the letter writers themselves.

26. What do we learn about applicants to postdoctoral positions in geosciences?
- A) There are many more men applying than women.
 - B) Chances for women to get the positions are scare.
 - C) More males than females are likely to get outstanding letters of recommendation.
 - D) Male applicants have more interest in these positions than their female counterparts.
27. What do studies about men and women in scientific research show?
- A) Women engaged in postdoctoral work are quickly catching up.
 - B) Fewer women are applying for postdoctoral positions due to gender bias.
 - C) Men are believed to be better able to excel in STEM disciplines.
 - D) Women who are keenly interested in STEM fields are often exceptional.
28. What do the studies find about the recommendation letters for women applicants?
- A) They are hardly ever supported by concrete examples.
 - B) They contain nothing that distinguishes the applicants.
 - C) They provide objective information without exaggerate.
 - D) They are often filled with praise for exceptional applicants.
29. What did Dutt and her colleagues do with the more than 1,200 letters of recommendation?
- A) They asked unbiased scholars to evaluate them.
 - B) They invited women professionals to edit them.
 - C) Them assigned them randomly to reviewers.
 - D) They deleted all information about gender.
30. What does Dutt aim to do with her study?
- A) Raise recommendation writers’ awareness of gender bias in their letters.
 - B) Open up fresh avenues for women post-doctors to join in research work.
 - C) Alert women researchers to all types of gender bias in the STEM disciplines.
 - D) Start a public discussion on how to raise women’s status in academic circles.

Section D

Directions: In this section, there is a passage with ten blanks. You are required to select one word for each blank from a list of choices given in a word bank following the passage. Read the passage through carefully before making your choices. Each choice in the bank is identified by a letter. Please mark the corresponding letter for each item on the **Answer Sheet**. You may not use any of the words in the bank more than once.

Questions 31 to 40 are based on the following passage.

A few months ago, I was down with a terrible cold which ended in a persistent bad cough. No matter how many different 31 I tried, I still couldn't get rid of the cough. Not only did it 32 my teaching but also my life as a whole. Then one day after class, a student came up to me and 33 traditional Chinese medicine. From her description, Chinese medicine sounded as if it had magic power that worked wonders. I was 34 because I knew so little about it and have never it before. Eventually, my cough got so much 35 that I couldn't sleep at night, so I decided to give it a try. The Chinese doctor took my pulse and asked to see my tongue, both of which were new 36 to me because they are both non-existent in Western medicine. Then the doctor gave me a scraping (刮) treatment known as "Gua Sha". I was a little 37 at first because he used a smooth edged tool to scrape the skin on my neck and shoulders. A few minutes later, the 38 strokes started to produce a relieving effect and my body and mind began to 39 deeper into relaxation. I didn't feel any improvement in my condition in the first couple of days, but after a few more regular visits to the doctor, my cough started to 40. Then, within a matter of weeks, it was completely gone!

- | | |
|------------------|--------------|
| A) deepen | I) remedies |
| B) experiences | J) scared |
| C) hesitant | K) sensitive |
| D) inconvenience | L) sink |
| E) lessen | M) temporary |
| F) licenses | N) tremble |
| G) pressured | O) worse |
| H) recommended | |

Section E

Directions: In this section, you are going to read a passage with ten statements attached to it. Each statement contains information given in one of the paragraphs. Identify the paragraph from which the information is derived. You may choose a paragraph more than once. Each paragraph is marked with a letter. Answer the questions by marking the corresponding letter on the **Answer Sheet**.

Is It Really OK to Eat Food That's Fallen On The Floor?

A) When you drop a piece of food on the floor, is it really OK to eat if you pick it up within five seconds? An urban food myth contends that if food spends just a few seconds on the floor, dirt and germs won't have much of a chance to contaminate it. Research in my lab has focused on how food becomes contaminated, and we've done some work on this particular piece of wisdom.

B) While the "five-second rule" might not seem like the most pressing issue for food scientists to get to the bottom of, it's still worth investigating food myths like this one because they shape our beliefs about when food is safe to eat.

C) So is five seconds on the floor the critical threshold (门槛) that separates a piece of eatable food from a case of food poisoning? It's a bit more complicated than that. It depends on just how many bacteria can make it from floor to food in a few seconds and just how dirty the floor is.

D) Wondering if food is still OK to eat after it's dropped on the floor is a pretty common experience. And it's probably not a new one either. A well-known, but inaccurate, story about Julia Child may have contributed to this food myth. Some viewers of her cooking show, *The French Chef*, insist they saw Child drop lamb on the floor and pick it up, with the advice that if they were alone in the kitchen, their guests would never know.

E) In fact it was a potato pancake, and it fell on the stovetop, not on the floor. Child put it back in the pan, saying, "But you can always pick it up and if you're alone in the kitchen, who's going to see it?" But the misremembered story persists. It's harder to pin down the origins of the oft-quoted five-second rule, but a 2003 study reported that 70% of women and 56% of men surveyed were familiar with the five-second rule

and that women were more likely than men to eat food that had dropped on the floor.

F) So what does science tell us about what a few moments on the floor means for the safety of your food? The earliest research report on the five-second rule is attributed to Jillian Clarke, a high school student participating in a research project at the University of Illinois. Clarke and her colleagues introduced bacteria to floor tiles (瓷砖) and then placed cookies on the tiles for varying times. They reported bacteria were transferred from the tiles to the cookies within five seconds, but didn't report the specific amount of bacteria that made it from the tiles to the food.

G) But how many bacteria actually transfer in five seconds? In 2007, my lab at Clemson University published a study in the *Journal of Applied Microbiology*. We wanted to know if the length of time food is in contact with a contaminated surface affected the rate of transfer of bacteria to the food. To find out, we introduced bacteria to squares of tile, carpet or wood. Five minutes after that, we placed either bacon or bread on the surface for 5, 30 or 60 seconds, and then measured the number of bacteria transferred to the food. We repeated this exact procedure after the bacteria had been on the surface for 2, 4, 8 and 24 hours.

H) We found that the number of bacteria transferred to either kind of food didn't depend much on how long the food was in contact with the contaminated surface - whether for a few seconds or for a whole minute. The overall number of bacteria on the surface mattered more, and this decreased over time after the initial introduction. It looks like what's at issue is less how long your food stays on the floor and much more how contaminated with bacteria that patch of floor happens to be.

I) We also found that the kind of surface made a difference as well. Carpets, for instance, seem to be slightly better places to drop your food than wood or tile. When a carpet was contaminated, less than 1% of the bacteria were transferred. But when the food was in contact with tile or wood, 45-70% of bacteria were.

J) Last year, a study from Aston University in the UK used nearly identical parameters (参数) to our study and found similar results. They also reported that 87% of people asked either would eat or had eaten food fallen on the floor.

K) Should you eat food fallen on the floor then? From a food safety standpoint, if you have millions or more bacteria on a surface, 0.1% is still enough to make you sick. Also, certain types of bacteria are extremely harmful, and it takes only a small number to make you sick. For example, 10 bacteria or less of an especially deadly strain of bacteria can cause severe illness and death in people with compromised immune systems. But the chance of these bacteria being on most surfaces is very low.

L) And it's not just dropping food on the floor that can lead to bacterial contamination. Bacteria are carried by various "media", which can include raw food, moist surfaces where bacteria have been left, our hands or skin and from coughing or sneezing (打喷嚏). Hands, foods and utensils (器皿) can carry individual bacteria living in communities contained within a protective film. These microscopic layers of deposits containing bacteria are known as biofilms and they are found on most surfaces and objects. Biofilm communities can harbor bacteria longer and are very difficult to clean. Bacteria in these communities also have an enhanced resistance to sanitizers (清洁剂) and antibiotics compared to bacteria living on their own.

M) So the next time you consider eating fallen food, the odds are in your favor that you can eat it without getting sick. But in the rare chance that there is a micro-organism that there is a micro-organism that can make you sick on the exact spot where the food dropped, you can be fairly sure that the bug is on the food you are about to put in your mouth.

N) Research or common sense tells us that the best thing to do is keep your hands, utensils and other surfaces clean.

41. A research project found bacteria made their way to the food on the floor in five seconds.
42. Whether food is contaminated depends much on the number of bacteria that get onto it.
43. Food contamination may result from various factors other than food dropping on the floor.
44. Males are less likely than females to eat food that may have been contaminated.
45. The author's research centers around how food gets contaminated.
46. Keeping everything clean is the best way to stay healthy.

47. Chances are you will not fall sick because of eating food picked up from the floor.
48. For a long time people have had the experience of deciding whether or not to eat food picked up from the floor.
49. Some strains of bacteria are so harmful that a tiny few can have deadly consequences.
50. Researchers found how many bacteria got onto the food did not have much to do with how long the food stayed on a contaminated floor.

Section F

Directions: There are 2 passages in this section. Each passage is followed by some questions or unfinished statements. For each of them there are four choices marked A), B), C) and D). You should decide on the best choice and mark the corresponding letter on the **Answer Sheet**.

Passage One

Questions 51 to 55 are based on the following passage.

The latest in cat research reveals that the lovely animal seems to have a basic grasp on both the laws of physics and the ins and outs of cause and effect.

According to a newly published study, cats seem to be able to predict the location of hiding prey (猎物) using both their ears and an inborn (天生的) understanding of how the physical world works.

In a recent experiment, Japanese researchers taped 30 domestic cats reacting to a container that a team member shook. Some containers rattled (发出响声); others did not. When the container was tipped over, sometimes an object fell out and sometimes it didn't.

It turns out that the cats were remarkably smart about what would happen when a container was tipped over. When an object did not drop out of the bottom of a rattling container, they looked at it for a longer time than they did when the container behaved as expected.

“Cats use a causal-logical understanding of noise or sounds to predict the appearance of invisible objects,” lead researcher Saho Takagi says in a press release.

The researchers conclude that cats' hunting style may have developed based on their common-sense abilities to infer where prey is, using their hearing.

Scientists have explored this idea with other endearing creatures: babies. Like cats, babies appear to engage in what's called "preferential looking" — looking longer at things that are interesting or unusual than things they perceive as normal.

When babies' expectations are violated in experiments like the ones performed with the cats, they react much like their animal friends. Psychologists have shown that babies apparently expect their world to comply with the laws of physics and cause and effect as early as two months of age.

Does the study mean that cats will soon grasp the ins and outs of cause and effect? Maybe. Okay, so cats may not be the next physics faculty members at America's most important research universities. But by demonstrating their common sense, they've shown that the divide between cats and humans may not be that great after all.

51. What do we learn from a newly published study about cats?
- A) They can be trained to understand the physical world.
 - B) They know what kind of prey might be easier to hunt.
 - C) They have a natural ability to locate animals they hunt.
 - D) They are capable of telling which way their prey flees.
52. What may account for the cats' response to the noise from the containers?
- A) Their inborn sensitivity to noise.
 - B) Their unusual sense of direction.
 - C) Their special ability to perceive.
 - D) Their mastery of cause and effect.
53. What is characteristic of the way cats hunt, according to the Japanese researchers?
- A) They depend on their instincts.
 - B) They rely mainly on their hearing.
 - C) They wait some time before attack.
 - D) They use both their ears and eyes.
54. In what way do babies behave like cats?
- A) They focus on what appears odd.

- B) They view the world as normal.
 - C) They do what they prefer to do.
 - D) They are curious about everything.
55. What can we conclude about cats from the passage?
- A) They have higher intelligence than many other animals.
 - B) They interact with the physical world much like humans.
 - C) They display extraordinarily high intelligence in hunting.
 - D) They can aid physics professors in their research work.

Passage Two

Questions 56 to 60 are based on the following passage.

Imagine you enter a car with no steering wheel, no brake or accelerator pedals (踏板). Under a voice-activated command, you say an address. “The fastest route will take us 15.3 minutes. Should I take it?” You say “yes” and you are on your way. The car responds and starts moving all by itself. All you have to do is sit back and relax.

How weird would it be if, one day in the future, everyone had such a car? No crazy driving, no insults, no cutting in; traffic laws would be respected and driving much safer. On the other hand, imagine the cost savings for local police enforcement and town budgets without all those speeding and parking tickets.

A new technology has the potential to change modern society in radical ways. There’s no question that self-driving vehicles could be an enormous benefit. The potential for safer cars means accident statistics would drop: some 94% of road accidents in the U.S. involve human error. Older drivers and visually-or physically-impaired people would gain a new level of freedom. Maintaining safe speeds and being electric, self-driving cars would drastically reduce pollution levels and dependency on non-renewable fuels. Roads would be quieter, people safer.

But we must also consider the impact of the new technology on those who now depend on driving for their livelihoods. According to the U.S. Department of Labor, in May 2015 there were 505,560 registered school bus drivers. The American Trucking Association lists approximately 3.5 million professional truck drivers in the U.S.

The companies developing self-driving vehicles should be partnering with state and federal authorities to offer retraining for this massive workforce, many of whom will be displaced by the new technology. This is similar to what's happening in the coal and oil industries, a situation that fuels much of the current political discontent in this country.

New technologies will, and should, be developed. This is how society moves forward. However, progress can't be one-sided. It is necessary for the companies and state agencies involved to consider the ethical consequences of these potential changes to build a better future for all.

56. What would be the impact of the extensive use of driverless cars?
- A) People would be driving in a more civilized way.
 - B) It would save local governments a lot of money.
 - C) More policemen would be patrolling the streets.
 - D) Traffic regulations would be a thing of the past.
57. How would the elderly and the disabled benefit from driverless cars?
- A) They could enjoy greater mobility.
 - B) They would suffer no road accidents.
 - C) They would have no trouble driving.
 - D) They could go anywhere they want.
58. What would be the negative impact of driverless cars?
- A) The conflict between labor and management would intensify.
 - B) The gap between various sectors of society would be widened.
 - C) Professional drivers would have a hard time adapting to new road conditions.
 - D) Numerous professional drivers would have to find new ways of earning a living.
59. What is the result of the introduction of new technologies in energy industries?
- A) Political dissatisfaction.
 - B) Retraining of employees.
 - C) Fossil fuel conservation.
 - D) Business restructuring.
60. What does the author suggest businesses and the government do?
- A) Keep pace with technological developments.

- B) Make new technologies affordable to everyone.
- C) Enable everyone to benefit from new technologies.
- D) Popularize the use of new technologies and devices.

Answer Keys to the Reading Posttest

Section A

1–5 G L F O C

6–10 E M N J B

Section B

11–15 H D O M B

6–20 L K J G F

Section C

21–25 B A D C A

26–30 C C B D A

Section D

31–35 I D H C O

36–40 B J G L E

Section E

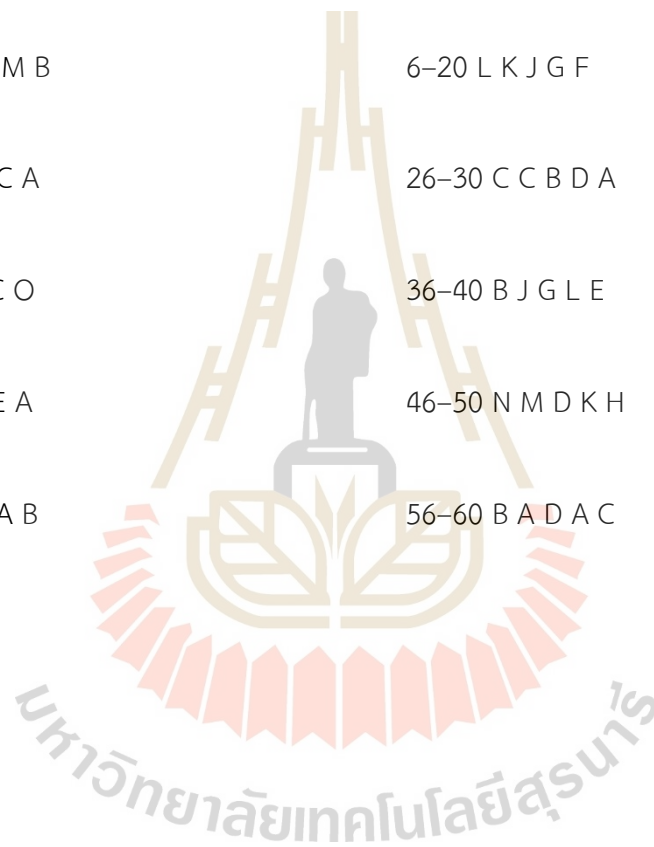
41–45 F C L E A

46–50 N M D K H

Section F

51–55 C D B A B

56–60 B A D A C



APPENDIX D

Reading Pretest and Posttest Scores of the Control Group and Experimental Group

The Control Group				The Experimental Group		
No.	Pretest	Posttest		No.	Pretest	Posttest
1	87	83.5		1	76	78
3	84	81		2	46	53
4	60.5	62.5		3	81.5	83.5
5	61.5	67		4	65.5	69
6	67	69.5		5	81	80
7	65.5	67		6	58	75.5
8	58.5	61.5		7	63.5	57.5
9	55	53.5		8	62.5	59.5
10	60	55		9	73.5	75.5
11	68.5	62.5		10	52.5	78.5
12	64	59		11	49	51
13	61	70.5		12	49.5	61.5
14	70.5	71		13	25	27.5
15	60	61.5		14	63	75.5
16	70	72.5		15	81	85
17	68	70		16	62.5	79
18	79	74.5		17	84.5	77
19	86	82.5		18	68	71.5
20	58	62		19	63	82.5
21	61.5	76		20	70	73.5
22	44.5	74.5		21	56	69.5
23	68	62.5		22	71	73.5
24	56.5	61.5		24	80.5	83
26	54.5	60.5		25	51	58
27	74	67.5		26	86.5	84
28	80.5	82.5		27	74	76

The Control Group				The Experimental Group		
No.	Pretest	Posttest		No.	Pretest	Posttest
29	61	63		28	65.5	71.5
30	50	50.5		29	75.5	77
31	83	78.5		30	86.5	83
32	74.5	71		31	65	72.5
33	53.5	56		32	64.5	63.5
34	81	77		33	60	62
35	70	67		34	69	70.5
36	73	64.5		35	65	67
37	56	51		36	84.5	85
38	28.5	32.5		37	46.5	58.5
39	82	76.5		38	60.5	72
40	50.5	45		39	81	77
41	50	67		40	76.5	74.5
42	83	83		41	59.5	71
43	44	46		42	80.5	73.5
44	69	61		43	68	64.5
46	81.5	75.5		44	83.5	81
				45	47.5	66.5
				46	50	56

Notes: In the CG, No. 2, 25, 45 didn't take the tests; in the EG, No. 23 didn't take the tests.

APPENDIX E

A Questionnaire on Students' Opinions of the Effects of the Lexical Approach on Reading Comprehension Ability

Directions:

This questionnaire is intended to investigate whether the participants have improved their reading comprehension ability in different aspects through the lexical approach. It includes two parts, part one is the 5-point Likert scale. Please read each statement carefully and tick (✓) the responses which represent your opinions. There is no right or wrong in your answer. Part two is the open-ended questions. Please try to answer the questions based on your true feelings and experiences. Your answers will be used confidentially. Thank you for your participation!

Part I

The numbers 1 to 5 stand for the following responses:

1	2	3	4	5
Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree

No.	Statements	1	2	3	4	5
1	Through the training session, I have known the basic knowledge of lexical chunks, discourse organizers, and lexical approach.					
2	The lexical approach changes my previous 'word by word' reading method.					
3	The lexical approach increases my reading interest.					
4	The lexical approach builds up my reading confidence.					
5	The lexical approach helps me better understand the structure of the text.					
6	The lexical approach expands my vocabulary.					
7	After learning the lexical approach, I know how to guess the meaning of new words in reading.					
8	After learning the lexical approach, I know how to understand long and difficult sentences in reading.					
9	The lexical approach is helpful in improving my English reading comprehension ability.					
10	The lexical approach helps me improve my reading speed.					
11	After learning the lexical approach, I will consciously pay attention to the lexical chunks and highlight them in reading.					

Part II

1. What do you benefit most after using the lexical approach to learn reading?
2. Do you want to continue using the lexical approach to learn reading in the future? Why?

Chinese Version

A Questionnaire on Students' Opinions of the Effects of the Lexical the Approach on Reading Comprehension Ability

关于学生对词块教学法对阅读理解能力影响的意见的问卷调查说明:

本次问卷的目的是调查学生通过词块教学法的学习,在阅读能力的各个方面是否有提高。问卷包括两部分,第一部分是 5 级量表。请仔细阅读,并选择符合你看法的选项打勾(√)。你的选择没有对错之分。第二部分是开放式问题,请尝试根据您的真实感受和经历回答问题。你的答案将采取不记名的方式被使用,感谢你的参与!



第一部分

以下数字从 1 到 5 依次代表了：

1	2	3	4	5
完全不同意	不同意	不确定	同意	完全同意

题号	描述	1	2	3	4	5
1	通过培训课程，我了解了词块、话语组织词和词块教学法的基本知识。					
2	词块教学法改变了我之前逐词阅读的习惯。					
3	词块教学法提高了我的阅读兴趣。					
4	词块教学法增强了我的阅读信心。					
5	词块教学法帮助我更好地理解文章的结构。					
6	词块教学法扩大了我的词汇量。					
7	通过学习词块教学法，在阅读中我知道怎样猜测生词词意。					
8	通过学习词块教学法，在阅读中我知道怎样理解长难句。					
9	词块教学法有助于提高我的英语阅读理解能力。					
10	词块教学法有助于提高我的阅读速度。					
11	通过学习词块教学法，在阅读中我会有意识地注意并标记词块。					

第二部分

1. 使用词块教学法学习阅读之后，你最大的收获是什么？
2. 你希望将来继续使用词块教学法学习阅读吗？为什么？

APPENDIX F

IOC Analysis for a Questionnaire on Students' Opinions of the Effects of Lexical
Approach on Reading Comprehension Ability

Item	Expert A	Expert B	Expert C	Expert D	Result of analysis
1	+1	+1	+1	+1	√
2	+1	+1	+1	+1	√
3	0	0	+1	+1	√
4	+1	+1	+1	+1	√
5	+1	+1	+1	+1	√
6	+1	+1	+1	+1	√
7	+1	+1	0	+1	√
8	+1	+1	0	+1	√
9	+1	+1	+1	+1	√
10	+1	+1	+1	+1	√
11	0	0	+1	+1	√
Total	9	9	10	12	

Notes:

1. +1= the item is congruent with the objective
2. -1= the item is not congruent with the objective
3. 0=uncertain about this item

$$(IOC = \sum R/N)$$

Item number: 11

$R = 9 + 9 + 10 + 12 = 40$ (Scores from experts)

$N = 4$ (Number of experts)

$$IOC = 40/4 = 10$$

Percentage: $10/11 = 0.909$

The table above shows that the analysis result of IOC is 0.909, which is higher than 0.75. Therefore, the items are suitable for adoption in this questionnaire.

APPENDIX G

A Semi-structured Interview on Students' Opinions of Using the Lexical Approach to Learn Reading (For the Experimental Group)

Dear students,

This interview is to elicit your opinions on using lexical approach to learn reading. There is no right or wrong answer. Please feel free to say anything you think and feel about the approach. Your response will be kept confidential. Thank you for your participation!

Guiding questions:

1. What is your understanding of lexical chunks and the lexical approach?
2. Do you think the lexical approach is suitable for your reading learning?
3. Do you think the lexical approach has changed your concept of learning words? (E.g., learning a word from multiple aspects, from learning words individually to learn chunks, and focusing more on the relationship between words.)
4. Do you think the lexical approach helps you improve your reading comprehension ability? If yes, in what aspects? (E.g., change reading methods, improve reading speed and accuracy, expand vocabulary, handle long difficult sentences.)
5. What difficulties have you met during the process of using the lexical approach to learn texts? (E.g., difficult to identify lexical chunks, easily forget newly learned chunks.)
6. As to the teaching of the lexical approach, do you have any suggestions?

Chinese Version

A Semi-structured Interview on Students' Opinions of
Using the Lexical Approach to Learn Reading
(For the Experimental Group)

关于学生运用词块教学法学习阅读的意见的半结构化访谈
(实验组用)

亲爱的同学们，你们好，

本次的访谈是为了了解你们关于运用词块教学法学习阅读的意见和想法。本次访谈没有对错或者标准答案，请自由地说出你们的想法。你的答案会采取不记名方式发挥作用，请不必顾虑保密问题。感谢你的参与！

访谈问题

1. 你是怎么理解词块和词块教学法的？
2. 你认为词块教学法适合你的阅读学习吗？如果是，具体体现在哪些方面呢？
3. 你认为词块教学法有没有改变你学习单词的观念？（比如从多个方面学习单词，学习单个单词到学习词块，更加注重单词间的关系）
4. 你认为词块教学法提高了你的阅读理解能力吗？如果是，具体体现在哪些方面呢？（比如改变阅读习惯、提高阅读速度和准确性、扩大词汇量、处理长难句）
5. 用词块教学法来学习文章时，你遇到了哪些困难呢？比如说很难找出词块，词块容易遗忘等。
6. 关于词块教学法的教学，你有什么建议吗？

APPENDIX H

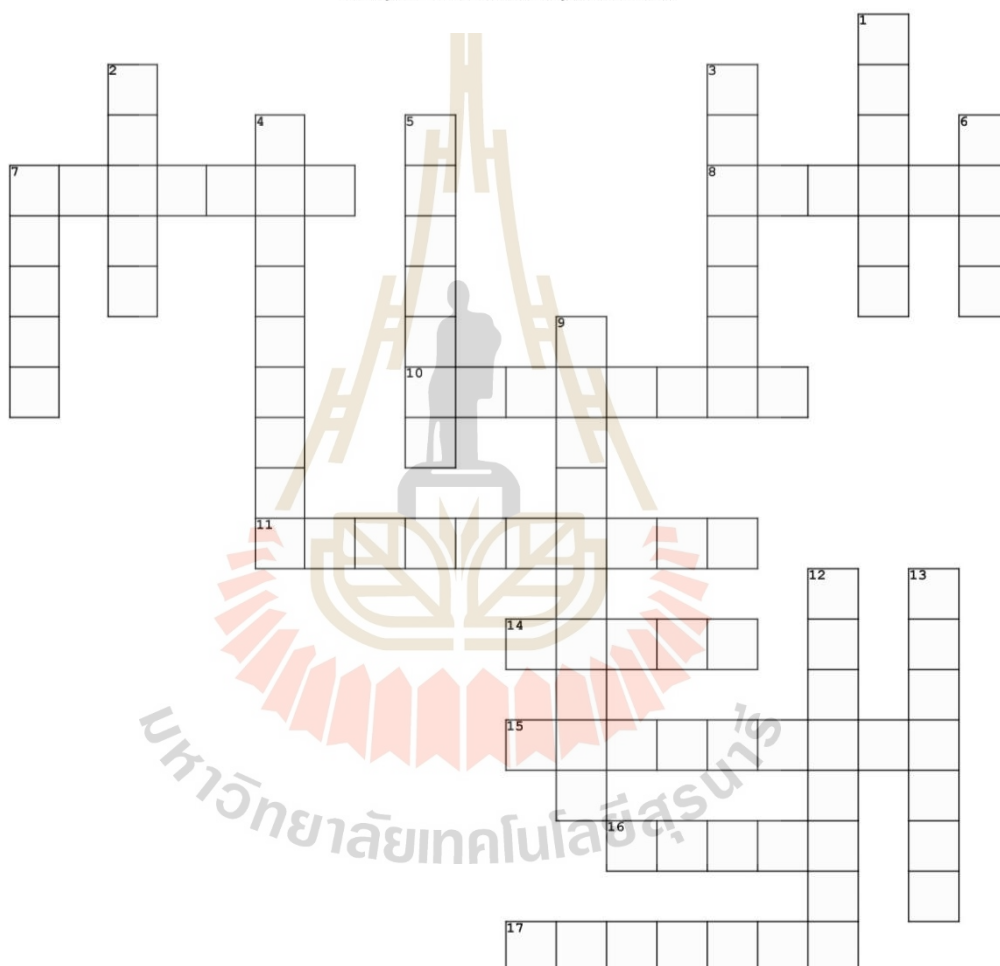
Examples of the Main Teaching Activities in the CG

Activity 1: Crossword puzzle game

Example:

Group: _____

Complete the crossword puzzle below

**Across**

7. become, slower, less active
8. try to reach for something or hold it in a clumsy way
10. being great, esp. in difficulty
11. a warning to sb about their behaviour
14. a fact or event that can be used for judging sb. or sth
15. go into or through sth
16. winds are very strong and irregular
17. to damage sb's body so that they are no longer able to walk or move normally

Down

1. to walk with difficulty, especially because your feet or legs hurt
2. weak; easily damaged or broken
3. cause severe suffering or pain
4. an area of land that is almost surrounded by water but is joined to a larger piece of land
5. a person sent by God to teach the people and give them messages from God
6. move with a sudden short sharp movement
7. smooth and slippery
9. feeling annoyed and impatient because you cannot do or achieve what you want
12. cause to be unable to move
13. completely

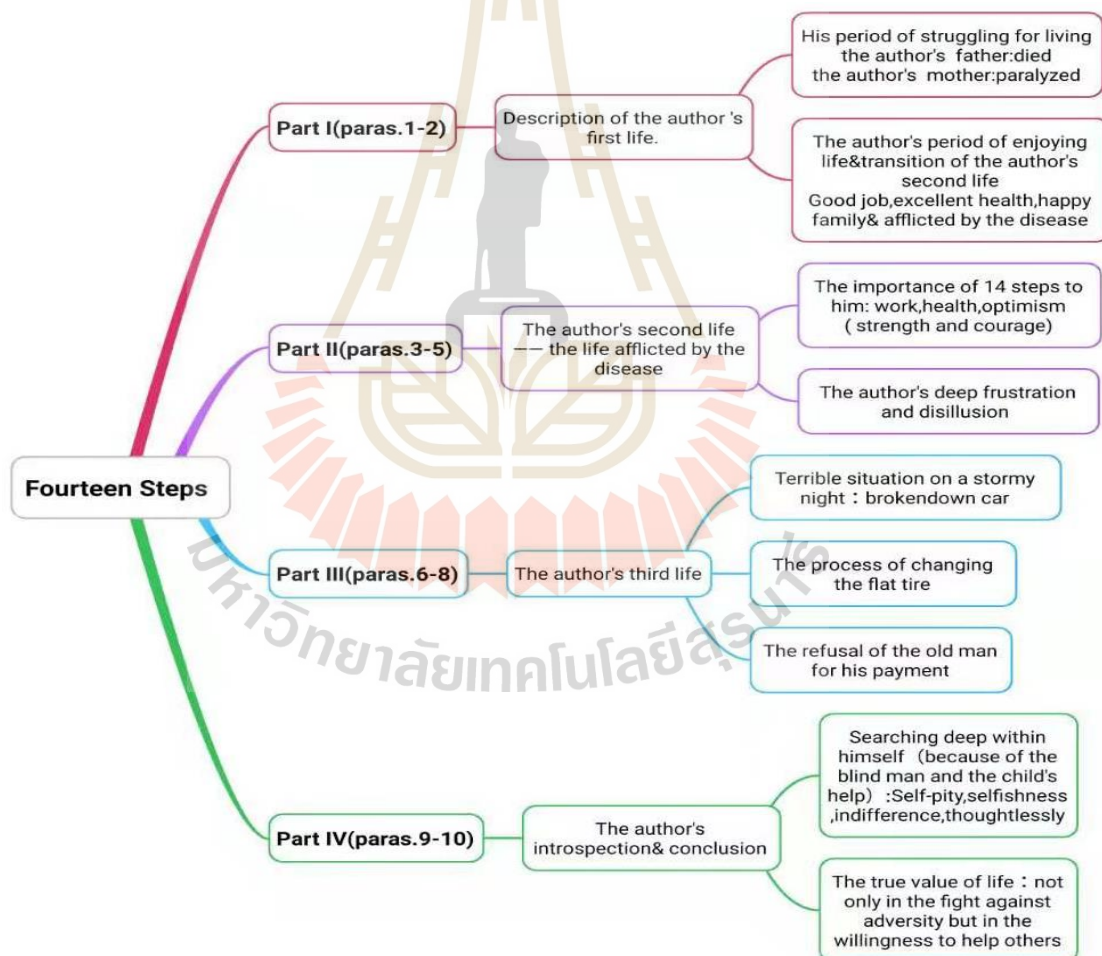
Answer keys:

- | | | | |
|---------------|--------------|-------------------|--------------|
| 1. hobble | 2. frail | 3. afflict | 4. peninsula |
| 5. prophet | 6. jerk | 7. slick, slacken | 8. fumble |
| 9. frustrated | 10. enormity | 11. admonition | 12. paralyze |
| 13. utterly | 14. gauge | 15. penetrate | 16. gusty |
| 17. cripple | | | |

Activity 2: Drawing the tree diagram

Students work in groups and draw the tree diagram.

Example:



Activity 3: Understanding Details

The teacher shows the reading comprehension questions on the screen, and asks the students read the text and think about the questions.

Example:

Q1. What can we infer about the author's childhood?

Answer: He lived an unhappy and hard life because of the early death of his father and the poor health of his mother.

Q2. How did the author's second life begin?

Answer: He was afflicted with a slowly progressive disease of the motor nerves, affecting first his right arm and leg and then his other side.

Activity 4: Learning language points

How to teach words:

Example:

They say a cat has nine lives, and I am inclined to think that possible since I am now living my third life and I'm not even a cat.

inclined

Definition: be likely or tend to 倾向于

Making sentences:

In the first instance I was inclined to refuse, but then I reconsidered.

He was inclined to give them a free hand.

How to teach long and complex sentences:

Example:

Here hobbled a bitterly disillusioned cripple, a man who held on to his sanity and his wife and his home and his job because of 14 miserable steps leading up to the back door from his garage.

Explain: Inversion. A bitterly disillusioned cripple hobbled here.

Paraphrase: Painfully and bitterly, a disabled man hobbled around here. Owing to the 14 miserable steps leading up to the back door from his garage, the man could keep up to his sanity and his wife and his home and his job.

Translation: 这是一个梦想破灭、痛苦失望的残疾人，他跛行着，正是因为有了这条从车库通向后门的可怕的 14 级台阶，他才能保持理智、陪伴妻子、维护家庭、坚持工作。

Activity 5: Dictation

The teacher speaks out the words, and the students are required to write their equivalent English and Chinese meaning.

Example

Teacher (T): inclined (spoken)

Students (Ss): inclined (written) 趋向的

Activity 6: Quiz

Example:

Mr. Easton was _____ in an accident and had to leave his job.

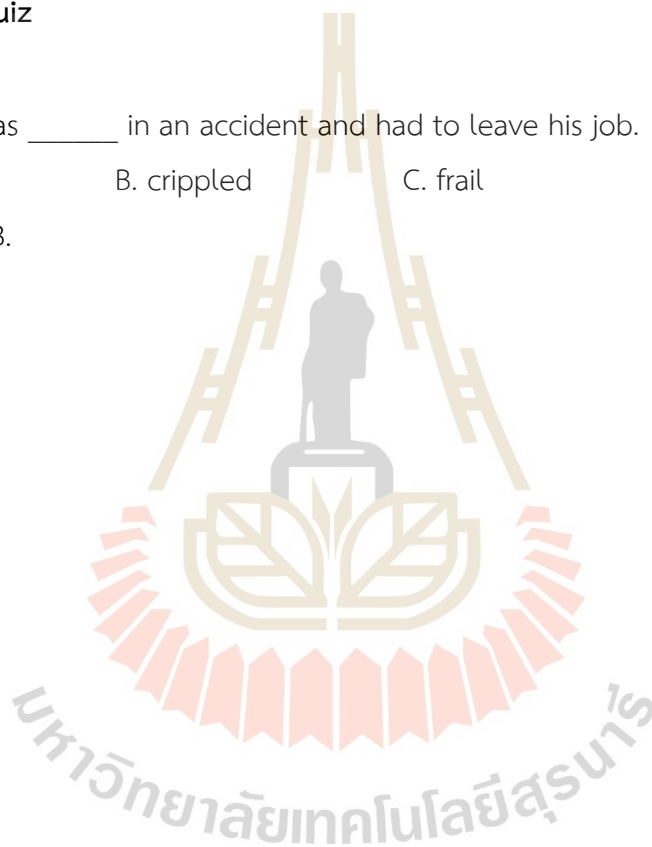
A. hobbled

B. crippled

C. frail

D. fated

Key answer: B.



APPENDIX I

Examples of the Main Teaching Activities in the EG

Read the text chunk by chunk (Unit 2 Fourteen Steps Para. 1):

They say/ a cat has nine lives,/ and I am inclined to think/ that possible/ since/ I am now/ living my third life/ and I'm not even a cat./ My first life/ began/ on a clear cold day/ in November 1934,/ when I arrived/ as the sixth of eight children/ of a farming family./ My father died/ when I was 15,/ and we had a hard struggle/ to make a living./ As the children grew up,/ they married,/ leaving/ only one sister/ and myself /to support and care for Mother,/ who became paralyzed/ in her last years/ and died/ while still in her 60s./ My sister/ married/ soon after,/ and I followed her example/ within the year./

Divide the text:

Discourse organizers (Temporal connectors)	Para(s)	Main idea
This was when I began to enjoy <u>my first life</u> .	1-2	The author's first life in which he began to enjoy everything pleasant.
Thus began <u>my second life</u> .	3-5	The author's second life. Because of his disease, he became miserable and frustrated.
I began <u>my third life</u> .	6-8	The author's third life began with the trouble of his car on the stormy night and he described the blind man's selfless help.
<u>To me now</u> , months later...	9-10	The author reflected on the incident and his life philosophy, from which he discovered the true value of life.

Activity 1: Noticing: identify the lexical chunks.

Classification of Lexical chunks	Lexical Chunks in the Text
Words and Polywords	Words: arrive, peninsula Polywords: be inclined to, as the sixth of eight children, in her last years, in her 60s, soon after, within the year
Collocations	on a clear cold day, farming family, had a hard struggle, make a living, support, and care for mother, became paralyzed, followed her example, in excellent health, quite a good athlete, became afflicted with a disease, motor nerves
Institutionalized Utterances	They say a cat has nine lives.
Sentence Frames and Heads	This was when I began to enjoy my first life.

Activity 2: Awareness-raising of Lexical Chunks

Students classify the lexical chunks first, and then discuss in groups to compare the lexical chunks they found, meanwhile, guess and talk about their meanings with other students.

Activity 3: Understanding Details

Reading Comprehension Strategies: First read the questions and catch the key lexical chunks, then locate the answer in the text. When reading the text, read it chunk by chunk to decode the meaning of the text, meanwhile, connect the textual information with your background knowledge to understand the text.

Example:

Question 1: What can we infer about the author's childhood?

Answer: He lived an unhappy and hard life because of the early death of his father and the poor health of his mother.

Question 2: How did the author's second life begin?

Answer: He was afflicted with a slowly progressive disease of the motor nerves, affecting first his right arm and leg and then his other side.

Activity 4: Memory-enhancing of Lexical Chunks

How to teach words:

Example:

They say a cat has nine lives, and I am inclined to think that possible since I am now living my third life and I'm not even a cat.

am inclined to

Definition: be likely or tend to 倾向于

Synonymy: inclined=likely

Co-text: be+ inclined + to do sth

Contextualization: (make a sentence)

In the first instance I was inclined to refuse, but then I reconsidered.

He was inclined to give them a free hand.

Association: adj inclinable; n inclination

How to teach long and complex sentences:

Example:

Here hobbled a bitterly disillusioned cripple, a man who held on to his sanity and his wife and his home and his job because of 14 miserable steps leading up to the back door from his garage.

Step 1: break the sentence into several parts based on chunks and sense groups.

Here/ hobbled/ a bitterly disillusioned cripple, a man/ who held on to his sanity/ and his wife/ and his home/ and his job/ because of/ 14 miserable steps/ leading up to the back door/ from his garage.

Step 2: combine grammar knowledge to understand and translate or paraphrase the sentence.

Translation: 这是一个梦想破灭、痛苦失望的残疾人，他跛行着，正是因为有了这条从车库通向后门的可怕的 14 级台阶，他才能保持理智、陪伴妻子、维护家庭、坚持工作。

Paraphrase: Painfully and bitterly, a disabled man hobbled around here. Owing to the 14 miserable steps leading up to the back door from his garage, the man could keep up to his sanity and his wife and his home and his job.

Activity 5: Practice activities

Cloze: ask students to fill in the blanks based on the text's content.

Example:

They say a cat has nine lives, and I _____ (倾向于) think that possible _____ I am now living my third life and I'm not even a cat. My first life began _____ (在一个清晰寒冷的天) in November 1934, when I _____ as the sixth of eight children of a _____ (农民家庭). My father died when I was 15, and we had a hard struggle to _____ (谋生). As the children grew up, they married, leaving only one sister and myself to support and _____ (照顾) Mother, who _____ in her last years and died while still in her 60s. My sister married _____ (不久之后), and I _____ (跟随) within the year.

This was when I began to enjoy my first life. I was very happy, _____ (身体很好), and quite a good athlete. My wife and I became the parents of two lovely girls. I had a good job in San Jose and a beautiful home up the peninsula in San Carlos. Life was a pleasant dream. Then the dream ended. I _____ (患病) a slowly progressive disease of the motor nerves, _____ first my right arm and leg and then my other side. _____ began my second life.

Answer keys: am inclined to; since; on a clear cold day; arrived; farming family; make a living; care for; became paralyzed; soon after; followed her example; in excellent health; became afflicted with; affecting; Thus

Retelling: Ask students to retell the author's first and second life. The teacher puts key lexical chunks on the screen.

Example:

Born: My first life began...

Family situation: my father died, struggle to make a living, mom paralyzed

Grow up: my sister and I got married

Enjoy my first life: excellent health, lovely kids, a good job; then dream ended; afflict with a disease.

Role-play

Example:

Three people in a group, one plays the author, one plays the little girl, and another plays the old man to show the scene that how the blind old man helped the author change the tire on a rainy and dark night.

Activity 6: Evaluation

Students work in pairs, and give the lexis list to them to check the newly learned lexical chunks.

Example:

Form	Pronunciation	Speak it out	
	Spelling	inclined	
Meaning	Form and meaning	倾向于	
	Referential meaning	be likely to	
	Associations	Derivatives	inclination
		Synonyms/Antonyms	likely/tend
Use	Grammatical functions	be inclined to do something	
	Collocations	/	
	Register	written	

Activity 7: Dictation

The teacher speaks out Chinese meanings of polywords and institutionalized utterances, and students need to write the equivalent English, because the meanings and structure of these two kinds of lexical chunks are almost invariable. As to the collocations, the teacher speaks out the main word or says the Chinese meaning, and students are required to write its collocations.

Example:

T: 暗中通知某人

Ss: tip somebody off

T: impression

Ss: distinct impression

CURRICULUM VITAE

Yao Zhong was born on July 30, 1996 in Hunan, China. She received a B.A. in English Education from Hunan First Normal University in 2018. In the same year, she began to study for a M.A. degree in English Language Studies at the School of Foreign Languages, Institute of Social Technology, Suranaree University of Technology, Thailand. Her research interests include EFL teaching and learning, lexical approach, reading instruction, and vocabulary teaching.

