The Use of Jigsaw Cooperative Learning Strategy to Enhance English Reading Comprehension for Higher Vocational College Students in Sichuan Province, China

Yang Yu

A Thesis Submitted in Partial Fulfillment of Requirements for
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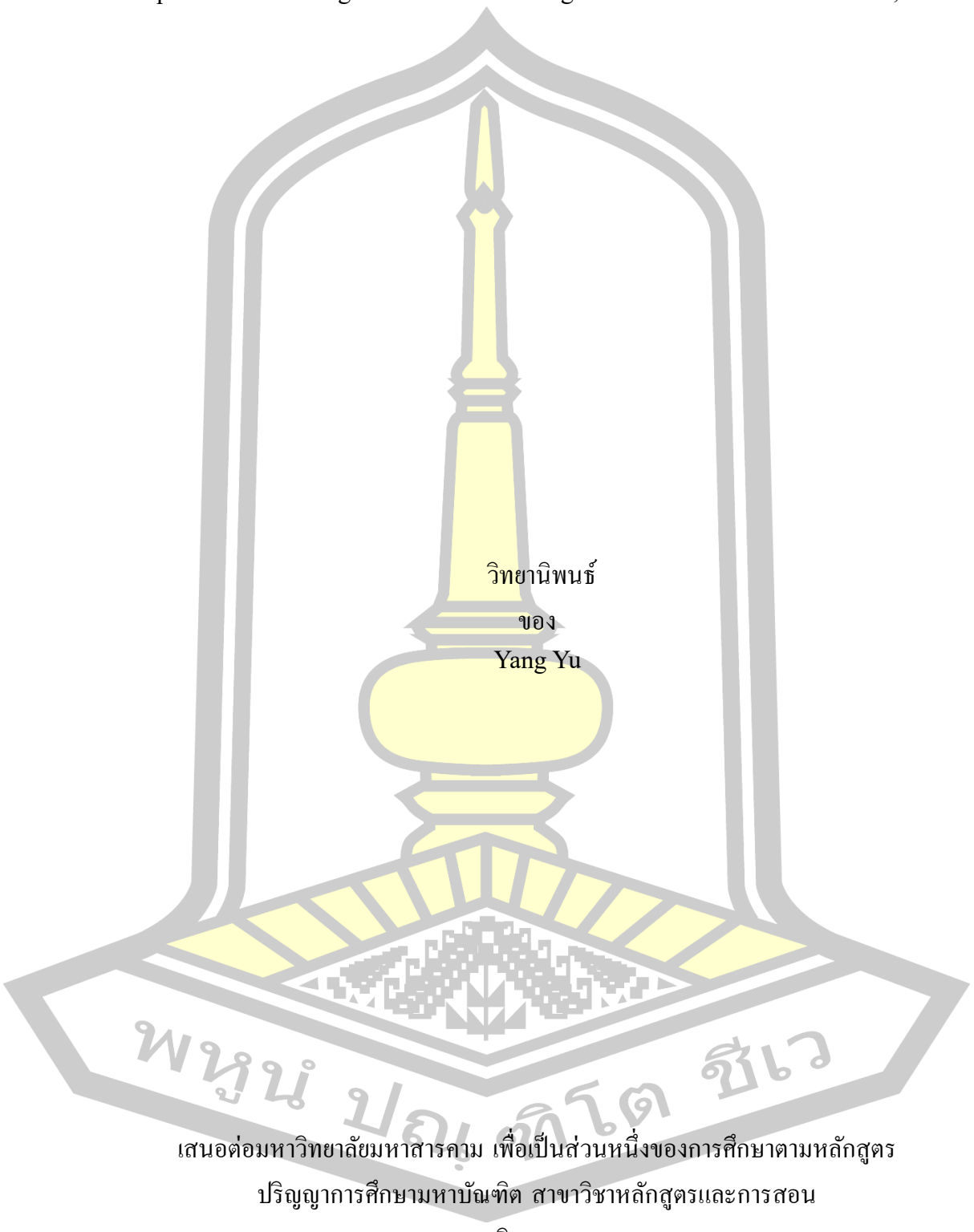

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ABSTRACT

Students in higher vocational colleges generally face difficulties in English reading comprehension, which not only affects their academic learning but also impacts their career development. Therefore, the objectives of this study are as follows: 1. to enhance English reading comprehension of higher vocational college students by using Jigsaw in Cooperative Learning; 2. to compare English reading comprehension of students in the experimental class before and after using Jigsaw in Cooperative Learning. This study is a quantitative research that employed stratified random sampling to select 60 students from Sichuan Vocational College of Health and Rehabilitation as participants, divided into an experimental class (30 students) and a control class (30 students). The experiment lasted for eight weeks, with 80-minute English reading sessions each week. The research instruments included a pre-test, a post-test, and lesson plans. Data were collected before and after the experiment, and statistical analysis was conducted using independent-sample t-tests and paired-sample t-tests.

The results showed that the post-test scores of the experimental class, which implemented Jigsaw in Cooperative Learning (mean = 180.46), were markedly higher than those of the control class that used the traditional teaching method (mean = 140.11, $p < 0.001$), indicating that Jigsaw in Cooperative Learning can improve the English reading comprehension of higher vocational students. Furthermore, the post-test scores of the experimental class was significantly higher than its pre-test scores (mean = 127.45, $p < 0.001$), confirming the effect of Jigsaw in Cooperative Learning on enhancing students' English reading comprehension, providing a practical reference for English teaching in higher vocational colleges.

Keyword : Jigsaw in Cooperative Learning, English Reading Comprehension, Higher Vocational College Students

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CHAPTER I

INTRODUCTION

This chapter presents the background, research objectives, research hypotheses, scope of the study, and definitions of key terms used in this research. This study aims to explore the effect of Jigsaw in cooperative learning on enhancing English reading comprehension of higher vocational college students.

Background

With the deepening of globalization, the importance of English as an international common language has become more and more prominent in the field of vocational education. Along with the development of the society, the requirements for English proficiency of higher vocational students are also increasing. English learning covers five core skills: listening, speaking, reading, writing and translating, among which reading occupies a pivotal position. Language input mainly relies on listening and reading, and since listening is instantaneous and limited by time and space, Chinese students mainly rely on reading to improve their English.

Reading, as a core skill in English learning, not only helps students acquire language knowledge but also plays an irreplaceable role in enhancing their overall language proficiency. Statistics show that over half of the English knowledge students acquire comes through reading (Cheng Shilu & Zhang Guoyang, 1995). Carrel (1989), in her article *Can Reading Strategies be Successfully Taught*, also highlighted that reading is particularly important in language learning compared to other skills. *Higher Vocational Education: English Curriculum Standards (2021 Edition)* set basic requirements for higher vocational students' English reading abilities, stating that students should be able to understand the main content, extract key information, distinguish between facts and opinions, and make simple inferences; they should also be able to recognize the structure and logical connections within texts.

Reading is not merely a process of inputting language information; it is also a test of students' reading comprehension. Simply increasing the amount of reading does not guarantee effective learning; the key factor that truly influences language skills is

whether students can comprehend the materials they read and accurately grasp the information within.

In the context of vocational college English teaching, students' reading comprehension are crucial for their academic development and future career paths. However, vocational college students typically encounter challenges related to inadequate foundational knowledge, limited vocabulary, and a deficiency in complex sentence structure and grammar mastery. These issues lead to difficulties in reading comprehension, especially when they encounter the reading sections of standardized exams such as the Upgrade from Junior College Student to University Student Exam. In traditional English reading instruction, teachers typically take a dominant role in the classroom, primarily teaching by reading aloud vocabulary and translating texts, with a focus on explaining vocabulary and grammar. Students mostly listen passively, receiving information without much engagement. This approach is overly rigid and abstract, lacking classroom interaction, which limits the effectiveness of English reading instruction and neglects the development of students' reading skills, thereby restricting their improvement in reading comprehension (Zou Dejuan, 2023). Consequently, this traditional method has limited effectiveness in helping students tackle complex texts or enhance their overall reading comprehension.

Meanwhile, Cooperative Learning, a constructivist-based teaching method, has gained increasing attention and importance in vocational education. *Higher Vocational Education: English Curriculum Standards (2021 Edition)* clearly state that English instruction should be student-centered, emphasizing autonomous learning, cooperative learning, and inquiry-based learning to promote students' overall development. In this context, teachers need to organize instruction based on students' cognitive characteristics and proficiency levels to enhance their language application skills, particularly in English reading comprehension. Cooperative Learning is considered an effective approach to increase students' motivation and language proficiency. It emphasizes cooperation and interaction among students, guiding them to construct knowledge through group collaboration and completing learning tasks. By incorporating group discussions and task distribution, this method helps students make progress in reading comprehension and language application (Wang, 2021).

Cooperative Learning focuses on positive interdependence and individual accountability, where, through face-to-face interaction, students receive feedback and support from peers, further enhancing overall learning outcomes (Lucas et al., 2022).

Jigsaw is a typical cooperative learning strategy that has gained significant success and attention in various educational contexts over the past few decades. This theory was originally proposed by social psychologist Elliot Aronson (1978), which divides knowledge into different parts and requires students to be responsible for learning specific parts within a group, thereby promoting comprehensive understanding among all group members through sharing knowledge.Woolfolk (2014) asserts that Jigsaw is the most suitable cooperative learning technique for learning written materials, as it enhances the interaction between learners and the text. Furthermore, it serves to reinforce student engagement and responsibility. By dividing learning material into sections and appointing each student as a specialist in a specific area, students can enhance their knowledge acquisition while facilitating their comprehension and analysis of complex texts (Rahmi et al., 2024). The evidence from research studies indicates that Jigsaw significantly impacts students' reading comprehension, particularly in extended reading passages and reasoning questions (Buulolo, 2024).

Moreover, Jigsaw offers students a valuable opportunity to expand their learning beyond the constraints of individualistic approaches. Through collaborative discussions with group members, students can not only focus on the content they are responsible for but also deepen their understanding of the overall text through communication. This method is particularly effective in handling complex reading materials and enhancing students' vocabulary acquisition. The research indicates that the implementation of Jigsaw significantly enhances students' reading comprehension and facilitate the acquisition of a more robust vocabulary and an in-depth understanding of grammatical structures (Haryudin & Argawati, 2018; Hoerunnisa, N., & Suherdi, D, 2017).

Although previous studies have shown that the Jigsaw strategy has achieved significant success in various educational contexts, there are still relatively few applied studies on higher vocational students. Based on this background, this study focuses on the English reading comprehension of vocational college students, aiming to explore

the effectiveness of Jigsaw in Cooperative Learning within this specific educational context.

Significance of the Study

1. The effectiveness of the Jigsaw in Cooperative Learning on enhancing English reading comprehension among higher vocational students is validated using the standardized quantitative tool, College English Test Band 4 (CET-4), extending the applicability of the Jigsaw strategy across different educational contexts.

2. This study provides positive implications for English teaching practice, particularly for English teachers in higher vocational institutions. By validating the effectiveness of the Jigsaw in English reading instruction, the findings offer teachers new strategies in teaching to help students better improve their reading comprehension. Teachers can apply the core principles of the Jigsaw strategy in their practice, using cooperative learning activities to encourage active participation and interaction among students, thereby enhancing classroom teaching effectiveness.

Research Objectives

1. To enhance English reading comprehension of higher vocational college students by using Jigsaw in Cooperative Learning.

2. To compare English reading comprehension of students in the experimental class (EC) before and after using Jigsaw in Cooperative Learning.

Research Hypothesis

1. Jigsaw in Cooperative Learning can enhance English reading comprehension of higher vocational college students.

2. The English reading comprehension post-test scores for students in the experimental class are higher than their pre-test scores after using the Jigsaw.

Scope of the Research

1. Population and Sample

The population of this study consists of 1,640 first-year non-English major students at Sichuan Vocational College of Health and Rehabilitation.

The sample group for this study first-year non-English major students from Sichuan Vocational College of Health and Rehabilitation. A stratified random sampling method was used based on the English final exam scores from the previous semester. 60 students were selected to participate in the experiment and were divided into an experimental class and a control class, with 30 students in each. The experimental class was taught using the Jigsaw strategy, while the control class followed the traditional teaching method.

2. Research Design

This study adopts a comparative experimental research design, dividing participants into an experimental class and a control class. The research started on May 24, 2024, and ended on July 25, 2024. The teaching experiment lasted for eight weeks, from May 29 to July 17, with 80 minutes per week. The primary aim is to evaluate whether Jigsaw in Cooperative Learning enhances students' English reading comprehension by comparing the pre-test and post-test scores of both the experimental and control classes. Additionally, the study further validates the effectiveness of this strategy by comparing the pre-test and post-test scores within the experimental class. For this purpose, the reading comprehension section of CET-4 is used as the research instrument, and quantitative analysis is conducted based on pre-test and post-test data to assess the effectiveness of Jigsaw in Cooperative Learning.

3. Research Tools

In this study, there are two main research tools:

(1) Reading comprehension pre- and post-tests: the reading comprehension section of College English Test Band Four(CET-4) was selected as the test material. It includes Banked Cloze, Matching, and Reading in-depth, which can comprehensively assess students' reading comprehension.

(2) Lesson plans: To effectively implement this study, lesson plans were designed based on the *Higher Vocational Education: English Curriculum Standards (2021 Edition)*, taking into account the students' situation and the teaching objectives. These plans not only provide a clear framework for teaching activities but also assist teachers

in organizing tasks effectively, ensuring that the teaching process runs smoothly and achieves the desired outcomes.

4. Variables

Independent variable: Jigsaw, Cooperative Learning

Dependent variable: English Reading Comprehension

Definition of Key Terms

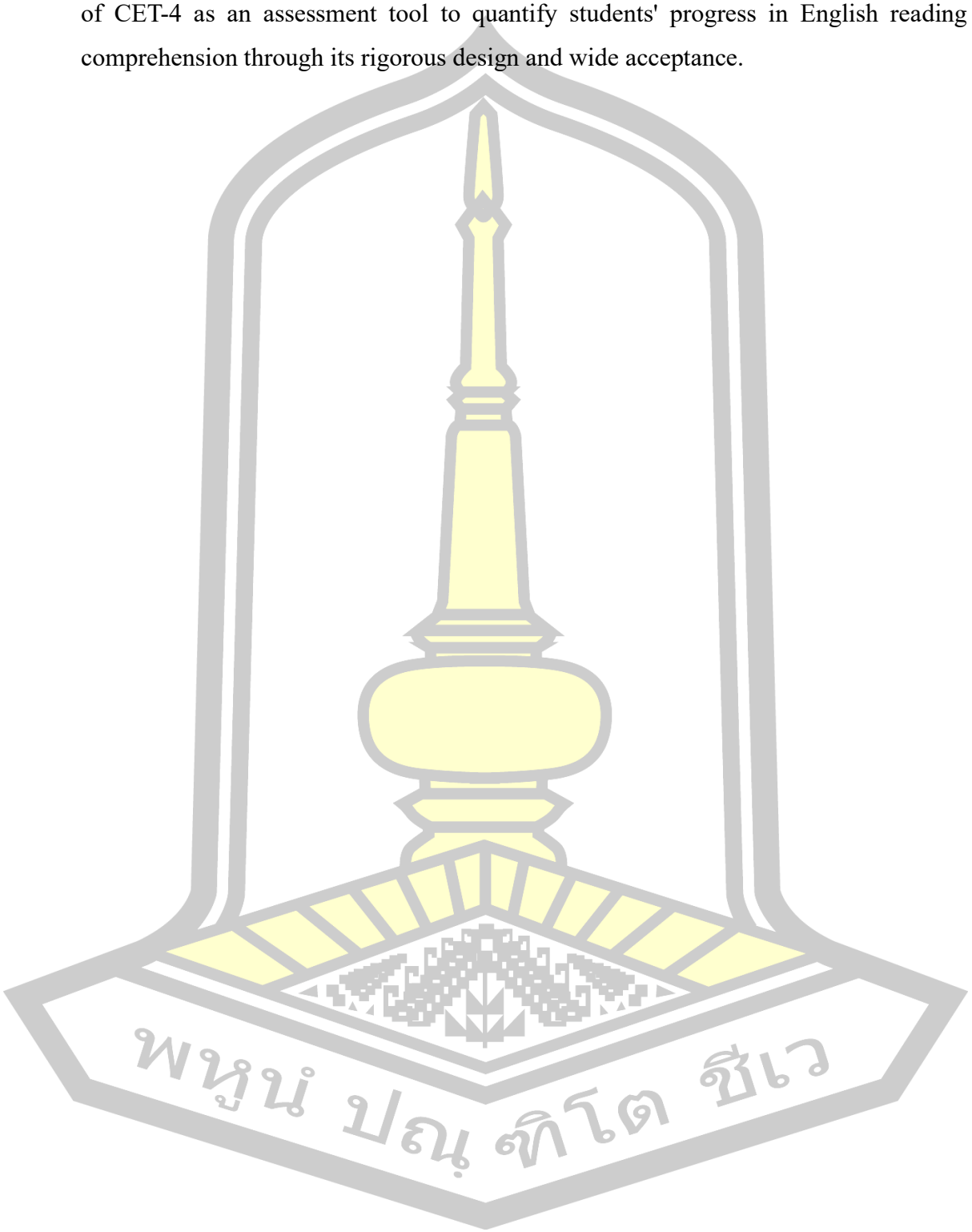
1. Cooperative Learning is a teaching method that emphasizes students working in groups to accomplish learning tasks. Each student plays a specific role in the group and works together to achieve the learning objectives through cooperation and division of labor. Cooperative Learning aims to enhance students' learning and cognitive abilities through interactions and discussions among group members, encouraging individual participation and collective progress.

2. Jigsaw is an instructional technique based on the cooperative learning pioneered by American psychologist Elliot Aronson. The technique divides the learning material into sections, and each student is responsible for one of the sections. Subsequently, students work in groups to integrate information from their mastered parts to better understand the overall content. The Jigsaw reinforces students' sense of responsibility and engagement through the division of labor while enhancing mastery and comprehension of complex material.

3. English Reading Comprehension refers to the process in which students accurately comprehend the main idea, detailed information, inferred content, and language structures when reading an English text. It requires students to have a solid grasp of vocabulary and grammar and involves a deep analysis of text structure, author's intention, and underlying meaning.

4. CET-4 Reading Comprehension: College English Test Band 4 (CET-4) is a nationwide standardized English proficiency test designed to assess students' overall English proficiency in listening, speaking, reading, and writing. The reading comprehension section of CET-4, as a core component, primarily tests students' overall understanding of English texts, including their grasp of textual details, reasoning, and

analysis of language structures. This study employs the reading comprehension section of CET-4 as an assessment tool to quantify students' progress in English reading comprehension through its rigorous design and wide acceptance.



CHAPTER II

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

This study aims to explore whether Jigsaw in Cooperative Learning can effectively enhance English reading comprehension among higher vocational students. This chapter provides a detailed literature overview and conceptual framework related to this study. Specifically, it covers the following parts:

1.Cooperative Learning

2.Jigsaw

3.English Reading Comprehension

4.Studies on Jigsaw in English Reading Comprehension

5.Theoretical Basis

6.Related Research

7.Summary

8.Conceptual Framework

Cooperative Learning

1. Definition of Cooperative Learning

Cooperative Learning is an interactive teaching method based on sociocultural theory, which emphasizes that students work in groups to accomplish tasks. Cooperative learning has not formed a universal definition since its development. Scholars, both domestic and international, have proposed various perspectives on the concept of cooperative learning. Professor Slavin (1995) from the United States is one of the leading figures in cooperative learning. He defines cooperative learning as a classroom instructional method where students are responsible for their own learning as well as the learning of other members within the group, and they earn individual rewards based on the performance of the entire group. Students efficiently complete

learning tasks through communication and negotiation with their group members. This cooperation involves not only collaboration among students but also communication between teachers and students. Dr. Sharan, S. (1990) of Tel Aviv University, Israel, a renowned educational psychologist and an important representative of cooperative learning, defines cooperative learning as a general term for a set of methods that organize and facilitate classroom instruction. The essential characteristic of all these methods is cooperation among students during the learning process. In the classroom, peer cooperation is organized through group activities, usually composed of 3-5 students. The group serves as a social organizational unit where students engage in learning through peer interaction and communication, as well as through individual study. The primary founders of cooperative learning in the United States, Johnson, R.T. & Johnson, D.W. (1999), describe it as a teaching approach that uses small groups to maximize the learning progress of both oneself and others. Their theory emphasizes the importance of positive interdependence among group members, stating that one can only succeed by relying on and collaborating with others. They also stress the concept of "face-to-face promotive interaction," encouraging teachers to provide as many opportunities as possible for group members to support one another. In China, one of the most in-depth studies on cooperative learning was conducted by the renowned scholar Wang Tan (2002). He defines cooperative learning as an instructional activity where heterogeneous learning groups are used as the basic form. It systematically utilizes the interaction among dynamic teaching factors to promote student learning, evaluates performance based on group achievements, and collaboratively achieves educational goals. Another Chinese education scholar, Wang Hongyu (1993), defines cooperative learning as the integration of students' emotional and cognitive development, using cooperative principles within heterogeneous groups to learn together. The learning process involves communication among individuals, facilitating cognitive development.

From the definitions provided by these scholars, it can be seen that cooperative learning is a teaching approach that emphasizes students completing learning tasks through group collaboration. Each student plays a specific role within the group, working together through cooperation and division of tasks to achieve learning goals.

2. Advantages of Cooperative Learning

Cooperative learning method, as an effective teaching method, has the advantage of being interactive and participatory, which can promote cooperation and communication among students. It emphasizes on helping students to actively participate and construct knowledge in the classroom through group discussion and task division to promote skill enhancement (Wheaton et al., 2024). Particularly in language learning, cooperative learning provides a diverse environment where students can enhance their language skills through interaction, fostering a sense of teamwork and responsibility, which is crucial for their holistic development.

Research indicates that cooperative learning not only increases students' classroom engagement but also effectively enhances their independent learning skills (Katgeri, 2022). Through cooperative learning, students receive peer feedback, which is particularly important in language learning, as it helps them refine pronunciation, grammar, and other language details, further improving their practical language skills During cooperative learning, students face challenges together in a supportive and highly interactive environment, creating a positive learning atmosphere. Studies have shown that such an environment effectively reduces students' learning anxiety, enhances their practical language skills and self-confidence in expression, thereby improving overall learning outcomes (Liu Zhiguo et al., 2018).

In terms of English reading comprehension, Cooperative Learning has also shown significant effectiveness in enhancing students' reading skills. Slavin (1995) noted that Cooperative Learning promotes a deeper understanding of the learning content through interaction and discussion among group members. In the process of task division and discussion, students gain a more comprehensive learning experience and knowledge integration. Johnson & Johnson (1999) further demonstrated that Cooperative Learning not only improves students' academic achievements but also cultivates their critical thinking and problem-solving skills, which are crucial for enhancing reading comprehension. Additionally, Gillies (2007) pointed out that Cooperative Learning encourages students to engage in in-depth discussions and exchanges within the group through interaction and knowledge sharing. The feedback from peers allows for a more

thorough understanding of the learning content. Cooperative Learning also enhances students' analytical and inferential skills during group discussions, enabling them to better integrate and apply existing knowledge when tackling complex problems. This model of interaction and communication not only helps students grasp learning materials more effectively but also facilitates deeper learning outcomes through collaboration. The above studies demonstrate that Cooperative Learning provides comprehensive support for students in understanding complex texts, thereby effectively improving overall reading comprehension and showcasing its unique advantages in language learning. Yang Bing's (2013) research further revealed that Cooperative Learning, compared to traditional teacher-centered methods, can compensate for the weaknesses of vocational students in language foundations and technical vocabulary, thus improving their English reading performance. Furthermore, Shen Bei (2022) indicated that applying Cooperative Learning to vocational English reading instruction helps shift the roles of teachers and students, transforming students from passive knowledge receivers into active learning participants, which in turn develops their English skills. Huang Wei's (2014) study also found that Cooperative Learning effectively promotes English reading instruction for vocational students, with students at all levels significantly improving their reading comprehension through peer interaction and mutual assistance. Through this approach, students can overcome the limitations of individual learning and gain broader knowledge input through group interaction.

Jigsaw

1.Origin and Development

Jigsaw is a cooperative learning strategy proposed by Elliot Aronson in the 1970s, initially aimed at reducing racial conflict and facilitating cooperation between students of different races. The basic idea of Jigsaw is to divide the learning content into parts, where each student is responsible for one part of the content and develops a comprehensive understanding of the overall content through group discussion and sharing. It motivates students to learn the material in depth by having each student take

on a different learning task and teach what they have learned to other group members, ultimately leading to the integration and sharing of knowledge (Rahmi et al., 2024).

Jigsaw has existed for over forty years and has gone through four generations known as Jigsaw I, Jigsaw II, Jigsaw III, and Jigsaw IV.

In the early 1970s, the United States had just abolished racial segregation, and students from different ethnic backgrounds were appearing together in the same classroom for the first time. However, the long history of racial division led to a lack of communication and trust among students of different ethnicities, making it difficult for them to get along and, in some cases, even causing hostility, which disrupted normal teaching activities. In response to this situation, Aronson and his colleagues developed the Jigsaw method in 1978, which is commonly referred to as Jigsaw I by scholars. The main steps of Aronson's Jigsaw method are as follows: students are divided into groups of 5-6, and a learning task is divided into several parts or segments, with each student responsible for mastering one part. Then, students from different groups who are responsible for the same part of the task come together to form an "Experts Group," where they study and master their assigned segment collaboratively. After that, all students return to their original groups and teach the content they have learned to their group members. Finally, a test is conducted at the end of the learning unit to assess each student's mastery of the task (Huang Juan & Fu Lin, 2010). Jigsaw I successfully established a cooperative and harmonious learning environment where students depended on each other for support. However, since students are only responsible for a particular section, their understanding of the overall content may not be comprehensive.

In 1987, Slavin, R. E. improved upon Aronson's work and proposed Jigsaw II. Firstly, the number of group members was reduced to 4-5. Secondly, two additional steps were introduced: first, before grouping, the teacher provides an overview of the learning task to ensure that students have a comprehensive understanding of the entire content before taking on specific tasks. This helps students grasp the overall structure while allowing them to delve into details. The second step involves the introduction of STAD (Student Teams Achievement Divisions) to promote intergroup competition. Jigsaw II not only retains the benefits of group cooperation but also enhances student

engagement and their comprehensive understanding of tasks through the introduction of overall content and team competition mechanisms.

Jones and Steibrink (1988) added a "cooperative review" component to Jigsaw II before the final test, in which learners in the original group work together and help each other to review the material in preparation for the test (Hu Jifei, 2009). After the "expert groups" complete their discussion, the teacher provides targeted feedback and gives students an opportunity to review and consolidate their learning content. This step helps students further enhance their understanding of the material after sharing and collaborative learning within their groups. Jigsaw III not only emphasizes cooperation among students but also highlights the teacher's guiding role. Through timely feedback and support, the teacher ensures that students achieve maximum understanding and progress during the learning process.

In 2000, Holliday Dwight C (2000) continued to improve on Jigsaw III and developed Jigsaw IV in terms of multiple dimensions, such as the degree of accuracy of students' mastery of knowledge and the provision of supplemental instruction by the teacher. After grouping, the teacher provides a detailed explanation of the task to ensure that students clearly understand the learning objectives. Following the discussion in the expert groups, a test is added to assess the students' knowledge acquisition. Then, after students share their knowledge within their original groups, an internal group test is conducted to further evaluate their understanding of the overall content. Finally, the teacher summarizes and provides additional explanations to help students integrate the knowledge more comprehensively.

Through the development of these four stages, Jigsaw has evolved from a simple task allocation model into a more refined and comprehensive instructional tool. Each generation's improvement aims to enhance student engagement, interaction, and comprehensive understanding of the content. In summary, the core characteristics of Jigsaw include: students acting as teachers in the classroom, each taking responsibility for different tasks, and only by completing their individual parts can the overall task be accomplished; the classroom centers around students, who actively participate through group discussions and collaboration; the teacher shifts from the traditional role of leader

to a supporter and facilitator, providing necessary feedback and assistance to ensure the achievement of learning objectives.

2. The Advantages of Jigsaw

One significant advantage of Jigsaw is that it cultivates students into "experts" on different parts of the material by having each student focus on a specific section. This role assignment encourages students to engage in deep learning of their designated portion and further enhances their understanding of the learning material by teaching their group members. Research shows that this student-centered cooperative learning strategy effectively facilitates knowledge construction as students deepen their mastery of the content by teaching others (Aronson, 1978). Jigsaw emphasizes individual accountability, motivating students to participate more actively in learning and take on a more significant role in group collaboration.

In addition, Jigsaw helps students make progress in language learning through knowledge sharing and teamwork, and Buulolo's (2024) study showed that Jigsaw significantly improved students' vocabulary and grammatical mastery, especially in the repeated use and explanation of complex vocabulary and grammatical rules, helping students to deepen their understanding of the language. At the same time, the students, as "experts" in the group, not only consolidated their knowledge but also helped other members understand the same topics, thus contributing to the overall learning progress of the group.

Jigsaw is particularly well suited to working with complex reading materials. When the text is complex and contains multiple levels of content, Jigsaw works by dividing the reading material into various parts, allowing students to take responsibility for a particular part, and then working in small groups to integrate the parts to develop a holistic understanding of the text (BR & Kuning, 2023). This collaborative learning approach not only helped students analyze the text in depth but also improved their performance in handling logical reasoning and integrating information. Syadza & Astuti's (2024) study noted that Jigsaw excelled in complex materials and that students could comprehend the text's overall structure.

English Reading Comprehension

1. Components of English Reading Comprehension

English Reading comprehension is a complex cognitive process that involves interaction between the reader and the text. Carrell and Eisterhold (1983) viewed it as a process in which the text interacts with the reader's background knowledge, suggesting that reading comprehension involves not only interpreting the surface meaning of the text but also how the reader uses his or her own knowledge and experience to make deeper understandings and inferences about the text. Hu Chundong (1996) suggested that reading comprehension is multilevel and multifaceted. Koda (2007) emphasized that reading comprehension is a process in which readers extract and integrate information from a text and make connections between old and new information, further revealing the importance of information in reading comprehension.

Scholars' studies show diversity in the components of reading comprehension. Ge Bingfang (2015) proposed that reading comprehension includes information storage, information integration, logical thinking, critical thinking, and reading strategies. Liu Han (2016) further proposed four elements of reading comprehension: summarizing the main idea, judging, guessing words, and detail comprehension. Li Yaqiong (2018) also summarized four aspects of reading comprehension: detail comprehension, generalization, judgment, and guessing vocabulary words. Rosalind (1941) analyzed the three essential elements constituting reading comprehension through the factor analysis method: word sense comprehension, detail perception, and logical relationship sorting. Davis (1942), on the other hand, proposed nine reading skills involving seven kinds of reading comprehension, including comprehending word meaning in context, analyzing text structure, summarizing the main idea of the text, extracting detailed information, identifying the author's affective attitude, and reasoning judgment. Duan Huifen and Jiang Zicheng (2000) pointed out that word meaning comprehension, vocabulary identification, understanding sentence structure and meaning, information screening, and reasoning judgment are essential to reading comprehension. Guo Baoxian and Zhang Jenzhong (2016), on the other hand, classified reading comprehension into six levels from the dimension of cognitive process and level:

information perception and recognition, information localization and extraction, information comprehension and integration, information analysis and reasoning, information appreciation and evaluation, and information transfer and application.

At the same time, *Higher Vocational Education: English Curriculum Standards (2021 Edition)* also set out precise requirements for English reading comprehension for higher vocational students, stating that students should be able to comprehend the main content, access critical information, distinguish between fact and opinion, and make simple inferences, as well as recognize the chapter structure and logical associations of common parts of speech in the workplace. These standards emphasize several key components of reading comprehension that constitute important aspects of English reading comprehension.

Based on the above literature and standards, different scholars have varied perspectives on categorizing reading comprehension. However, a certain consensus has been reached in some aspects, which primarily includes the acquisition and integration of information, understanding of vocabulary and language structures, grasping both textual details and overall structure, as well as logical reasoning and critical thinking. Drawing on these studies, and according to the *Higher Vocational Education: English Curriculum Standards (2021 Edition)* and *Syllabus for College English Test —Band Four(CET-4) (2016 revised edition)*, English reading comprehension in this study refers to students accurately understanding the main ideas, detailed information, inferred content, and language structures when reading English texts. Reading comprehension not only involves mastery of vocabulary and grammar but also requires analysis of the text structure, author's intent, and implicit meanings. It comprises three key components:

Vocabulary Comprehension refers to the students' understanding and use of vocabulary in the process of reading, including the mastery of the basic meaning of words as well as the speculation of word meanings in different contexts. Vocabulary Comprehension is the foundation of English reading and directly affects students' understanding of the text's overall meaning. Accurate comprehension of vocabulary is fundamental in complex academic texts. Elsayed (2023) suggests that students' reading

comprehension can be effectively enhanced through repeated practice and vocabulary application in various contexts in the process of vocabulary comprehension.

Extensive Reading Comprehension refers to students' use of skimming and scanning to extract information from a passage. Through rapid reading, they can grasp the article's main idea or central theme and locate specific information within the text. Kintsch's (1998) Construction-Integration Model suggests that inferencing ability in extensive reading plays a crucial role in students' processing of information and overall comprehension of the text. By understanding the overall structure of the article and identifying key information, readers can more quickly and accurately comprehend the main content of the text. In the EFL (English as a Foreign Language) context, mastering information extraction techniques is essential for improving reading comprehension. By combining scanning and skimming techniques, students can more effectively identify and extract key information from the text. This not only improves reading efficiency but also enhances their understanding of the overall content (Fatmawati, 2014).

Intensive Reading Comprehension refers to the process of reading in which students analyze the text in depth, such as comprehending the main idea and important details, synthesizing and analyzing, reasoning and judging, and guessing the meaning of words according to the context. It focuses on the excavation of details and the development of reasoning ability. Students need to analyze and infer the implicit information in the text and the logical chain of argumentation based on a thorough understanding of the text. Syadza and Astuti's (2024) study showed that in-depth reading requires students to use their reasoning and analytical skills to comprehend the author's unspoken ideas or conclusions based on known information. Kintsch's (1998) study further emphasized the role of inference in the reading process and the role of inference in the reading process. 's study further emphasized the importance of reasoning in comprehending complex texts, through which readers can fill in information gaps in the text.

2. Assessment of English Reading Comprehension

Urquhart and Weir (2014) in their book *Reading in a Second Language: Process, Product and Practice* provide a detailed account of a wide range of reading comprehension assessment methods, from traditional testing methods to task-based assessment, depending on the purpose of the assessment. For example, Multiple-choice Questions are commonly used to assess how well candidates extract specific information and make inferences from a text, while Banked Cloze evaluate their vocabulary knowledge and understanding of the context. In addition, Matching Tasks and Ordering Tasks are used to measure students' understanding of text structure and information categorization. These methods provide multidimensional assessment tools for second language learners.

J.C. Alderson (2000) further emphasizes the practical application of these assessment methods in his book *Assessing Reading*, especially in common assessment tasks such as Multiple-choice Questions, Banked Cloze, and Matching Tasks. He discusses the use of these items in the classroom and in large-scale tests and points out their advantages for measuring students' reading comprehension.

Grabe and Stoller (2011) in *Teaching and Researching Reading* also discuss a variety of methods used to assess reading comprehension, mainly through standardized tests to measure student comprehension. Standardized testing has high reliability and validity and can be widely used in large-scale assessments. It provides consistent, objective, and reliable assessments that help educators and researchers evaluate reading skills, track progress, and identify areas for improvement (Yulianto et al., 2020). The use of standardized tools ensures comparability across different backgrounds and populations, providing an important basis for educational planning and decision-making.

In China, College English Test Band 4 (CET-4) provides a reliable and valid assessment of English proficiency as a large-scale, criterion-referenced test. Wang (2022) noted that the CET has high reliability and validity and performs well in measuring students' reading comprehension in English. The reading comprehension portion of the CET provides a comprehensive measure of students' reading

comprehension through the text's multidimensional assessments, such as Banked Cloze, Matching, and Reading in Depth, which provide a comprehensive measure of students' reading comprehension. Li Yang(2019) emphasized the fairness and validity of the CET reading passages, noting that the test can objectively assess students' English proficiency and align with real-world language use.

Based on the above research, this study employs the reading comprehension section of the CET-4 exam as the assessment tool to evaluate students' reading comprehension comprehensively. These question types not only encompass the traditional assessment methods mentioned by Urquhart and Alderson but also systematically measure students' reading comprehension through standardized testing, providing reliable data support for this study.

3. The Current Situation of English Reading Teaching and Learning in Higher Vocational Education

The English reading instruction in higher vocational education tends to be monotonous, with teachers dominating the classroom and primarily using lecture-based methods. These typically involve leading students through word pronunciation, translating texts, and focusing on vocabulary and grammar explanations. This rigid, abstract teaching approach lacks vitality and fails to create an engaging language learning environment, leading to students passively receiving information rather than actively engaging in critical thinking (Zou Dejuan, 2023). Such a method is often ineffective in enhancing students' overall reading comprehension, especially when dealing with complex, extended texts, as it struggles to develop their reasoning and analytical skills. Rusmawan et al. (2024) highlight that while traditional teaching methods have certain advantages in conveying fundamental knowledge, the lack of interaction and collaboration hinders students from deeply understanding the deeper meanings and logical structures of complex texts. Furthermore, English reading instruction in higher vocational education often follows a top-down approach, lacking systematic guidance in developing students' overall comprehension and strategic reading skills. This method fails to cultivate effective English reading strategies,

leaving students with inadequate text analysis skills and a limited ability to perceive texts as cohesive units (Liang Shengnan, 2019).

Students in higher vocational colleges commonly face significant challenges in English reading. Firstly, a limited vocabulary is a major factor affecting many students' reading comprehension (Jiang Qinwei, 2013). Insufficient vocabulary not only slows down their reading speed but also impairs their overall understanding and reading experience. Secondly, students often read at a slow pace and lack effective reading strategies. Many students tend to analyze texts word by word and sentence by sentence, neglecting the connections and logical structures between different parts of the text. As a result, they struggle to grasp the author's intentions accurately. This word-for-word reading habit often leads to fragmented understanding of the passage; even after finishing the entire text, students find it difficult to grasp the overall content. Such poor reading habits not only reduce reading efficiency but also limit the depth and breadth of reading, affecting their overall comprehension and mastery of the text (He Xia, 2013).

Studies on Jigsaw in English Reading Comprehension

Jigsaw effectively addresses the vocabulary comprehension deficiencies of students through task assignments and group work. By assigning different vocabulary to individual students for study and explanation, students can gain a deeper understanding of the meaning and usage of the vocabulary through collaborative learning. Group discussions further reinforce their mastery of the vocabulary. Li Yaqiong's (2018) research shows that in the process of reading instruction, students who have been trained in Jigsaw can not only accumulate vocabulary, but also infer the meaning of unknown words. This strategy effectively promotes students' flexible use of vocabulary. Botina and Ortiz (2012) also showed that Jigsaw not only has a positive effect on students' overall reading comprehension but also enhances students' implicit vocabulary knowledge during the reading process, thereby promoting the effective learning and use of vocabulary. Through the division of labor and collaboration among group members, students can complement each other's vocabulary knowledge, form a deeper understanding, and improve their ability to use vocabulary flexibly in different contexts. BR & Kuning's (2023) study further suggests that Jigsaw not only helps

students expand their vocabulary, but also improves their long-term retention and practical use of new vocabulary. In particular, when the task required students to explain complex vocabulary in detail, students deepened their understanding of the vocabulary. They enhanced their memory retention by discussing it with their peers. In addition, Jigsaw demonstrated strong adaptability across different educational contexts. In the context of health professions education, a study by Istanto et al. (2022) found that students who adopted Jigsaw showed higher self-confidence in the vocabulary learning process and perceived that they could master vocabulary in a more structured way through task division and group work. By applying Jigsaw to vocabulary teaching, higher vocational students are not only able to effectively tackle the challenges of vocabulary learning but also develop a spirit of teamwork in a collaborative learning environment. This technique fosters deeper understanding of vocabulary meanings through cooperation and sharing, allowing students to flexibly apply vocabulary in real-life contexts, significantly improving their overall vocabulary proficiency and language expression.

In extensive reading, Jigsaw helps students understand the structure and logic of the text faster and deeper by breaking down complex texts into manageable parts. By dividing the text into different parts and each group member is responsible for analyzing a specific part, Jigsaw effectively helps students gradually digest the long and complex content. Dwi et al.'s (2013) study showed that Jigsaw not only improved the reading performance of eighth-grade students, but also helped them overcome the difficulties they encountered during the reading process, so that they were able to more clearly identify the text's main ideas and key details. In addition, the division-of-labor model allows students to focus on their respective parts, and then, through group discussion and information sharing, form an in-depth understanding of the whole article. This division of labor approach not only improves the effectiveness of reading, but also allows students to have a more comprehensive understanding of the overall framework and details of the article. In a study in East Jakarta, Mansur (2019) found that students who used Jigsaw were able to understand and express complex reading material more systematically and clearly, especially in long readings. Jigsaw significantly improved students' efficiency in processing information. Rafika & Suriani's (2024) study also

found that Jigsaw enabled students to grasp a text's main idea more quickly and further deepen their understanding and reasoning about the details of the text in group discussions. This learning method not only accelerated the speed at which students read the text, but also increased the precision with which they analyzed the text's details and logical relationships. This suggests that Jigsaw effectively facilitated students' performance in processing long reading materials by breaking down the reading tasks and discussing them in groups, thus helping them to better understand and analyze complex text structures.

In intensive reading, Jigsaw's strengths are reflected in helping students to analyze the details of a text in depth and to understand the implicit information through reasoning better. Syadza & Astuti's (2024) study showed that Jigsaw encourages students to use critical thinking to reason logically while carefully digging into the details of a text through task assignment and role reversal. This approach effectively improved students' reading accuracy and enabled them to grasp the text's core ideas and logical structure more comprehensively. In addition, Prom-D's (2012) study verified the effectiveness of Jigsaw II in enhancing freshmen's English reading comprehension, especially in comprehending main ideas and making inferential judgments. Jigsaw's task assignment model not only allows students to focus on the parts they are responsible for, but also helps them to grasp the overall content of the text more comprehensively through group cooperation and discussion. This collaborative approach motivated students to analyze the structure of the text more deeply during intensive reading, especially the complex logical relationships and implicit information. Mansur's (2019) study also further proved that students could reason and analyze better through Jigsaw, especially when reading in-depth, and had a deeper understanding of the logical chains and details of the text. This collaboration and division of labor not only made students more efficient when confronted with complex texts, but also improved their performance in analyzing and reasoning. Through the use of Jigsaw, students' performance in intensive reading was significantly improved, especially when dealing with complex texts, analyzing the content in detail, and making inferential judgments, and they were able to understand the deeper meanings of the texts more comprehensively through teamwork. Rafika & Suriani (2024) also found that Jigsaw's

division of labor and cooperative model encouraged students to grasp the core content of the text more quickly and effectively, and to better understand the logic and details of the article through in-depth analysis.

Theoretical Basis

1. Constructivist Theory

The constructivist theory was first proposed by Swiss psychologist Jean Piaget. His theory emphasizes that knowledge is not passively received but is gradually formed by learners through active construction as they interact with their environment (Piaget, 1952). Piaget's cognitive constructivism suggests that learners play an active role in the learning process, continuously adapting to new information and integrating it with their existing knowledge structures to construct new understandings. Constructivism posits that learners actively build their own understanding by engaging with content and reflecting on their experiences. Learners do not merely acquire knowledge from teachers; instead, they actively construct knowledge through interaction with their environment and peers (Jumaah, 2024). This theory emphasizes the learner's active role in knowledge construction, with individual cognitive development closely linked to interactions with the external world (Piaget, 1970). Within the constructivist framework, learning is viewed as a process of forming understanding through reflection and experience.

Vygotsky's sociocultural theory extends the constructivist perspective by emphasizing the importance of social interaction in cognitive development. The concept of "Zone of Proximal Development" (ZPD) proposed by him suggests that learners can achieve cognitive levels that were previously unattainable independently by interacting with more experienced individuals and leveraging social support (Vygotsky, 1978). According to Vygotsky, there are two levels of students' learning development: one is the current level of development in which students accomplish tasks independently through their own efforts and prior experience, and the other is the potential level of development in which tasks are accomplished through the guidance of the teacher or through cooperation among students. The distance between these two is the "zone of nearest development" (Chen Xintong, 2021). Therefore, Vygotsky

advocated that teaching should promote students' development through the form of cooperation, so that they can gradually transition from the potential level to the existing level, and finally reach the "realistic development zone" (Li Yang, 2019). This theory provides an essential basis for interactive teaching methods such as cooperative learning.

Vygotsky's sociocultural theories have had a profound impact on the cooperative learning approach. His "zone of nearest development" and "scaffolding" theories suggest that students can better construct knowledge and improve cognition through collaborative interactions with peers or teachers (Vygotsky, 1978). This theory provides a solid theoretical foundation for cooperative learning, emphasizing that through collaborative learning, students can not only leverage external support (such as peers or teachers), but also achieve personal cognitive development through interaction (Slavin, 1995).

Constructivism emphasizes a learner-centered teaching model, which is highly compatible with the concept of cooperative learning. The teacher is no longer the transmitter of knowledge in the process, but the facilitator of learning. This teaching mode allows students to explore language through meaningful tasks and social interactions (Venkadeswaran & Ramanathan, 2024). During cooperative learning, students are not only recipients of knowledge but also constructors of knowledge. They co-construct a new body of knowledge through the process of discussing with each other, sharing ideas, and solving problems.

Jigsaw, as one of the cooperative learning strategies, is closely linked to constructivist theory. It divides the learning content into different parts, allowing students to become “experts” in a specific section. In Jigsaw, students not only need to master the content they are responsible for, but also need to transfer this knowledge to other members of the group. In this process, students actually construct and re-construct knowledge through in-depth learning and transferring knowledge to others. The division of tasks in Jigsaw allows each student to focus on specific parts of the content, increasing their sense of responsibility and deepening their understanding of the text as a whole. Through this "divide-collaborate-share" model, students continue

to expand their knowledge through group interactions. Jigsaw promotes comprehensive understanding and analysis of complex texts through group work and knowledge sharing.

2. Cooperative Learning Theory

Cooperative learning, as an instructional theory, emerged in the early 1970s in the United States and quickly gained widespread recognition and attention within the educational community.

The Cooperative Learning Center at the University of Minnesota and Roger T. Johnson (1995) are key figures in cooperative learning. They believe that cooperative learning consists of five essential elements: positive interdependence, face-to-face interaction, individual accountability, social skills, and group self-evaluation. Cuseo (1992) also proposed that the basic form of cooperative learning theory develops personal social interaction and communication skills through the formation of groups with common goals, task allocation, and assignment of individual responsibilities within the group.

These elements of cooperative learning emphasize equality and collaboration, breaking the monotony of traditional classroom environments. They align with students' intrinsic needs and learning patterns, encouraging more students to actively participate in classroom activities and reducing the polarization of student achievement.

Since its emergence, cooperative learning has developed rapidly, leading to the formation of many different types. Below are ten cooperative learning strategies that have garnered the most attention from educators and scholars.

Table 1 Ten Different Cooperative Learning Strategies

	Date	**Researcher and Developer**	**Cooperative Learning Strategies**
1	Mid 1960s	Johnson& Johnson	Learning Together&Alone
2	Early 1970s	De Vries & Edwards	Teams-Games-Tournaments (TGT)

3	Mid 1970s	Sharan&Sharan	Group Investigation
4	Mid 1970s	Johnson& Johnson	Constructive controversy
5	Late 1970s	Aronson& Associates	**Jigsaw**
6	Late 1970s	Slavin &Associates	Student Team Achievement Divisions(STAD)
7	Early 1980s	Cohen	Complex Instruction (CI)
8	Early 1980s	Slavin&Associates	Team Accelerated Instruction (TAI)
9	Mid 1980s	Kagan	Cooperative learning structures
10	Late 1980s	Steven, Slavi & Associates	Cooperative Integrated Reading & Composition (CIRC)

The concept of Jigsaw closely aligns with the principles of cooperative learning, fully embodying its core characteristics. In a Jigsaw classroom, students are divided into groups where those with varying English proficiency levels collaborate. By helping one another and sharing reading materials, they form positive interdependence to collectively accomplish the reading tasks. During the learning process within both home and expert groups, students not only engage in face-to-face interactions but also actively develop social skills, enhancing their understanding of the reading material and their roles within both individual and group tasks through peer communication and discussion.

Driven by a common goal, students' sense of cooperation is strengthened, and complementary needs further reinforce this awareness. Additionally, the effective division of roles and clear communication among group members allow them to integrate their understanding and insights, ultimately achieving the team's reading objectives. Through this process, students transition from passive recipients of knowledge to active explorers of reading content, transforming from individual learners into collaborative learning partners. Rather than being in a traditional competitive relationship, students develop a mutual support system focused on collective progress.

In face-to-face interactions, they engage in dialogue, discussions, and supplementation, collectively enhancing their comprehension of the text.

Related Studies

1. Related Studies in Chinese Contexts

Guo et al. (2023) conducted a study with 116 first-year undergraduate students at a private university in Northwest China. Data collection included pre-tests, post-tests, and questionnaires to evaluate the effectiveness of Jigsaw in improving student engagement and enhancing college English reading courses. The results showed that the mean scores of the pre-test and post-test were 48.44 and 68.93, respectively, indicating that students' performance improved significantly after implementing Jigsaw. Jigsaw significantly improved students' engagement and reading ability, highlighting its positive impact on students' learning outcomes. In particular, the significant improvement in pre-test and post-test scores further proves the effectiveness of Jigsaw in improving students' academic performance.

Li Yaqiong (2018) selected two classes from Wuwei No. 1 Middle School, with a total of 96 second-year students as the subjects of the study. The subjects were divided into an experimental class and a control class. After a 16-week teaching experiment, the results showed that Jigsaw helped improve students' four reading comprehension skills: summarizing the main idea, understanding factual details, reasoning and judging, and guessing word meanings. In addition, Jigsaw also enhanced their sense of sharing and communication skills while improving their interest in reading, ability to cooperate, and interpersonal skills.

Yang Jiani (2023) conducted a three-month teaching experiment with a total of 80 students from two eighth-grade classes in a middle school. The results of the study show that: first, Jigsaw has a positive impact on junior high school English writing teaching and can effectively improve students' ability to express their thoughts, organize paragraphs, use language, and write according to the rules; second, Jigsaw also significantly promotes students' sense of self-efficacy in writing, and can effectively improve their sense of efficacy in writing skills and understanding of efficacy in writing

tasks; finally, Jigsaw has a positive impact on students' writing strategies, significantly improving their strategies for organizing ideas, language techniques, and social and emotional strategies.

Kang Li (2012) introduced Jigsaw into English listening and speaking classes to solve the teaching difficulties that exist in teaching large classes of English listening and speaking, such as a small number of students "monopolizing the speaking" and low student participation. The study results showed that Jigsaw significantly improved the efficiency of teaching large classes, promoted students' cooperative learning and independent learning abilities, improved students' oral expression and listening comprehension skills, created a harmonious classroom atmosphere, and enhanced students' sense of responsibility and self-confidence. Jigsaw effectively overcomes the problems of traditional large-class teaching, such as difficulties in conducting group discussions and insufficient student participation.

Qiu Hui (2010) applied Jigsaw to vocabulary teaching in order to address the problem of high consumption and low efficiency in English vocabulary teaching and explored the application of Jigsaw II in vocabulary teaching and its impact on vocabulary acquisition. The study results showed that Jigsaw II has a positive effect on vocabulary learning, can effectively improve students' academic performance, and enhances their initiative and sense of responsibility. Compared with the traditional teaching method, Jigsaw II greatly stimulates students' sense of participation, transforms the one-way interaction between teachers and students into multi-directional interaction between students and between students and teachers, and significantly optimizes vocabulary teaching classes.

2. Related Studies in International Contexts

Research by Yuste (2022) confirms that cooperative learning, and in particular the Jigsaw method, can help improve the academic writing skills of English as a foreign language (EFL) students. Compared to the control class, the experimental class using the Jigsaw method performed more prominently in developing writing skills. The study also shows that the Jigsaw method not only improves the basic writing skills of EFL students, but also enhances their language skills, especially in a university setting.

Tran Thi Yen et al. (2023) investigated the effectiveness of Jigsaw in improving students' oral English performance. The study was conducted with first-year freshmen who were non-English majors at Thai Nguyen University of Education. The participants were 30 freshmen majoring in mathematics education, including 20 females and 10 males. The study analyzed the impact of the Jigsaw teaching method on students' oral skills through pre- and post-test oral performance assessments and feedback questionnaires. The results showed that Jigsaw significantly improved students' oral performance in terms of vocabulary, pronunciation, grammar, and fluency. Students' feedback on applying Jigsaw teaching activities in oral classes was very positive, believing that this teaching method is of great significance for improving oral skills and is lively, interesting, and practical.

Ubaedillah (2019) conducted a study to investigate the effect of Jigsaw on the improvement of English speaking skills of Muhadi Setiabudi University's Management Study Program students of the second semester in the academic year 2018/2019. The study used an experimental design, with pre-and post-tests of oral exams conducted on students in the experimental and control classes, to assess the impact of Jigsaw. The results showed that students' oral English proficiency improved significantly after implementing Jigsaw. Applying Jigsaw in English oral teaching effectively promoted the development of students' oral skills, especially in vocabulary, pronunciation, fluency, and other aspects. These results confirmed the positive effect of Jigsaw in improving students' oral proficiency.

Buulolo's (2024) study targeted 30 eighth-grade students at SMP Negeri 1 Amandraya and aimed to improve students' vocabulary mastery through Jigsaw. The study used classroom action research (CAR) in two cycles. The results showed that the students' vocabulary skills improved significantly, with test scores rising from an average of 55 in the first cycle to 82 in the second cycle, and student classroom participation also increased from 70% to 93%. These results show that Jigsaw has a significant effect on improving students' vocabulary mastery and learning participation, proving the effectiveness of Jigsaw in solving vocabulary learning problems.

Saker (2015) conducted a study to investigate the effectiveness of Jigsaw in improving the English grammar learning of Palestinian tenth-grade students. The study

adopted an experimental method and used a sample of 72 English as a foreign language (EFL) male students from Beit Lahia Basic Boys School in the Gaza Strip. The researcher selected two classes from the four classes he taught, one as the experimental class (36 students) and the other as the control class (36 students). In the second semester of the 2013-2014 school year, the control class used traditional teaching methods, while the experimental class used Jigsaw to teach grammar. The results of the study showed that the experimental class students' English grammar learning outcomes were significantly better than those of the control class, and this difference was attributed to the use of Jigsaw.

Summary

Within the framework of constructivism and cooperative learning theory, numerous studies have demonstrated the significant role of the Jigsaw strategy in English reading instruction. As an effective approach, it fosters a cooperative and interactive classroom environment, enhancing students' engagement with and comprehension of reading materials. However, most of these studies focus on English reading instruction at the primary, middle, and high schools, with relatively few studies targeting higher vocational students. Therefore, this study aims to fill this gap by conducting an empirical investigation into the effectiveness of the Jigsaw strategy in English reading instruction for higher vocational students. Specifically, this research will evaluate whether the Jigsaw strategy can effectively enhance the English reading comprehension of higher vocational students, providing new theoretical foundations and practical insights for English teaching in this context. By thoroughly analyzing the actual application of the Jigsaw strategy, this study will offer educators practical recommendations for improvement.

Conceptual Framework

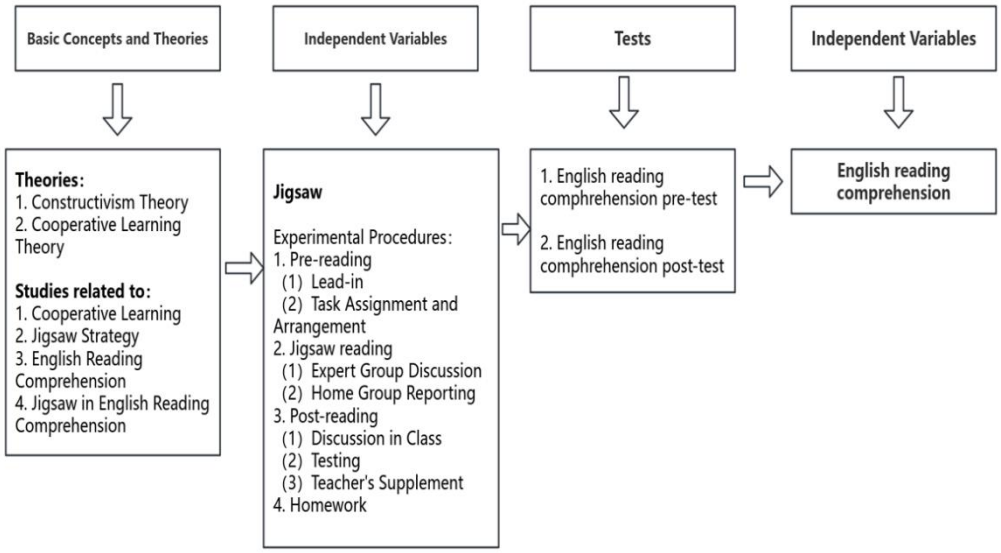


Figure 1Conceptual Framework

CHAPTER III

RESEARCH METHODOLOGY

This chapter outlines the research methodology for the study, which is composed of the following sections: methodology, population, research instruments, experimental procedures, data collection, and data analysis.

Methodology

This study adopts a quantitative research method, primarily by analyzing the pre-test and post-test scores of the experimental class and the differences in pre- and post-tests between the experimental and control classes, to evaluate the effectiveness of Jigsaw in Cooperative Learning on enhancing English reading comprehension among higher vocational students.

Population and Settings

This study was conducted at Sichuan Vocational College of Health and Rehabilitation, a public higher education institution and a well-known vocational college in Sichuan Province. The population were 1,640 first-year non-English major students at the college. Some students face challenges in English reading comprehension, and the current reading instruction is typically teacher-centered, focusing on explaining vocabulary and translating texts sentence by sentence. These issues align with the background of this study, making this student group well-suited for testing the effectiveness of Jigsaw in Cooperative Learning in enhancing English reading comprehension. To ensure the scientific validity and reliability of the results, stratified random sampling was employed, selecting 60 students based on their previous semester's English final exam scores, forming an experimental class (30 students) and a control class (30 students).

Research Instruments

1.English Reading Comprehension Pre-Test and Post-Test

The reading comprehension pre-test and post-test are selected from the reading comprehension section of the College English Test Band 4 (CET-4), a large-scale standardized test sponsored by the Ministry of Education of the People's Republic of China. The test is administered by the Educational Examination Office of the Ministry of Education (formerly the Ministry of Education Examination Center), which plays a significant role in assessing the English proficiency of college students. It serves as a crucial reference point for evaluating the overall English proficiency of college students. It is a large-scale standardized test that plays an integral role in assessing the English proficiency of Chinese college students. Additionally, it serves as a crucial reference point for evaluating the comprehensive English proficiency of college students. The items included in the test have been subjected to a meticulous process of proposal and review, ensuring a high degree of reliability and validity. This allows for a comprehensive assessment of students' reading comprehension.

The reading comprehension pre- and post-tests comprise three question types, amounting to a total of 248.5 points. The first of these is the Banked Cloze (35.5 points), which consists of 10 sub-questions, each of which is worth 3.55 points. Students are required to fill in the gaps in the article by selecting 10 of the 15 vocabulary words provided, based on their comprehension of the article's content. The Matching Section (71 points) comprises an article and 10 sub-questions, each worth 7.1 points. The article is accompanied by 10 sentences, each corresponding to a question, and students are required to identify the passage that corresponds to the information in each sentence. Reading in Depth (142 points): it consists of two articles and 10 sub-questions of 14.2 points each. Each article is followed by five questions, and students are required to choose the best answer from four options based on the content of the article.

The steps involved in constructing and administering the English reading comprehension pre- and post-tests are as follows：

Stage 1：Access to relevant documents and standards for testing and assessing English reading comprehension

The author conducted a comprehensive review of existing literature on the assessment of English reading comprehension, the *Higher Vocational Education: English Curriculum Standards (2021 Edition)*, and *Syllabus for College English Test —*

Band Four(CET-4) (2016 revised edition). This was done to ensure the scientific and rigorous nature of the tests design.

Stage 2: Construct reading comprehension pre-test and post test

In accordance with the guidelines established for the CET-4 reading comprehension section, two sets of pre-test and post-test were formulated. Each set consisted of three question types and a total of 30 questions. The full score for each set was 248.5 points.

Stage 3 : Evaluate pre - and post tests by three experts

To ensure the consistency and validity between the test items and the research objectives, three English experts were invited to evaluate the test items. The three experts are:

1. Associate Professor Ni Bo, from Sichuan Vocational College of Health and Rehabilitation, has over 20 years of experience in teaching college English, specializing in Chinese-English language comparison and translation, with several related academic papers published.

2. Associate Professor Li Fang, also from the same institution, graduated from Sichuan Normal University and focuses on vocational English teaching and assessment, with extensive teaching experience dedicated to cultivating students' comprehensive application skills.

3. Lecturer Yang Yi, with 12 years of teaching experience, specializes in English education research and has achieved notable success in coaching students for English reading competitions.

The profound expertise of these three experts in language assessment and English teaching provided critical support in evaluating the reading comprehension test items for this study. The test items were evaluated using the Item-Objective Congruence (IOC) index (Appendix C and D). After expert evaluation, all test items were retained.

Stage 4: Conduct the pilot study

A pilot study was conducted before the formal implementation of the pre-test and post-test. A sample of 30 first-year students was selected, and they completed the test within the specified time.

Stage 5: Assess the quality of the tests and revise the tests

The statistics were analyzed to assess the reliability and difficulty of the tests. Based on the feedback from the pilot study, the researcher and three experts made appropriate adjustments to ensure that the formal tests can more accurately evaluate students' reading comprehension.

Stage 6: Implement the tests

The final versions of the tests were used as the pre-test and post-test in this study. These instruments were administered to students in both the experimental and control classes before and after the experiment.

2. Lesson Plans

To better implement this study, the lesson plans were designed based on the *Higher Vocational Education: English Curriculum Standards (2021 Edition)*, in combination with the research objectives and tailored to the students' actual conditions.

The steps for constructing and implementing the lesson plans are as follows:

Stage 1: Research relevant documents and curriculum standards

In this study, the *Higher Vocational Education: English Curriculum Standards (2021 Edition)* was thoroughly researched, and relevant topics for teaching were determined by referring to the thematic categories in the standards, including personal, social, and environmental aspects.

Stage 2: Construct the lesson plans

In this study, the lesson plans consist of eight topics, each designed based on the thematic categories outlined in the curriculum standards. Additionally, the textbook content was thoroughly analyzed to ensure that the teaching focus aligned with the student's actual needs. After selecting the research sample, the lesson plan was adjusted according to the students' learning conditions, ensuring that the teaching content

matches their levels and learning goals to achieve the best teaching outcomes. Each class lasts 80 minutes, with pre-reading, while-reading, and post-reading sections designed based on the teaching objectives, ensuring that all activities are completed within the specified time. Detailed sample lesson plan can be found in Appendix E.

Table 2 Weekly Teaching Content Arrangement

Week	Date	Class	Teaching content
1	May 29th, 2024	EC	Keep Close to Nature
	May 30th, 2024	CC	
2	June 5th, 2024	EC	Social Responsibility
	June 6th, 2024	CC	
3	June 12th, 2024	EC	College Life
	June 13th, 2024	CC	
4	June 19th, 2024	EC	Believe and Achieve
	June 20th, 2024	CC	
5	June 26th, 2024	EC	Love
	June 27th, 2024	CC	
6	July 3rd, 2024	EC	Handling Stress
	July 4th, 2024	CC	
7	July 10th, 2024	EC	Career Pursuit
	July 11th, 2024	CC	
8	July 17th, 2024	EC	Nothing Is Impossible
	July 18th, 2024	CC	

Stage 3: Evaluation of the lesson plans by the three experts

In this study, the lesson plan was evaluated by the same three experts who previously assessed the pre-test and post-test, using the Item-Objective Congruence (IOC) (Appendix F). These experts reviewed the lesson plan design based on the research objectives and students' learning needs, ensuring the scientific rigor and consistency of the content. Each expert rated the content of the lesson plan, and the IOC values were calculated to ensure that the lesson plan had a high level of content validity, providing a foundation for the effective implementation of the subsequent teaching.

Stage 4: Revise the lesson plans

Based on the feedback from the experts and the IOC values, the lesson plans were adjusted to ensure that its content and design meet the teaching objectives and students' needs to the greatest extent. After incorporating the expert feedback and completing the revisions, the lesson plans were finalized and prepared for the subsequent teaching implementation.

Stage 5: Implement the teaching based on the lesson plans

The planned eight-week teaching was implemented according to the lesson plans. The teaching process was carried out in accordance with the designed sections of the lesson plans. This stage of teaching laid a solid foundation for the subsequent evaluation and data collection in the study.

Research Design

This study lasted from May 24, 2024, to July 25, 2024, and was divided into three main phases: pre-experimental phase, experimental phase, and post-experimental phase. The specific arrangements for each phase are as follows:

Table 3 The Timetable for the Research Design

Phase	Date	Contents
Pre-experimental phase	May 24th to May 28th	1. Determine the sample. 2. Inform and sign volunteer consent 3. Conduct reading comprehension pre-test. 4. Collect and analyze the data. 5. Design instructional content based on the samples. 6. Introduce the Jigsaw strategy to students in the experimental class and establish rules.
Experimental phase	May 29th to July 18th	The experimental class used Jigsaw for instruction, while the control class used teacher-centered teaching method for instruction.

Post-experimental phase	July 19th to July 25th	1.Conduct reading comprehension post-test 2. Collect and analyze the data

1. Pre-experimental phase

1.1 Determine the sample

The population for this study consists of 1,640 first-year students from Sichuan Vocational College of Health and Rehabilitation. To ensure the sample size is reasonable, the required sample size was initially calculated to be 312 participants using the finite population sample size formula. However, managing a large-scale sample experiment could be difficult to execute efficiently and might lead to incomplete data collection or unsatisfactory experimental outcomes. For this reason, under the premise of ensuring the validity of the study, appropriately reducing the sample size can ensure that the experiment is carried out smoothly and avoid experimental bias caused by operational complexity. Therefore, the researcher determined the feasibility of reducing the sample size through statistical efficacy analysis.

Based on the effect size standard proposed by John Hattie in *Visible Learning*, an effect size of d=0.67 is regarded as the threshold for having a meaningful impact on learning outcomes and has become a benchmark for evaluating educational practices. This study used this effect size as the basis for sample size calculation and verified the statistical power using G*Power software (see Figures 2 and 3). Assuming an effect size of 0.67 and a significance level of Alpha = 0.05, the statistical power reached 0.821, exceeding the standard of 0.80. Therefore, the study determined that even if the sample size is reduced to 60 students (30 in the experimental class and 30 in the control class), the statistical power still meets the expected requirements, indicating that this sample size is statistically reasonable and effective, and does not affect the credibility of the study.

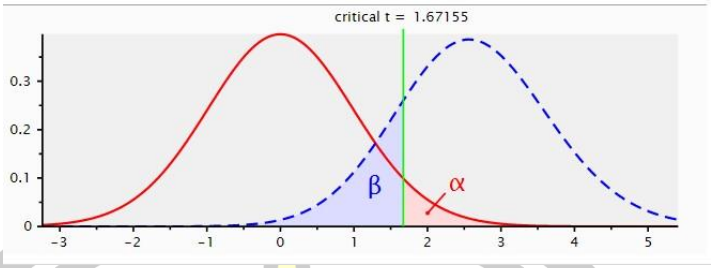


Figure 2 The Result of the Estimated Sample Size

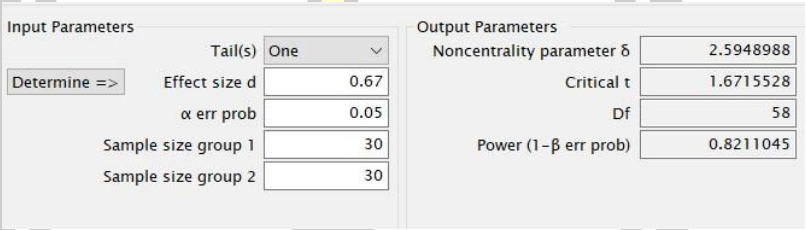


Figure 3 The Result of G-Power

To ensure that the samples of the experimental and control classes were representative, stratified random sampling was used in this study. Based on the students' final English scores from the previous semester (with a maximum of 100 points and a minimum of 58 points), the students were divided into three groups: 58-71 points (478 students), 72-85 points (773 students), and 86-100 points (389 students). Using the stratified random sampling formula, samples were drawn from each segment: 9 students from the 58-71 points, 14 students from the 72-85 points, and 7 students from the 86-100 points, forming a total of 30 students for the experimental class. The control class was selected in the same way, with 30 students.

To ensure the smooth execution of the experiment, the study also considered potential attrition, including students who had already the CET-4 related training, those who had undergone Jigsaw strategy training, and those who withdrew for other reasons. The estimated attrition rate was 20%. To cope with attrition and to ensure an effective sample size of 60 students in the final experimental and control classes, an additional 15 students were recruited for this study according to the formula. Therefore, a total of 75 students were recruited to ensure that, even in the event of attrition, the effective sample size for the experiment could be maintained. By using stratified random sampling and accounting for attrition, this study ensured a balanced distribution of

students across different score ranges in both the experimental and control classes, thereby ensuring the representativeness of the samples and the scientific validity of the research results.

1.2 Inform and sign volunteer consent

After identifying the research sample, the researchers provided detailed explanations to the participants regarding the purpose, content, procedure, and potential risks and benefits of the study. The participants fully understood their roles, rights, and the measures taken to protect their personal privacy. By signing the volunteer consent forms, the participants ensured that they voluntarily participated in the study after comprehending the relevant information. Signing the consent forms not only guaranteed the ethical and legal standards of the study but also safeguarded the rights and safety of the participants. The researchers committed to strictly protecting the participants' privacy, and all data were processed anonymously to ensure that personal information would not be disclosed. The entire study adhered to high ethical standards to ensure respect and protection for the participants.

1.3 Conduct reading comprehension pre-test

Before the experiment, an English reading comprehension pretest was administered to the students in the control and experimental classes. The test lasted 60 minutes and was designed to determine whether students in the two classes were equivalent in English reading comprehension.

1.4 Collect and analyze the data

After the pretest, the researcher collected the students' test papers and the technicians input the data into the computer. The researcher then analyzed the data using SPSS. The results showed that there was no significant difference in the reading comprehension between the two classes.

1.5 Design instructional content based on the samples

The researchers formulated and adjusted the teaching plan and content based on the pre-test scores of the students in the experimental and control classes.

1.6 Introduce Jigsaw to students in the experimental class and establish rules

Since the students in the experimental class were unfamiliar with Jigsaw, the teacher provided a detailed introduction to the definition and specific teaching steps of the Jigsaw strategy. This was done to reduce the difficulty of implementation and avoid potential problems during the process, ensuring that students could become familiar with this strategy.

At the same time, the following rules were formulated to ensure the orderly conduct of the experiment: First, group members need to have a sense of cooperation, actively participate in discussions, and share tasks together. Second, each member should actively express their personal opinions and be good at listening to the opinions of others. After someone finishes speaking, other members may supplement or correct as needed. Finally, during the Jigsaw process, students should try to communicate in English as much as possible.

2. Experimental phase

The teaching experiment for this study took place from May 29, 2024, to July 17, 2024, lasting eight weeks, with 80 minutes each week. The experimental class used Jigsaw for instruction, while the control class used teacher-centered traditional teaching method for instruction.

3. Post-experimental phase

3.1 Conduct reading comprehension post-test

After the eight-week intervention, students in the control class and the experimental class took a post-test on reading comprehension. The test aimed to verify whether the Jigsaw strategy could improve the English reading comprehension of students in the experimental class, as well as to compare the reading comprehension between the experimental and control classes.

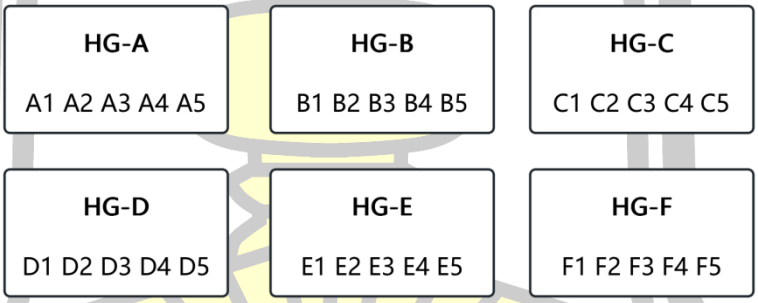
3.2 Collect and analyze the data

After the post-test, the researcher collected the students' test papers and the technicians input the data into the computer. The researcher then analyzed the data using SPSS.

Experimental Procedures

This experiment lasted eight weeks, for a total of 80 minutes per week. Jigsaw was used in the experimental class for instruction. Before the experiment started, the following preparations were made:

1. Establish Home Groups：the author organized Home Groups according to the actual number of students. The experimental class had a total of 30 students, so it was divided into six Home Groups with five members in each group. Initially, students were grouped based on their pre-test scores to ensure a balanced distribution of performance levels within each group, encompassing different ability levels. Then, further adjustments were made according to students' personality traits to enhance interaction and collaboration within each group. Here is the formation of Home Groups.



（HG stands for Home Group）

Figure 4 Formation of Home Groups

2. Design Tasks：the teacher divided the reading material into several sections, such as Part 1, Part 2, Part 3, and so on. Then, corresponding tasks were created for each section, sequentially named Task 1, Task 2, Task 3, etc. This approach added structure to the learning process and helped students gradually achieve a deep understanding and mastery of each part's content.

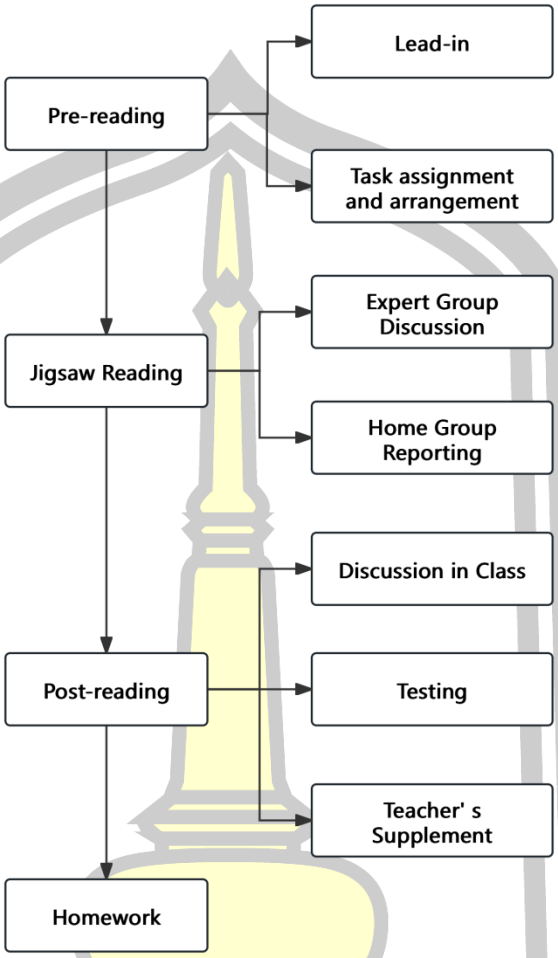


Figure 5 Teaching Procedures of the Experimental Class

The whole teaching procedures are as follows.

Step 1：Pre-reading

1.Lead-in

The teacher introduces the lesson through activities involving images, videos, and related questions to spark students' interest and activate their prior knowledge, laying the groundwork for constructing new knowledge. At the same time, these activities help students form an initial, holistic understanding of the upcoming content.

2.Task Assignment and Arrangement

The teacher distributes the prepared reading materials and corresponding tasks to the members of the Home Groups, for example, A1 is responsible for Part 1 and Task 1, A2 is responsible for Part 2 and Task 2, and so on. This ensures that each member has a clear responsibility, facilitating collaboration and learning within the group.

Step 2: Jigsaw Reading

1. Expert Group Discussion

Students assigned the same reading section and task form an Expert Group. Each "expert" first reads the materials independently and completes the assigned task within the allotted time, acquiring the information in the text through rapid reading. Then, members of the Expert Group engage in in-depth discussions centered around the task and reading content. Through this exchange of ideas, students collaboratively reinforce essential vocabulary and develop a deeper understanding of text details. During the process, the teacher makes a round trip to provide necessary assistance and guidance to ensure that the Expert Group members have a deep understanding of the content they are responsible for.The formation of Expert Groups and task distribution is shown as follows.

Table 4 Formation of Expert Groups and Task Distribution

	HG-A	**HG-B**	**HG-C**	**HG-D**	**HG-E**	**HG-F**	
EG-1	A1	B1	C1	D1	E1	F1	**Task 1**
EG-2	A2	B2	C2	D2	E2	F2	**Task 2**
EG-3	A3	B3	C3	D3	E3	F3	**Task 3**
EG-4	A4	B4	C4	D4	E4	F4	**Task 4**
EG-5	A5	B5	C5	D5	E5	F5	**Task 5**
EG-6	A6	B5	C6	D6	E6	F6	**Task 6**

(HG stands for Home Group, EG stands for Expert Group)

2. Home Group Reporting

After the Expert Group discussions, each member returns to their Home Group and sequentially presents the findings from their Expert Group discussions according

to the order of the text, collaboratively building a comprehensive understanding of the entire article. Group members can ask questions about any unclear parts, which the presenter addresses to ensure that everyone gains a solid grasp of the full content. Through group discussions, students question each other and clarify doubts, further deepening their overall comprehension of the text. During this phase, the teacher monitors each group's progress, encouraging active questioning. In this process, each student serves both as a learner and a presenter of knowledge.

Step 3: Post-reading

1.Discussion in Class

Based on the group discussions, the teacher raises questions for the whole class, providing additional explanations on the knowledge points that students have not fully mastered. The teacher also guides the class in further analyzing the overall structure and theme of the article.

2.Testing

After completing the study of the article, a test is conducted to assess the students' comprehension and understanding of the content, aiming to evaluate the group members' mastery of the material.

3.Teacher's Supplement

The teacher evaluates the students based on the test results and their performance in class, providing further feedback and necessary guidance.

Step 4: Homework

After class, students complete related exercises to further consolidate their understanding and retention of the article. Repeated practice helps them deepen their grasp of key vocabulary, the structure of the article, and its details.

Data Collection

Data collection for this study included English reading comprehension pre- and post-tests. All data was entered into a computer by the technical staff and supervised by

the three experts to ensure the accuracy of data processing and the rigor of the research process. To protect the personal privacy of students, data was processed anonymously to ensure that no personal information was disclosed. All pre- and post-test papers were organized and archived for safekeeping.

Data Analysis

Before the experiment, independent samples t-tests were used to compare the pretest scores of the experimental and control classes to help the researcher understand whether there were significant differences between the two classes in English reading comprehension. After the experiment, an independent samples t-test was conducted to compare the post-test scores of the experimental and control classes, while a paired samples t-test was applied to compare the pre- and post-test scores within the control class, aiming to verify whether the Jigsaw strategy was more effective than the traditional teaching method in enhancing students' English reading comprehension. Additionally, a paired samples t-test was used on the pre and post-test scores of the experimental class to further verify whether the Jigsaw strategy enhanced the English reading comprehension of the students.

CHAPTER IV

RESULTS

The chapter presents and analyze the data. English reading comprehension pre-test and post-test are used as data collection tools. By comparing the results of the pre-test and post-test, the study aims to validate the two research objectives: 1) to enhance English reading comprehension of higher vocational college students by using Jigsaw in Cooperative Learning; 2) to compare English reading comprehension of students in the experimental class before and after using Jigsaw in Cooperative Learning.

To enhance English reading comprehension of higher vocational college students by using Jigsaw in Cooperative Learning

To verify whether Jigsaw can improve students' English reading comprehension, a comparison was made between the pre-test and post-test results of the experimental and control classes.

Before the experiment, both the experimental and control classes took a reading comprehension pre-test to determine whether there was a significant difference in English reading comprehension between the two classes. The following Table 5 shows the results of the independent samples t-test for the pre-test in the experimental and control classes.

Table 5 Independent Samples T-Test of Pre-test for the CC and EC

		Full Score	M	SD	Cohen's d	Sig. Two-Sided p	t Equal variances assumed	t Equal variances not assumed	df Equal variances assumed	df Equal variances not assumed
Pre-test	CC	248.5	129.22	21.74	0.08	0.75	0.32	0.32	58.00	58.00
	EC		127.46	21.59						

Table 5 presents the mean, standard deviation, Cohen's d, and p-value for the two classes before the experiment. It shows that the mean scores of the experimental and control classes in the pre-test were 127.46 and 129.22, respectively, with standard deviations of 21.59 and 21.74. The Cohen's d value was 0.08, indicating that the difference between the two classes was negligible. The t-value was 0.32, with a corresponding p-value of 0.75, which did not reach the significance level ($p > 0.05$). This suggests that the score differences between the two classes in the pre-test were not statistically significant. These results indicate that the English reading comprehension levels of students in the experimental and control classes were comparable, with a mean difference of only 1.77 points and similar standard deviations. This demonstrates that there was no significant difference in reading comprehension between the two classes before the intervention, ensuring their comparability and providing a scientific and reliable basis for the subsequent post-test analysis of the intervention's effects.

Table 6 Paired Samples T-Test of Pre-test and Post-test for the CC

					Sig.	Paired T-test		
	Full Score	M	SD	Correlation	Cohen's d	Two-Sided p	SD	t	df
Pre-test	248.5	129.22	21.74	0.94	-1.28	0.000	8.54	-6.98	29
Post-test		140.11	24.29						

A paired samples t-test was conducted to compare the performance of students in the control class between the pre-test and post-test. As is presented in this Table 6, the mean score of the control class in the pre-test is 129.22, while the mean score in the post-test is 140.11, showing an increase of 10.89 points. This indicates that students in the control class made some progress in reading comprehension after the eight-week intervention using the traditional teaching method.

Regarding the standard deviation, the pre-test value is 21.74, while the post-test value increases to 24.29, suggesting that the distribution of students' scores is more dispersed in the post-test. The correlation coefficient for the paired samples is 0.94, indicating a strong positive correlation between the pre-test and post-test scores, implying that the pre-test scores can reliably predict the post-test performance.

Additionally, the result shows a t-value of -6.98 and a p-value of 0.000, which is far below 0.05, indicating that the difference between the pre-test and post-test scores is statistically significant. Cohen's d value is -1.28, indicating a large effect size, which suggests that the traditional teaching method intervention leads to an improvement in the reading comprehension of students in the control class.

Table 7 Independent Samples T-Test of Post-test for the CC and EC

		Full Score	M	SD	Cohen's d	Sig.	t		df	
						Two-Sided p	Equal variances assumed	Equal variances not assumed	Equal variances assumed	Equal variances not assumed
Post-test	CC	248.5	140.11	24.29	-1.80	0.000	-6.99	-6.98	58.00	56.27
	EC		180.46	20.34						

After the eight-week experiment, students in both the experimental and control classes took a reading comprehension post-test. To determine whether there was a significant difference in reading comprehension between the two classes, an independent samples t-test was conducted on the post-test results. As shown in Table 7, the mean score of the control class is 140.11 with a standard deviation of 24.29, while the mean score of the experimental class is 180.46 with a standard deviation of 20.34. The experimental class is considerably higher than the control class. The Cohen's d value is -1.80, indicating a large effect size, showing that the performance of the experimental class in the post-test is markedly superior to that of the control class. The t-test result shows a t-value of -6.98 and a p-value of 0.000, which is far below 0.05, indicating that the difference in post-test scores between the experimental and control classes is statistically highly significant.

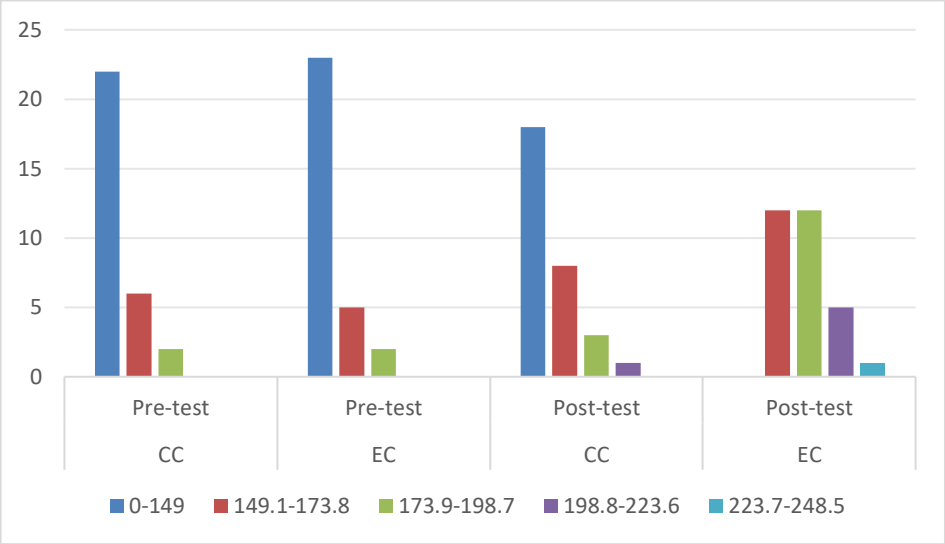


Figure 6 Comparison of Pre-test and Post-test Score Distributions between the CC and EC

Table 8 Number and Percentage of Students in the Pre- and Post-Tests for CC and EC

Score Range	Pre-test for CC		Post-test for CC		Pre-test for EC		Post-test for EC	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
0-149	22	73.3%	18	60%	23	76.6%	0	0%
149.1-173.8	6	20%	8	26.7%	5	16.7%	12	40%
173.9-198.7	2	6.7%	3	10%	2	6.7%	12	40%
198.8-223.5	0	0.0%	1	3.3%	0	0.0%	5	16.7%
223.6-248.5	0	0.0%	0	0.0%	0	0.0%	1	3.3%

Figure4 and Table8 show the distribution of scores on the pre-test and post-test for the experimental (EC) and control (CC) classes and a comparison of the number and proportion of students in each score range. In the pre-test, the majority of students in both the control and experimental classes scored within the 0-149, with 73.3% (22 students) of the control class and 76.6% (23 students) of the experimental class falling into this category. In the post-test, the percentage of students scoring in the 0-149 in the control class decreased to 60% (18 students), while the proportion in the experimental class dropped to 0%, indicating an overall improvement after the intervention.

Between scores of 149.1-173.8, the proportion of students in the control class increased from 20% (6 students) in the pre-test to 26.7% (8 students) in the post-test. Meanwhile, the percentage of students in the experimental class in this range rose significantly from 16.7% (5 students) to 40% (12 students). This indicates that more students in the experimental class moved up from the lower score range to this middle score range.

The percentage of students in the control class in the higher score ranges (173.9-198.7 points, 198.8-223.5 points, and 223.6-248.5 points) increased slightly but did not change much. In contrast, the experimental class demonstrated substantial progress in these higher score ranges, especially in the 198.8-223.5 range, where 16.7% of students reached this level in the post-test, compared to none in the pre-test. Additionally, 3.3% of students (1 student) in the experimental class reached the highest score range (223.6-248.5) in the post-test, further demonstrating the significant improvement in overall performance after implementing the Jigsaw strategy.

To compare English reading comprehension of students in the experimental class before and after using Jigsaw in Cooperative Learning

To compare the changes in English reading comprehension of students in the experimental class before and after using Jigsaw, a paired samples t-test was used to analyze the differences between the pre-test and post-test scores, aiming to validate the effectiveness of the strategy.

Table 9 Paired Samples T-Test of Total Score in Pre-test and Post-test for the EC

						Sig.	Paired T-test		
	Full Score	M	SD	Correlation	Cohen's d	Two-Sided p	SD	t	df
Pre-test	248.5	127.46	21.59	0.96	-9.23	0.000	5.74	-50.57	29
Post-test		180.46	20.34						

According to the results of Table 9, the total scores of students in the experimental class show a significant improvement after 8- week intervention. The mean score in the pre-test was 127.46 with a standard deviation of 21.59, indicating a certain degree of

dispersion in scores and a considerable variation among individuals. After the eight-week instructional intervention, the mean score in the post-test increased to 180.46, and the standard deviation decreased to 20.34, suggesting that the post-test scores were more concentrated, with reduced variability among individuals. Furthermore, the paired samples t-test results indicate a significant difference between the pre-test and post-test scores, with a t-value of -50.57, a degree of freedom of 29, and a p-value far below 0.05, demonstrating a statistically significant difference between the two tests. Additionally, the correlation coefficient between the pre-test and post-test scores is 0.96, showing a high positive correlation, suggesting a strong association between the two sets of scores. The effect size, Cohen's d, is -9.23, reflecting a substantial change between the pre-test and post-test results.

Table 10 Paired Samples T-Test of Three Sections in Pre-test and Post-test for the EC

	Full Score	M	SD	Correlation	Cohen's d	Sig.	Paired T-test		
						Two-Sided p	SD	t	df
Pre-Banked Cloze	35.5	16.92	4.91	0.87	-2.99	0.000	2.46	-16.37	29
Post-Banked Cloze		24.26	4.38						
Pre-Matching	71	35.74	7.57	0.75	-3.80	0.000	5.17	-20.82	29
Post-Matching		55.38	7.08						
Pre-Reading in Depth	142	74.79	15.35	0.94	-4.84	0.000	5.38	-26.49	29
Post-Reading in Depth		100.82	14.13						

As shown in Table 10, the mean score of the experimental class in the Banked Cloze section was 16.92 with a standard deviation of 4.91 in the pre-test. The mean score increased to 24.26 in the post-test, and the standard deviation decreased to 4.38, indicating that the distribution of scores became more concentrated and individual differences reduced. The paired samples t-test results reveal that the difference between the pre-test and post-test is statistically significant, with a t-value of -16.37, a degree of freedom of 29, and a p-value less than 0.001, confirming the statistical significance of the improvement in the Banked Cloze section. Additionally, the correlation coefficient between the pre-test and post-test scores is 0.87, indicating a high positive correlation and suggesting a relationship between the two sets of scores. The effect size, Cohen's

d, is -2.99, demonstrating a notable change between the pre-test and post-test.

In the Matching section, the mean score in the pre-test was 35.74 (standard deviation = 7.57). After the eight-week instructional intervention, the mean score increased to 55.38 (standard deviation = 7.08). This improvement not only indicates significant progress in the Matching section but also suggests a slight reduction in individual differences. The paired samples t-test results show a significant difference between the pre-test and post-test (t-value = -20.82, degree of freedom = 29, p-value < 0.001). The correlation coefficient between the two tests is 0.75, indicating a moderate positive correlation. The effect size, Cohen's d, is -3.80, further highlighting the substantial change in scores between the tests.

The data also reveal that students in the experimental class made significant progress in the Reading in Depth section in the post-test. The mean score increased from 74.79 (standard deviation = 15.35) in the pre-test to 100.82 (standard deviation = 14.13) in the post-test. The paired samples t-test results show a t-value of -26.49, with a degree of freedom of 29 and a two-tailed p-value of less than 0.001, which is well below the significance level of 0.05, indicating a highly significant difference statistically. Moreover, the correlation coefficient between the pre-test and post-test is 0.94, demonstrating a strong positive correlation between the two tests. The effect size, Cohen's d, is -4.84, reflecting a substantial change in the Reading in Depth scores between the pre-test and post-test.

Summary

By comparing the pre-test and post-test of the two classes, the results indicate that the experimental class outperformed the control class after the eight-week instructional intervention. The analysis of the experimental class's pre-test and post-test scores reveals that students made significant progress in all tested sections (including Banked Cloze, Matching, and Reading in Depth) after using Jigsaw. Overall, the Jigsaw strategy effectively enhanced students' reading comprehension, and these improvements are statistically significant.

CHAPTER V

CONCLUSION AND DISCUSSION

This chapter provides a comprehensive summary and discussion of the research findings. It includes the following sections: research objectives, discussion, conclusion, innovations, limitations, implications and some recommendations for the future research.

Research Objectives

1. To enhance English reading comprehension of higher vocational college students by using Jigsaw in Cooperative Learning.

2. To compare English reading comprehension of students in the experimental class before and after using Jigsaw in Cooperative Learning.

Conclusion

This study aims to explore whether Jigsaw in Cooperative Learning can enhance the English reading comprehension of higher vocational college students. It specifically compares the performance of students in the experimental and control classes in the pre-test and post-test, as well as the changes in English reading comprehension of the experimental class students before and after using the Jigsaw strategy. Through quantitative analysis, the study yielded the following key findings:

1. In the terms of the first objective, the results show that students in the experimental class significantly improved their reading comprehension after the eight-week intervention using Jigsaw (M=180.46, SD=20.34). Although the control class also showed some progress following traditional instruction (M=140.11, SD=24.29), the post-test scores of the experimental class were notably higher than those of the control class, demonstrating the greater effectiveness of the Jigsaw strategy in enhancing students' English reading comprehension. Additionally, data analysis indicates that students in the experimental class made significant gains across all score ranges, with particularly evident progress from lower to middle and higher score ranges (see Table 8). This finding further confirms that Jigsaw in Cooperative Learning can better

enhance students' English reading comprehension comparing with the traditional teaching method. That is to say, Jigsaw in Cooperative Learning can enhance English reading comprehension of higher vocational college students.

2. In terms of the second objective, the results indicate that after the eight-week intervention using the Jigsaw strategy, the English reading comprehension of students in the experimental class significantly improved. In the three sections of the test, such as Banked Cloze, Matching, and Reading in Depth, students in the experimental class showed significant progress across all dimensions. In the Banked Cloze section, the post-test mean score increased by 7.34 points compared to the pre-test, and the standard deviation also decreased, indicating an improvement in students' vocabulary comprehension. In the Matching section, the post-test score saw an even larger increase, with a mean gain of nearly 20 points, demonstrating significant progress in extensive reading comprehension. The improvement in the Reading in Depth section was also significant, with the average post-test score increasing by 26 points, showing an enhancement in students' intensive reading comprehension.

Overall, the English reading comprehension of students in the experimental class improved significantly across multiple dimensions following the intervention with the Jigsaw strategy, thereby validating the second research objective--to compare the English reading comprehension of students in the experimental class before and after using Jigsaw in Cooperative Learning.

Discussion

The primary aim of this study is to explore whether Jigsaw in Cooperative Learning can enhance the English reading comprehension of higher vocational college students. The effectiveness of the Jigsaw strategy is validated through a comparative analysis between the experimental and control classes, as well as by examining the changes in the scores of the experimental class before and after the intervention.

1. To enhance English reading comprehension of higher vocational college students by using Jigsaw in Cooperative Learning

The comparison of pre-test and post-test scores between the experimental and

control classes reveals that, although both groups showed progress after the intervention, the improvement in the experimental class was significantly greater than that in the control class. This indicates that the Jigsaw strategy has a clear advantage over traditional teaching methods in enhancing students' reading comprehension. Unlike traditional teaching, the Jigsaw strategy promotes active student participation through group cooperation and interaction. Traditional teaching is often teacher-centered, where students passively receive knowledge and lack sufficient interaction and opportunities for independent learning (Zou Dejuan, 2013). In contrast, the Jigsaw strategy encourages students to work collaboratively, where they not only need to thoroughly understand the content they are responsible for but also share and discuss it with their group members. This cooperative learning model greatly enhances student engagement and responsibility, thereby improving learning outcomes. This finding is highly consistent with the core principles of cooperative learning theory. According to Johnson & Johnson (1999), in cooperative learning, students can help each other, share information, and deepen their understanding of the material through discussion. The Jigsaw strategy encourages students to take on different roles within their groups and solve problems together. This division of labor and collaboration effectively promotes deep learning. In contrast, traditional teaching lacks this peer interaction, and when students encounter difficulties in understanding, they often have to rely solely on the teacher's explanation, which may limit learning outcomes. Therefore, the significant progress observed in the experimental class can be attributed to the cooperative learning environment provided by the Jigsaw strategy, while the effect of traditional teaching methods appears to be relatively limited. Pariati (2018) conducted a quasi-experimental study with 80 students, and the results showed that students using the Jigsaw strategy performed significantly better in reading comprehension compared to those using traditional teaching methods, proving that the strategy is more effective in enhancing reading comprehension. Similarly, Aprilia et al. (2024) found that after a five-week teaching experiment, students using the Jigsaw strategy showed significant improvements in their reading comprehension test scores, with the experimental group outperforming the control group. Furthermore, Elsayed (2023) conducted a study in Saudi Arabia that also confirmed the Jigsaw strategy's statistically significant advantage over traditional teaching methods in improving reading comprehension.

2. To compare English reading comprehension of students in the experimental class before and after using Jigsaw in Cooperative Learning

The results of this study indicate that after the eight-week intervention using the Jigsaw strategy, students in the experimental class showed significant improvement across multiple dimensions of reading comprehension, including vocabulary comprehension, extensive reading comprehension, and intensive reading comprehension. This finding is consistent with Vygotsky's sociocultural theory, which emphasizes that learning is constructed through social interaction, and that students can achieve better learning outcomes through communication and collaboration with others. The implementation of the Jigsaw strategy provided students with more opportunities for interaction. During group discussions, students reinforced their understanding of the reading materials through mutual exchange and feedback, which helped them make greater progress in understanding complex sentences, vocabulary, and content.

During the implementation of the Jigsaw strategy, students are required to engage with and master key vocabulary within the reading materials. Each student is responsible for learning and understanding a specific section, which compels them to gain an in-depth understanding of the key vocabulary in the text and accurately convey it to their group members. Through this interactive approach, students repeatedly use and discuss vocabulary during the reading process. This repeated exposure and application help deepen their understanding of vocabulary. Unlike the more traditional and isolated approach to vocabulary instruction, the Jigsaw strategy allows students to consolidate their vocabulary comprehension through active learning and group discussions. This aligns with the concept of positive interdependence in cooperative learning theory, where students collaborate within groups by dividing tasks. They not only need to understand their assigned parts but also assist their peers in grasping other sections of the material. Such cooperative relationships promote vocabulary comprehension. Dwi et al. (2013) conducted an experiment and found that students trained with the Jigsaw strategy were better able to infer the meanings of new words. Their findings are consistent with those of this study, further validating the effectiveness of the Jigsaw strategy in enhancing students' vocabulary acquisition. Similarly, Li Yaqiong (2018), through a 16-week teaching experiment, discovered that the Jigsaw

method not only improved overall reading comprehension but also helped students make more accurate word meaning predictions. Pariati (2018) also demonstrated the effectiveness of the Jigsaw strategy, highlighting its positive impact on vocabulary acquisition and reading comprehension. This suggests that the collaborative and discussion-based nature of the Jigsaw strategy provides students with more opportunities to encounter, use, and learn new vocabulary, thus expanding their vocabulary knowledge.In a related study, Aprilia et al. (2024) observed that implementing the Jigsaw strategy in instruction led to an increase in students' vocabulary knowledge. These findings closely align with the results of this study, further confirming the effectiveness of the Jigsaw strategy in improving students' vocabulary mastery and their skill to infer word meanings.

Extensive reading comprehension refers to students' use of skimming and scanning to extract information from a text. Through rapid reading, they grasp the main ideas or central themes of an article and locate specific information within the text. In the Jigsaw strategy, students independently work on a portion of the text and then share it with their group members. This approach requires students to quickly extract information, helping them enhance their extensive reading comprehension skills. The Jigsaw strategy effectively improves students' extensive reading comprehension because, during group collaboration, students need to rapidly understand their assigned sections and summarize and communicate the key information within a limited time. This training in information extraction significantly improves their reading speed and ability to synthesize information compared to the passive reading mode often seen in traditional teaching methods. Additionally, through discussion and feedback with group members, students can deepen their overall understanding of the text.This aligns with the views of Tanaka and Sanchez (2016), who found that peer questioning in cooperative learning enables students to engage more critically in text discussions. Through such interaction, students must thoroughly understand the text to fulfill their role as the "expert," which not only strengthens their information retrieval skills but also ensures they communicate content clearly and accurately. The study by Dwi et al. (2013) supports this perspective, showing that the Jigsaw strategy helps students overcome difficulties in reading comprehension, enabling them to better identify the

main ideas and key details in a text. Similarly, Shi Tongmei (2022) conducted a three-month experimental study and found that group discussions in Jigsaw activities not only deepened students' understanding of text structures but also enabled them to extract key information from the text more effectively through explanation. Additionally, students showed significant improvement in detail extraction, inferential reasoning, and summarization skills. Mansur's (2019) research further supports the conclusions of this study. He investigated the impact of Jigsaw on developing extensive reading comprehension among university students in East Jakarta, revealing that when using the Jigsaw technique for extensive reading, students were able to systematically and clearly articulate their understanding of the text, demonstrating strong reading performance.

Intensive reading comprehension refers to the in-depth analysis of a text during the reading process. The group discussions in the Jigsaw strategy provide students with opportunities to deeply analyze text details. Each student is responsible not only for understanding their assigned portion but also for mastering the entire text's details through discussion, prompting them to better process complex information and make inferences and judgments during reading. According to the construction-integration model by Kintsch & van Dijk (1978), text comprehension is achieved through repeated processing and integration of information. When readers engage with complex texts, they need to integrate new information into their existing knowledge network, gradually building a deep understanding of the text. The Jigsaw strategy, through collaborative division of tasks, effectively reduces the cognitive load on students when dealing with complex texts. Students need only focus on and analyze a portion of the text within the group and then, through interaction and information exchange with other members, develop a comprehensive understanding of the entire text. This process enhances students' ability to integrate information, enabling them to make logical judgments and inferences when faced with complex information and textual reasoning. The significant improvement in intensive reading comprehension observed in the experimental class can be attributed to the effective interaction mechanisms of the Jigsaw strategy. In traditional teaching, students often rely on the teacher's guidance to understand complex content, whereas the Jigsaw strategy, through group collaboration and discussion,

allows students to exchange information with their peers, forming a comprehensive understanding of the entire text. This process effectively promotes students' analytical skills. Aprilia et al. (2024) also pointed out that the Jigsaw strategy requires students to teach their peers, further reinforcing their understanding and retention of the material. Their study found that students are more likely to identify detailed information in the text during the teaching process. When students are responsible for explaining their assigned portions to group members, this accountability encourages them to work harder in understanding details to ensure that the information they convey is accurate and thorough. This process not only consolidates their understanding of details but also deepens their comprehension and memory of the content through explanation. Through interaction and analysis, the Jigsaw strategy helps students grasp the overall structure and deeper meaning of the text. Particularly when dealing with implicit information and complex inferences, students can use contextual clues to make logical deductions, significantly improving their understanding of deeper textual information. The study by Syadza & Astuti (2024) highlights the advantages of the Jigsaw strategy in promoting deeper text comprehension, especially in handling complex tasks such as inferential reasoning, word meaning guessing, and logical analysis. Udombua (2019) employed a quasi-experimental design and conducted a two-month instructional experiment with 60 students. The study further confirmed that the Jigsaw strategy has a positive effect on enhancing students' reading comprehension performance. The interaction dynamics within the “Home Group” and the “Expert Group” facilitated communication among students and improved their reading comprehension. Additionally, the findings indicated that this strategy helps students identify headings, key ideas, and supporting information.These findings align with the results of this study, further validating the value of the Jigsaw strategy in enhancing students' intensive reading comprehension.

Innovations

This study introduced and validated the effectiveness of Jigsaw in Cooperative Learning in English reading instruction at higher vocational colleges, offering an innovative approach compared to traditional teaching methods. The innovation of this study is reflected in two main aspects:

Firstly, this study applied the Jigsaw strategy to English reading instruction in

higher vocational colleges, aiming to enhance students' reading comprehension skills, which is relatively rare in previous studies. Most existing research focuses on undergraduate or primary and secondary school students. By conducting a comparative analysis, this study verified the applicability and effectiveness of the Jigsaw strategy in higher vocational education. Compared to traditional methods, the Jigsaw strategy, through group collaboration and task division, provides an innovative teaching model for English instruction in higher vocational settings.

Secondly, this study empirically compared the effects of the Jigsaw strategy on different aspects of reading comprehension. Unlike previous studies that primarily focus on improving a single reading skill, this research innovatively analyzed the impact of the Jigsaw strategy on various aspects of reading comprehension among vocational students. The results demonstrated that the Jigsaw strategy shows significant advantages in vocabulary comprehension, extensive reading comprehension, and intensive reading comprehension, providing strong evidence for English instruction in higher vocational education.

Pedagogical Implications

This study empirically verifies the effectiveness of Jigsaw in Cooperative Learning in improving the English reading comprehension of college students. It provides a scientific and effective pedagogical approach to college English teaching and brings various insights to the practice of English teaching in colleges.

First, Jigsaw in Cooperative Learning provides an effective teaching method for English in higher vocational education. Research results show that the Jigsaw has a significant effect on improving students' English reading comprehension. Teachers can integrate this technique into their daily teaching so that through task sharing and group cooperation, students can have a deeper understanding of the text in interaction and improve their reading performance in all aspects. Jigsaw promotes students' mastery of the learning content in cooperation and strengthens their learning autonomy. For teaching English in colleges, teachers can use this technique to encourage students to actively participate in classroom interactions and improve their reading comprehension through cooperation, thus effectively supporting the improvement of the overall

teaching quality.

Second, Jigsaw significantly improved the English reading comprehension of students in higher vocational education. The study shows that students' performance in vocabulary comprehension, extensive reading comprehension, and deep reading comprehension improved. Through cooperative learning, students learn how to effectively extract critical information from the text and analyze it to develop a deep understanding of the overall content. The Jigsaw helps students cope better with complex texts and lays a solid foundation for their future academic and professional development. Teachers can use this one to help students develop the skills to deal with complex texts in the classroom, improving the overall English reading comprehension.

Limitations

The eight-week experiment proved Jigsaw's significant improvement effect in cooperative learning on vocational students' English reading comprehension, indicating that the technique has some reference value in developing students' English reading comprehension. However, this study has some shortcomings that need to be improved in future research.

1. The scope of this study is limited

This study was only conducted on students in one particular college, with a relatively limited sample size, which only partially represents all college students. Although the study results are informative for this group, there may be limitations in generalizing to a broader range of higher education institutions or other student groups. Therefore, future studies should increase the sample size to improve the generalizability and representativeness of the findings.

2. The research period is short

This study's experimental period was only eight weeks. Although the results showed that the Jigsaw in Cooperative Learning effectively improved students' English reading comprehension in the short term, it did not allow in-depth observation of the 's impact on students' long-term learning outcomes. Future research could extend the experimental period to examine the lasting effects of the Jigsaw at different stages of

learning in order to gain a more comprehensive understanding of its effects on students' long-term learning development.

3. The research method is limited

This study only employed a quantitative research method. Although it objectively measures changes in students' reading comprehension, it lacks qualitative data support, such as exploring the impact of the Jigsaw strategy on non-cognitive factors like students' learning motivation and attitudes. Learning motivation and attitudes play a significant role in students' long-term learning processes and may directly influence their learning experiences and performance.

Recommendations for Further Research

1. Expand the research scope

Future research could be conducted across various types of higher vocational colleges, different regions, and among students from different majors to further validate the effectiveness of Jigsaw in Cooperative Learning on enhancing English reading comprehension. This would also help examine its applicability and generalizability in different educational contexts.

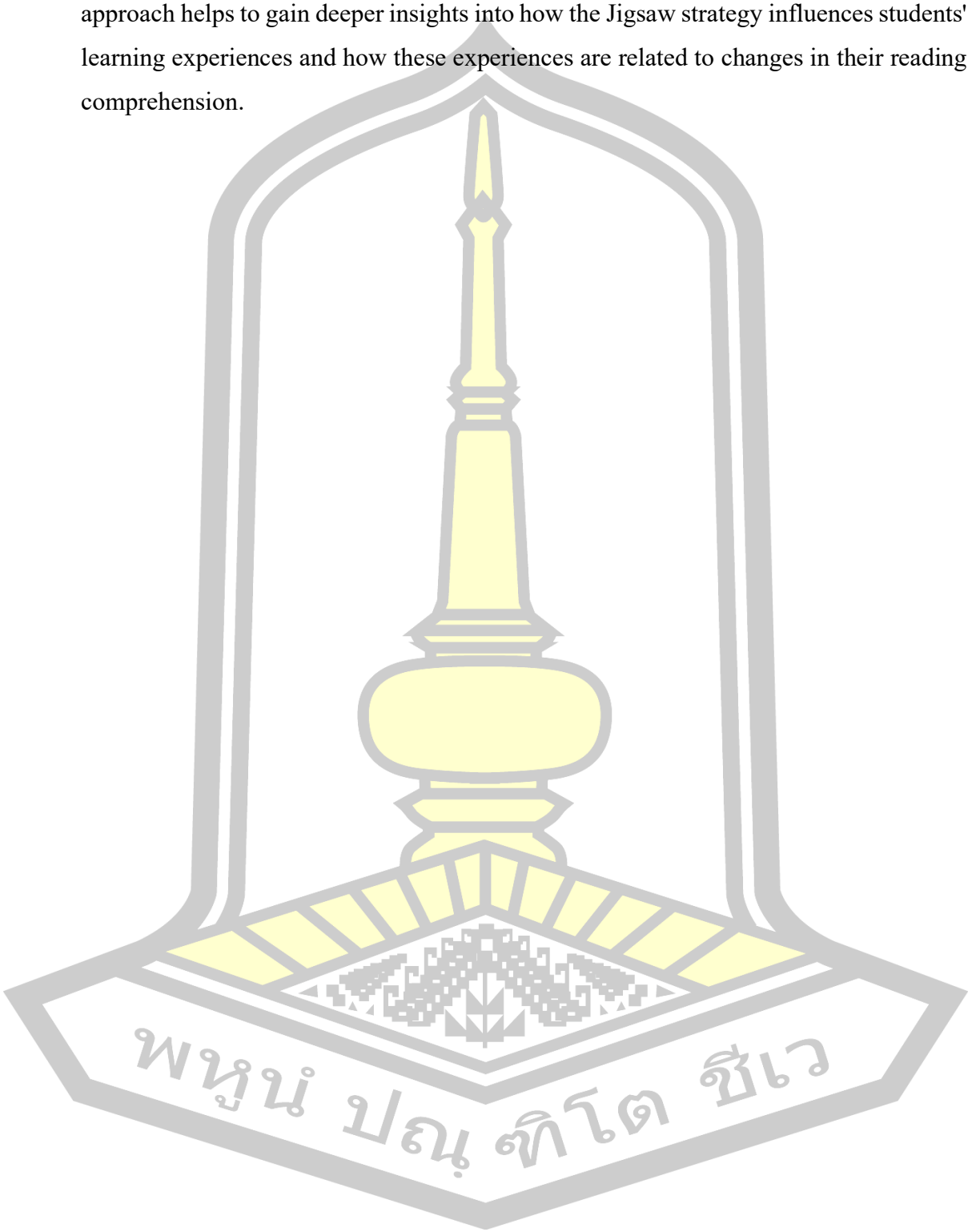
2. Extend the duration of the study

Future research could design longer-duration experiments, such as six months or a year, to observe the long-term effects of the Jigsaw strategy on students' English reading comprehension. In particular, attention should be paid to the long-term effects of Jigsaw on students' learning performance and study habits to ensure that it is not only effective in the short term but also maintains its effects over a long period of time. This will provide a more reliable basis for using the Jigsaw in long-term teaching.

3. Combine quantitative and qualitative research methods

To gain a more comprehensive understanding of the impact of the Jigsaw strategy on students' English reading comprehension, future research can combine both quantitative and qualitative methods. Qualitative data, such as interviews, classroom observations, and student feedback surveys, can reveal students' motivation, attitudes,

and emotional responses during their participation in cooperative learning. This approach helps to gain deeper insights into how the Jigsaw strategy influences students' learning experiences and how these experiences are related to changes in their reading comprehension.



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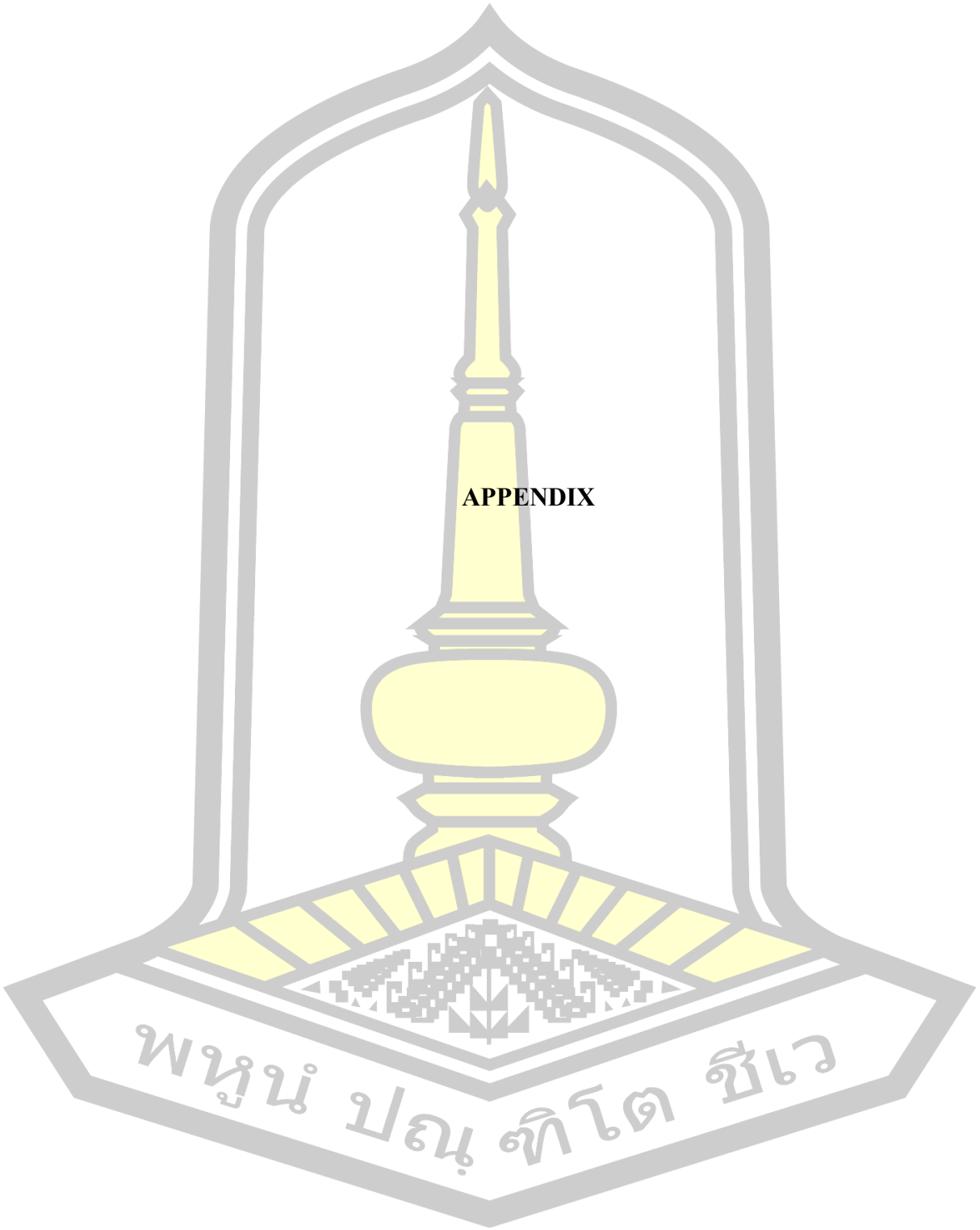
APPENDIX



APPENDIX A

Reading Comprehension Pre-Test

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 o f 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. You may not use any of the words in the bank more than once.*

Questions 1 to 10 are based on the following passage.

You might think of your teeth as tools, like built-in knives and forks, but if they are mere tools, why do they feel pain and wouldn't it be better if they could just 1 under any condition? In spite of our 2 discomfort, it turns out there's a good reason our teeth are so sensitive. Tooth pain is a 3 mechanism that ensures when a tooth is being damaged we'll notice and do something about it.

If we eat something too hot or too cold, or if the tooth is worn down enough where the tissue 4 is exposed, all of those things cause pain, and then the pain causes the person not to use that tooth to try to protect it a little bit more. So it's really a protective mechanism more than anything else. If teeth didn't feel pain, we might 5 to use them in situations that damage them, and for humans, damaging 6 teeth is a problem because, unlike crocodiles, we can't 7 them.

Teeth have three layers, only one of which-the innermost layer of the tooth-can hurt, as that layer of the tooth 8 both blood vessels and nerves. Pain is the only feeling to which the nerves in that layer respond. Whereas people with tooth sensitivity may complain, for example, of tooth pain 9 by heat or cold, the nerves in the inner layer don't sense temperature. Rather, they feel pain, which may be 10 with, say, drinking something very cold.

A) adult	I) emotional
B) associated	J) implies
C) chew	K) mammal
D) contains	L) replace
E) continue	M) swallow
F) defense	N) triggered
G) dental	O) underneath
H) downward	

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 o f 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 .*

How to determine if a company is a good fit for you

A) On paper, the job seemed perfect for me: The position was completely in line with my degree, the duties and responsibilities were compatible with my interests, and the office maintained a well-stocked kitchen that would satisfy my every snack desire.

B) Sounds like my dream job, right? There was only one small problem: I simply didn't get along with the company culture. They favored a more rigid, closed-door, corporate atmosphere, while I would have preferred something more collaborative and open. They were complete clock watchers, while I would have liked a more flexible schedule. To put it plainly, we just weren't on the same page.

C) When it comes to looking for a new job, you already know that a big part of the interview process involves the company evaluating whether or not you're a good fit for their open role. But, it's important to keep in mind that the employer isn't the only one who needs to identify a good match- you should be looking for that same exact thing. Company culture can have a big impact on how you feel about your work, so you want to make sure you sign an offer letter with an organization you're truly excited about.

D) However, figuring out what a company is like before you actually work there can be a bit of a challenge. Luckily, there are a few things you can do to determine whether or not a company is a good fit for you- before you ever sign your name on that dotted line.

E) First of all, know what you want. It's hard to make any decisions when you don't really know what you're looking for. So before you can determine whether you and a specific company would be compatible together, it's important to have a solid handle on what exactly you want from your employer. Many of us have an easier time identifying the things that we absolutely don't want. If those are the only things you can think of, don't worry! That's still a good place to start.

F) Start by writing down the things you didn't like about previous employers, as well as the parts you really valued. There is no wrong answer here--so from big things to small details, write them all down on your list. This will help you immediately identify what you're looking for in an organization, as well as the things you're trying to stay far, far away from.

G) Make sure to do your research. Now comes the part when you put on your detective hat and do a little digging. The Internet will be your best friend when you're trying to familiarize yourself with a company's culture before ever walking through their office doors. And where exactly should you look for these culture clues? Start with the most obvious place first: the company's website. Read through their copy and blog. Do they use formal, direct language? Or is it casual, conversational, and maybe even a little humorous? This can be a big indicator of what sort of atmosphere the company is trying to cultivate.

H) Next, turn your attention toward their social media outlets. Are they sharing photos of their team's Thursday afternoon barbeque or Halloween costume contest? Or are their social media accounts strictly reserved for company-related announcements and product launches?

I) An industry review website like Glassdoor is another spot to check in order to find some insider information about what you can expect about a company. However, remember to take the reviews you read with a grain of salt-many of them are written by scorned (被嗇口视的)employees.

J) Finally, you can never fail with personal connections. Send a quick message to a current or previous company employee on Linkedln or by email and ask if they would be willing to have a quick conversation with you about the organization in general.

If you get a yes to your request for a chat, you911 be armed with some pretty powerful and helpful information heading into your interview!

K) Learn more by asking questions. You know that part at the end of a job interview when the hiring manager asks if you have any questions, and you just stare across the table blankly with your mouth hanging open? That's the perfect opportunity to speak up and get your burning company culture questions answered! So yes, you can definitely ask your interviewer about what it's like to work for that particular organization. Simple questions like, “What three words would you use to describe the culture here?” or “What's your favorite part about working for this company?”can reveal a lot about what it's really like behind closed doors.

L) Prioritize your values. What does my dream company culture look like? Well, I could come and go as I please, as long as I was getting the work done. My boss would genuinely listen to and value all of my ideas arid suggestions. My co-workers would all be friendly with one another, without ever falling into the office gossip trap. The kitchen would have endless options of pizza and cookies. Oh, and they'd give me two months of paid vacation with a very generous salary.

M) What are my chances of finding all of those things with one employer? Slim to none—— believe me, I've looked. This is why it's so important to know which aspects of a company's culture you value most. Is it an open communication style or a flexible schedule? Focus on the top spots on your priority list, and ensure a potential employer at least checks those boxes. Unfortunately, this is reality, you can't have everything you want but a few are certainly achievable.

N) When you're hunting for a new job, you already know that the employer is trying to decide whether or not you're a good fit for the position. But you should also look at the process through a similar lens. You may not be the one conducting the actual interview, but you're still trying to determine whether or not the company is a good fit for you.

O) Keep these tips in mind to figure out whether you and a potential employer are a perfect match or just a recipe (方案)for disaster. After all, it's a good thing to know before actually accepting an offer.

11. Clues about the culture of a company can be found on its website.

12. It can be difficult to know the real situation in a company until you become part of

it.

13. It is impossible for a job applicant to have every expectation met.

14. Simply by reading its description, the author found the job offered ideal.

15. Job applicants are advised to make a written list of their likes and dislikes in their previous employment.

16. At the end of an interview, a job applicant should seize the opportunity to get answers to their urgent questions.

17. To begin with, job applicants should be clear what they expect from their future employer.

18. Job applicants should read with a critical eye what is written about a company on the website.

19. Job satisfaction has a lot to do with company culture.

20. A chat with an insider of a company can give job applicants very useful information when they prepare for an interview.

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.*

Passage One

Questions 21 to 25 are based on the following passage.

Online classes began to be popularized just a few decades ago. They are advertised as a way for adults to finish their education and students to learn the material at their own pace ——it is far more compatible for people with busy schedules.

But after being enrolled in an online course last fall semester, I came to realize online classes were merely a means to fulfil course requirements.

First of all, students lack the desire to learn, and they simply complete their

assignments to receive credit for a passing grade rather than genuinely engage with the course material.

As online courses tend to have more than 100 students, most of the assignments are short and simple. They are not designed for students to interact with the material in depth but designed to be graded easily to accommodate such a large number of students.

Perhaps the biggest disadvantage of taking an online class is the absence of face-to-face interaction between the teacher and their students. Live sessions are infrequent and are often scheduled during the middle of the day when students have to attend other classes or work. The office hours of the professor may also be during inconvenient times for many students as well. Most interaction with the professor has to be through email which is often impersonal. It is nearly impossible for students to build a relationship with their professor.

There is also little interaction among students. It can be harder for students to create study groups and form relationships with their peers.

Online classes also require either a computer or laptop and a reliable internet connection. Not all students have access to these types of resources, whether it is for financial or other reasons, and some students can be put at a disadvantage.

Offering online classes certainly helps students who would otherwise not be able to attend classroom sessions. However, they fail to provide a genuine education with an emphasis on convenience rather than critical thinking. We need restructured online classes in which students can have a learning experience that will actually provide quality education.

21. What does the author say about students enrolled in online classes?

A) They can access course materials easily.

B) They are unmotivated to learn.

C) They can learn at their own pace.

D) They rarely fulfil the course requirements.

22. What does the author think of online course assignments?

A) They are made convenient to mark.

B) They are meant to facilitate interaction.

C) They are based on easily accessible material.

D) They are given to accommodate students' needs.

23. What does the author say is one disadvantage of online classes?

A) They are frequently scheduled at irregular times.

B) They make professors' offices much less accessible.

C) They tend to increase professors' burden of responding to students' emails.

D) They provide little chance for students to build relationships with each other.

24. What problem may arise if classes go online?

A) More students may find it easy to be absent from them.

B) Teachers will worry about poor internet connections.

C) Some students may have difficulty attending them.

D) Schools with limited resources will be at a disadvantage.

25. What does the author think constitutes a key part of genuine education?

A) Acquisition of useful knowledge.

B) Training of real-life skills on campus.

C) Development of students' personalities.

D) Cultivation of analytical thinking ability.

Passage Two

Questions 26 to 30 are based on the following passage.

In the age of the internet, there's no such thing as a private debate. But is that bad for science? Some scientists have had concerns. When debates in any sector move beyond the halls of universities and government agencies, there's potential for information to be used incorrectly, leading to public confusion; yet, open debate can also promote communication between the scientific community and the public. Recent open debates on scientific research, health, and policy have aroused greater public

attention and encouraged more diverse voices. If this trend spurs scientists to agree more quickly about the best solutions to our problems-and at the same time helps the public observe the process of scientific discourse more clearly- then this is good for everyone, including scientists.

A recent debate published in The New York Times discussed the question of how quickly medicine should be developed and produced. Issues such as safety of the product and perception of the public were examined and considered. But some experts worried that such public speculation might lead people to believe that disagreement about the details meant a lack of adequate scientific consensus over the safety and efficiency of modern-day medicine.

The anxiety seems misplaced. Gone are the days of going to a conference and debating scientific issues, and that's good because those gatherings were not diverse enough and excluded many important voices. These days, the public can access debates about science regardless of where they take place.

For many scientists, public debate is a new frontier and it may feel like a place with few restraints or rules? but rather than avoiding such conversations, let the debates be transparent and vigorous, wherever they are held. If the public is to understand that science is an honorably self-correcting process, the idea that science is a fixed set of facts in a textbook needs to be dismissed. With the validity of science coming under attack, there's a need for scientific debates to be perceived as open and true to life. Let everyone see the noisy, messy deliberations that advance science and lead to decisions that benefit us all.

26. What does the author think open debate can do?

A) Help the public to better understand science.

B) Clear up confusion in the scientific community.

C) Settle disputes between universities and government agencies.

D) Prevent information from being used incorrectly by the public.

27. Why did a recent debate published in The New York Times arouse concerns among experts?

A) It might hinder the progress in medical research.

B) It might breed public distrust in modem medicine.

C) It might add to the difficulty of getting research funds.

D) It might prevent medical scientists reaching consensus.、

28. Why does the author say some experts' anxiety seems misplaced?

A) Debating scientific issues at a conference is now old-fashioned.

B) Diverse topics can be debated by both scientists and the public.

C) Debates about science are accessible to the public anyway.

D) Scientists can voice their opinions whatever way they like.

29. What does the author suggest scientists do about public debate?

A) Have more discussions about it.

B) Embrace it with open arms.

C) Formulate new rules for it.

D) Restrain it to a rational degree.

30. What does the author say about science in the last paragraph?

A) It is transmitted through textbooks.

B) It is what proves valid and true to life.

C) It is a dynamic and self-improving process.

D) It is a collection of facts and established rule

APPENDIX B

Reading Comprehension Post-Test

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 o f 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. You may not use any of the words in the bank more than once.*

Questions 1 to 10 are based on the following passage.

If you've ever looked at the ingredients list while grocery shopping, chances are you've seen the term "natural flavors". But have you taken a __1__ to consider what these natural flavors actually are?

Most of us might think that "natural flavors" are, well, naturally good for us.

A recent study in the journal Appetite found that when the word "natural“ appears on packaging, people __2__ that the food within is indeed healthier. In truth, natural flavors do not __3__ much, at least chemically speaking, from their flavor-boosting __4__:artificial flavors. Both can be made in a lab by trained flavorists, but artificial flavors use chemicals to give a product a __5__ smell or taste.

Natural flavors come from plant or animal __6__ like fruit, vegetable, meat, fish or milk that is then processed or refined in some way. In short, natural flavors are __6__ from plants and animals to create specific flavors for processed foods. But that does not __8__ make it easier to tell what is really in your food. Because the Food and Drug Administration (FDA) has not __9__ the term, companies can use it to refer to pretty much anything derived from a plant or animal. And natural flavors can also include a variety of chemical additives, such as preservatives. The FDA doesn't require companies to reveal what additional chemicals a specific item __10__.

So if you want to know for certain what you're getting with your groceries, you might want to stick to the farmer's market. market.

A) acknowledge	I) implies
B) chance	J) necessarily
C) contains	K) particular
D) counterparts	L) perceive
E) defined	M) second
F) differ	N) sources
G) especially	O) strange
H) extracted	

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 o f 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 .*

Fake holiday villa websites prompt warning

A) During the British winter, the thought of two weeks in a coastal villa (别墅) with soul-stirring views of the sea and a huge pool to enjoy is enough to offset (抵消)the labor until the holidays start. For a growing number of people, however, their yearly break is turning into a nightmare as they find that the property they have paid thousands for does not exist and the website through which they booked it has disappeared.

B) Consumers have been warned to be aware of the potential for deception in this market,which is far from uncommon. In 2017 there were 1,632 cases of reported"villa fraud (诈骗)", with victims losing an average of £ 2,052, according to Action Fraud, the national center for reporting such frauds. "'Millions of pounds are lost each year by defrauded holidaymakers," says Sean Tipton of the Association of British Travel Agents (ABTA).

C) The problem has ballooned in the last 10 years, with frauds becoming more and more sophisticated. The fake websites have authentic-sounding names involving a mix of keywords, typically including the place name,"summer", "villas" or "rentals".

Details of legitimate (合法的)villas are often stolen from other sites. "When the fraudsters first started it was unsophisticated -- the websites looked amateur and there wasn't a lot of effort," says Tipton. "Now they are clever. They extensively rip off legitimate websites and use a different website name. They'll have pictures of a sales team and it might be a poor actor in New York that is down as their head of sales."

D) Fraudsters target popular seaside destinations for British tourists visiting Spain where prices can soar if demand exceeds supply. Prices are kept within reasonable ranges to avoid arousing suspicion. CCA villa might cost £ 5,000 elsewhere and they will offer it at say £ 3,500. But a bit of a giveaway is that the villa will be cheaper than on other websites and there's unlimited availability, says Tipton. Fraudsters also invest in pay-per-click advertising to feature at the top of search engines when people type in phrases such as "Spanish seaside villas".

E) With such a degree of professionalism, how can consumers find out if the website they're looking to book with is trustworthy?" When people book holiday villas they are doing so through rose-colored glasses," says Tony Neate, chief executive of Get Safe Online, "They should be Googling the property, and looking on websites like Google Maps and Street View to see if it's there. Also, speak to the person you're booking the villa with on a landline phone, as fraudsters tend to only use mobiles." He also suggests asking someone not going on the holiday to have a look at the website. "They might spot problems you don't spot." Another potential red flag is being asked to pay by bank transfer. "The problem is that when the money leaves your account it's in theirs straightaway and it's very hard to track it," says Barclays Bank head of digital safety, Jodie Gilbert. "We generally recommend other forms of payment, like credit card."

F) Little seems to be known about these fraudsters, "There is no way to definitely know who they are," says Neate. "It could be anyone. It could be your next-door neighbor or organized crime in Russia." Action Fraud says people should ensure the company renting the villa is a member of a recognized trade body such as ABTA.

G) "By working with industry partners such as ABTA and Get Safe Online, we are able to issue alerts about the latest threats they should be aware of. If you believe you have fallen victim to fraud or cyber-crime, please report it to Action Fraud, it adds. ABTA says it is trying to combat the issue by running public awareness campaigns. "It's a growing problem and people can't stop fraudsters being dishonest, "says Tipton. "They're still going to do it. It's not impossible to stop but as it's internet-based it's

harder to pursue.”

H) Nick Cooper, the founder and co-owner of villa booking company Villa Plus, estimates his company has uncovered more than 200 fake villa websites over the past two years, and doesn't believe enough is being done. "It is hopeless to report fake villa websites to the internet giants who host them,” he says. "I found it impossible to speak to anyone. Also, once one bank account gets reported, they simply use another.”

I) For now the only way to stop fraudsters appears ultimately to lie in the hands of the consumer. "When people book their holidays they get so emotionally involved, and when they find that villa at a good price with availability in peak season, they are an easy target, “says Cooper. “The public has to learn to be far more aware they are a target for these sort of frauds.” But it's not just the financial cost. "A family will turn up at a villa and find out it doesn't exist or the owner doesn't know who you are,” says Tipton. "The problem then is you have to find accommodation at short notice. It can be incredibly expensive but it's the emotional cost, too.”

J) Carla O9Shaughnessy from Sydenham was searching last year for a good deal to book a villa in Majorca for a summer break for the family. was comparing prices online and found one that came in a bit cheaper than others, says O9Shaughnessy. She emailed the company via its website, asking how far the villa was from the airport and about local restaurants. "They came back with believable answers; it was all very friendly and professional, she says. Happy with the responses, O'Shaughnessy paid the full amount of £ 3,000 via bank transfer into the travel agent's account and then forgot about it until a month before the booking.

K) “I tried logging on to the website and couldn't," she recalls. "I Googled the agent's name and there were lots of complaints about him being a fraudster. If only I'd Googled before but I never thought of it." Although she found another villa in time for their holiday, she admits she was much more cautious. “I paid through a secure third-party site and had phone conversations with the agent. But I wasn't able to relax until we turned up and I had the keys.”

11. Fraudsters often steal villa-booking information from authentic holiday websites.

12. Fraudsters keep changing their bank accounts to avoid being tracked.

13. It is suggested that people not going on the holiday might help detect website frauds.

14. More and more British holidaymakers find the seaside villas they booked online actually nonexistent.

15. By checking an agent's name online before booking a villa, holidaymakers can avoid falling into traps.

16. Fraudsters are difficult to identify, according to an online safety expert.

17. Holidaymakers have been alerted to the frequent occurrence of online villa-booking frauds.

18. It is holidaymakers that can protect themselves from falling victim to frauds.

19. Holidaymakers are advised not to make payments by bank transfer.

20. Fraudsters advertise their villas at reasonable prices so as not to be suspected.

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.*

Passage One

Questions 21 to 25 are based on the following passage.

Social media can be a powerful communication tool for employees, helping them to collaborate, share ideas and solve problems. Research has shown that 82% of employees think social media can improve work relationships and 60% believe it can support decision-making processes. These beliefs contribute to a majority of workers connecting with colleagues on social media, even during work hours.

Employers typically worry that social media is a productivity killer; more than half of U.S. employers reportedly block access to social media at work. In my research with 277 employees of a healthcare organization I found these concerns to be misguided. Social media doesn't reduce productivity nearly as much as it kills employee retention.

In the first part of the study I surveyed the employees about why and how they used platforms like Facebook, Twitter, or Linkedln. Respondents were then asked about

their work behaviors, including whether they felt motivated in their jobs and showed initiative at work. I found employees who engage in online social interactions with co-workers through social media blogs tend to be more motivated and come up with innovative ideas. But when employees interact with individuals outside the organization, they are less motivated and show less initiative.

In the second part of the study I found 76% of employees using social media for work took an interest in other organizations they found on social media. When I examined how respondents expressed openness to new careers and employers, I found that they engaged in some key activities including researching new organizations and making new work connections.

These findings present a dilemma for managers: employees using social media at work are more engaged and more productive, but they are also more likely to leave your company. Managers should implement solutions that neutralize the retention risk caused by social media.

They can create social media groups in which employees will be more likely to collaborate and less likely to share withdrawal intentions or discussions about external job opportunities. Managers can also use social media to directly reduce turnover (跳槽) intentions, by recognizing employees' accomplishments and giving visibility to employees' success stories.

21. What does previous research about social media reveal?

A) Most employees think positively of it.

B) It improves employees' work efficiency.

C) It enables employees to form connections.

D) Employees spend much of their work time on it.

22. What did the author's own research find about social media?

A) It influences employees' work negatively.

B) It does much harm to employee loyalty.

C) It kills employees' motivation for work.

D) It affects employers' decision-making.

23. What did the author find in his study about the effect of online social interactions?

A) It differs from employee to employee.

B) It tends to vary with the platform used.

C) It has much to do with whom employees interact with.

D) It is hard to measure when employees interact with outsiders.

24. What problem was found with employees using social media for work?

A) They seldom expressed their inner thoughts.

B) Most of them explored new job opportunities.

C) They were reluctant to collaborate with others.

D) Many of them ended with lower productivity.

25. What does the author suggest managers do to neutralize the retention risk?

A) Give promotions to employees for their accomplishments.

B) Create opportunities for employees to share success stories.

C) Acknowledge employees' achievements through social media.

D) Encourage employees to increase their visibility on social media.

Passage Two

Questions 26 to 30 are based on the following passage.

In the coming era of budget cuts to education, distance learning could become the norm.

The temptation for those in charge of education budgets to trade teachers for technology could be so strong that they ignore the disadvantages of distance learning.

School facilities are expensive to build and maintain, and teachers are expensive to employ.

Online classes do not require buildings and each class can host hundreds of people simultaneously, resulting in greater savings, thus increasing the temptation of distance education for those concerned more about budgets than learning. But moving away from a traditional classroom in which a living, breathing human being teaches and

interacts with students daily would be a disaster. Physically attending school has hidden benefits: getting up every morning, interacting with peers, and building relationships with teachers are essential skills to cultivate in young people. Moreover, schools should be more than simple institutions of traditional learning. They are now places that provide meals. They are places where students receive counseling and other support.

Those policy-makers are often fascinated by the latest technology in education and its potential to “transform" education overnight. But online education does not allow a teacher to keep a struggling student after class and offer help. Educational videos may deliver academic content, but they are unable to make eye contact or assess a student's level of engagement. Distance education will never match the personal teaching in a traditional classroom. In their first 18 years of life, American children spend only 9% of their time in school. Yet teachers are expected to prepare them to be responsible citizens, cultivate their social skills, encourage successful time management, and enhance their capacity to flourish in an increasingly harsh labor market. Given these expectations, schools should not become permanently “remote”.

The power of the classroom is rooted in the humanity of the people gathered in the same place, at the same time. Personal teaching is about teachers showing students a higher path, and about young people going through the process together. Technology, no matter how advanced, should simply be a tool of a good teacher.

26.What mainly accounts for the possibility that distance learning could become the norm?

A) Advances in education technology.

B) Shrinking financial resources.

C) Shortage of school facilities.

D) Lack of qualified teachers.

27. What does the author say is one possible benefit of students attending school physically?

A) Developing the habit of getting up early.

B) Eating nutritionally well-balanced meals.

C) Growing into living and breathing human beings.

D) Cultivating relationships with peers and teachers.

28. What does the author think of the latest technology in education?

A) It may have potential disadvantages.

B) It may render many teachers jobless.

C) It may add to students' financial burden.

D) It may revolutionize classroom teaching.

29. What does the author say teachers are expected to do?

A) Enhance students' leadership capacity.

B) Elevate students to managerial positions.

C) Enable students to adapt to the changes in life.

D) Prepare students to be competitive in the future.

30. Why couldn't technology replace a good teacher?

A) It lacks humanity.

B) It is still immature.

C) It cannot track students' growth.

D) It cannot cater to personal needs.

APPENDIX C

The Item-Objective Congruence Index of English Reading Comprehension Pre-Test

There were 3 experts to check and confirm the validity of *English Reading Comprehension Pre-test* using the Index of Item Objective Congruence, as follow:

Items	Expert Evaluation			IOC Value	Meaning
	1	2	3		
1	1	1	1	1	Reserved
2	1	1	1	1	Reserved
3	1	1	1	1	Reserved
4	1	1	1	1	Reserved
5	1	1	1	1	Reserved
6	1	1	1	1	Reserved
7	1	1	1	1	Reserved
8	1	1	1	1	Reserved
9	1	1	1	1	Reserved
10	1	1	1	1	Reserved
11	1	1	1	1	Reserved
12	1	1	1	1	Reserved
13	1	1	1	1	Reserved
14	1	1	0	0.67	Reserved
15	1	1	1	1	Reserved
16	1	1	1	1	Reserved
17	1	0	1	0.67	Reserved
18	1	1	1	1	Reserved
19	1	1	1	1	Reserved
20	1	1	1	1	Reserved
21	1	1	1	1	Reserved
22	1	1	1	1	Reserved

23	1	1	1	1	Reserved
24	1	1	1	1	Reserved
25	1	1	1	1	Reserved
26	1	1	1	1	Reserved
27	1	1	1	1	Reserved
28	1	1	1	1	Reserved
29	0	1	1	0.67	Reserved
30	1	1	1	1	Reserved

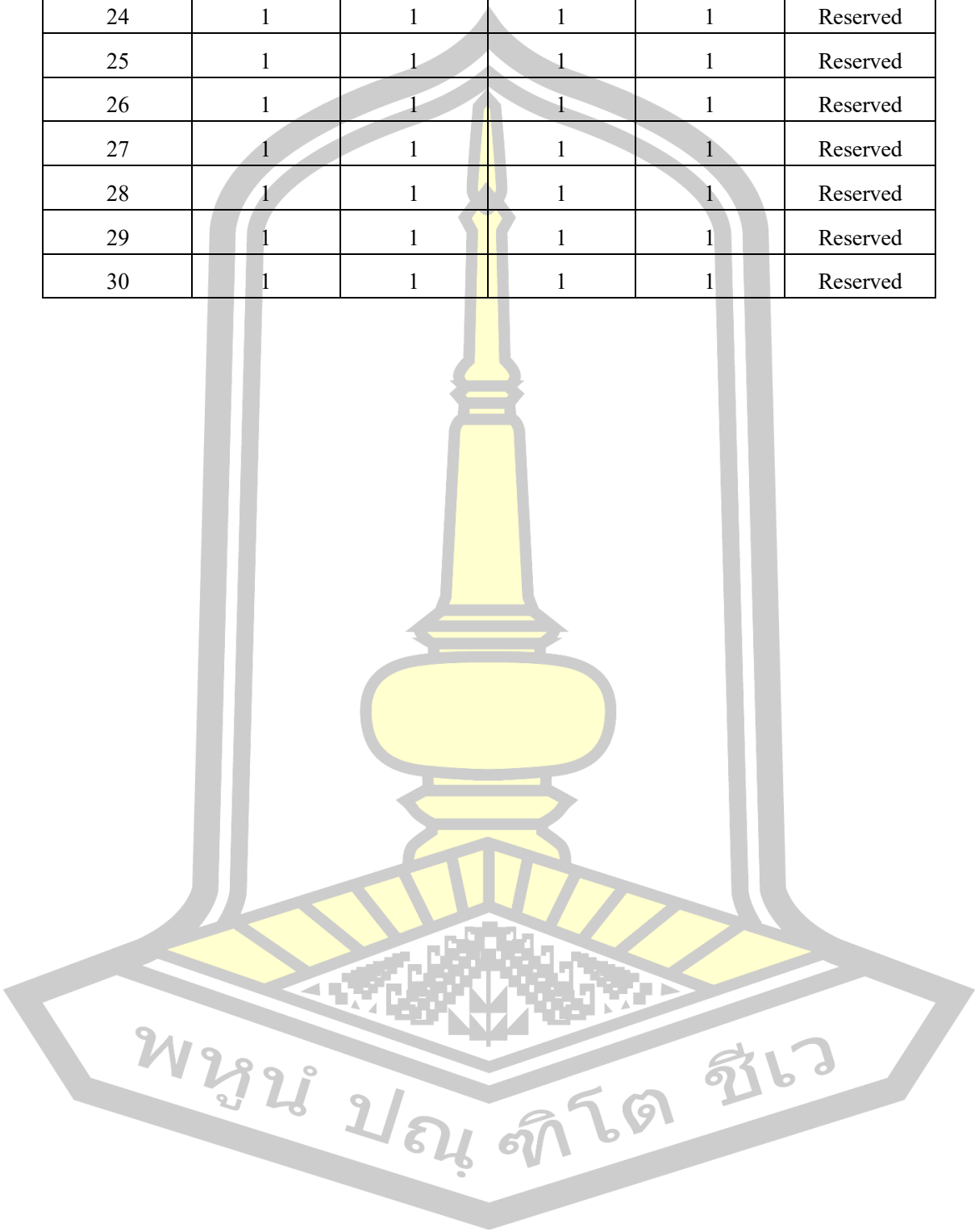
APPENDIX D

The Item-Objective Congruence Index of English Reading Comprehension Post-Test

There were 3 experts to check and confirm the validity of *English Reading Comprehension Post-test* using the Index of Item Objective Congruence, as follow:

Items	Expert Evaluation			IOC Value	Meaning
	1	2	3		
1	1	1	1	1	Reserved
2	1	1	1	1	Reserved
3	1	1	1	1	Reserved
4	1	1	1	1	Reserved
5	0	1	1	0.67	Reserved
6	1	1	1	1	Reserved
7	1	1	1	1	Reserved
8	1	1	1	1	Reserved
9	1	1	1	1	Reserved
10	1	1	1	1	Reserved
11	1	1	1	1	Reserved
12	1	1	1	1	Reserved
13	1	1	1	1	Reserved
14	1	1	1	1	Reserved
15	1	1	1	1	Reserved
16	1	1	1	1	Reserved
17	1	1	1	1	Reserved
18	1	1	1	1	Reserved
19	1	1	1	1	Reserved
20	1	1	1	1	Reserved
21	1	1	1	1	Reserved
22	1	1	1	1	Reserved

23	1	1	0	0.67	Reserved
24	1	1	1	1	Reserved
25	1	1	1	1	Reserved
26	1	1	1	1	Reserved
27	1	1	1	1	Reserved
28	1	1	1	1	Reserved
29	1	1	1	1	Reserved
30	1	1	1	1	Reserved



APPENDIX E

A Sample Teaching Plan Based On Jigsaw in Cooperative Learning Strategy

Type of Lesson: Reading

Class duration: 80 minutes

Teaching content: College - A Transition Point in My life

Teaching Objectives:

1. Knowledge objectives:

(1) Students will be able to understand the main content of the text and master key sentence patterns and vocabulary.

(2) The student is able to identify themes in the text, such as growth, independence, and self-management.

2. Competence objectives:

(1) Students will be able to improve their access and detail comprehension skills through cooperative group learning.

(2) Students will be able to summarize the main idea of a passage and share their personal opinions in a group discussion.

3. Emotional objectives:

(1) Through discussion and reflection, students will be able to relate to their own experiences and understand the importance of growth and independence.

(2) To develop students' sense of teamwork and responsibility.

Teaching focus:

(1) Understand the text through Jigsaw, students are able to summarize and share the main idea of the passage through cooperative discussion.

(2)Cultivate students' ability to extract important information and summarize content in reading.

Teaching difficulties:

How to guide students to express the content of the passage clearly and share it effectively to other members of the group in cooperative group learning.

Teaching aids: textbook, PowerPoint

Preparation before class:

Teachers will make learning materials of the key words and phrases in the article and the usage of definite clauses before class and send them to students in advance for preview.

Design Intention: The pre-reading materials help students understand the content faster and reduce the obstacles in vocabulary and grammar when they read the articles, thus allowing them to focus on the overall comprehension and detailed analysis of the articles.

Teaching procedures:

Step 1：Pre-reading (10 minutes)

1. Lead-in (5 minutes)

The teacher poses the following questions and asks students to discuss their views in small groups, and invites some students share their experiences.

T: For many people, college life is a new experience. They felt excited and at the same time a bit worried. How did you feel when you first got to college?

T: Please name things that you felt excited and you felt a bit worried about. Discuss with your team members.

Design intention: This part of the design aims to stimulate students' memories of college life, stimulate students' existing background knowledge, provide a basis for the construction of new knowledge, and help them establish an emotional connection with the content of the article. The group discussion will enhance students' ability of expression and cooperation.

2. Display the title of the article (2 minutes):

The teacher shows the title *College-A Transition Point in My Life* on the PPT and let the students to guess the main idea of this passage.

T: What information can you get from the title *College-A Transition Point in My Life*?

Design intention: By displaying the title of the article, students are prompted to think about the theme of "transformation", their curiosity is aroused, and by asking key questions, students can make preliminary guesses about the content of the article, helping them to make good mental preparation and comprehension framework before reading. During the process, the teacher encourages students to answer the questions in English and provides language support, such as the introduction of vocabulary like "challenge," "independence," "adjustment," and so on. " and other vocabulary introduced.

3. Words and Phrases Reviewing (3 minutes)

T: Now please translate the following words and phrases.

1. shortly
2. assignment
3. compete
4. hurdle
5. socialize
6. be up to
7. under control
8. turn out
9. look upon oneself from a different perspective
10. handle what is ahead

Design intention: to test the students' previewing effect, to make sure they have mastered the key vocabulary and phrases in the article, to help them enter the learning state quickly, and at the same time to lay the foundation for the subsequent in-depth discussion.

4. Distribution and organization of tasks (2 minutes)

The teacher divides the students into 6 Home Groups (5 students in each group), and the six groups are named with the letters A, B, C, D, E, and F. The students are taught to read the article in their own language. The article was divided into five parts- Part 1 (Paragraph 1), Part 2 (Paragraph 2), Part 3 (Paragraphs 3 and 4), Part 5 (Paragraph 5), and Part 5 (Paragraph 6).

T: Each student in each group will receive different paragraphs of the article with different tasks. member 1 will receive Part 1 and Task 1, member 2 will receive Part 2 and Task 2, and so on. Member 1 will receive Part 1 and Task 1, member 2 will receive Part 2 and Task 2, and so on.

Design Intention: Through clear grouping and task assignment, it helps students understand the operation process of Jigsaw, so that each student has a clear division of responsibility, thus ensuring that they have a deep understanding of what they are responsible for. At the same time, assigning specific tasks can guide students to complete their respective parts efficiently in teamwork, which helps to develop independent learning and teamwork skills.

Step 2：Jigsaw reading (35 minutes)

1.Expert Group Discussion (15 minutes)

(1) Students who are assigned the same part for expert groups to discuss their assigned reading.

(2) Give the students enough time to discuss the questions and confirm their answers.

Task 1 (Paragraph 1):

1. What was the writer afraid of when he first became a college student?

2. What are the three questions he had about his classmates and himself?

3. Write down some words or phrases that you think are important.

Task 2 (Paragraph 2).

1. What did the author have to do in order to do well in his studies?

2. Write down some words or phrases that you think are important.

Task 3 (Paragraphs 3-4):

1. What mistakes did the writer make at first?
2. What happened to him shortly after?
3. What other things did the author do in addition to his studies?
4. Write down some words or phrases that you think are important.

Task 4 (Paragraph 5):

1. How did the author begin to see himself as a result?
2. What did he think of his future at that time?
3. Write down some words or phrases that you think are important.

Task 5 (Paragraph 6):

1. Why was the writer so sure about himself and his own future?
2. What does the expression "this important hurdle in my life" mean?
3. Write down some words or phrases that you think are important.

Design intention: In this part, the teacher applies Jigsaw to the classroom. Students familiarize themselves with and master the content of this part by forming groups of experts and working together to complete the assigned tasks. During the process, the teacher visits each group to make sure that their discussions are focused on the key issues of the passage. In response to the difficulties that may be encountered within some of the groups, the teacher can provide appropriate hints or guidance to make the discussion smoother.

2. Home Group Reporting (20 minutes)

The students return to their home groups and teach their teammates the parts they have assigned in the order of the article. Members of the home group can ask their own questions about the content of the report. Members of the home group can ask their own questions about the content of the report. Students complete the mind map released by the teacher based on the reports of other members.

T: Please share the content of the paragraphs you are responsible for one by one, and other students can ask questions to ensure that everyone understands. Based on everyone's report, fill out the mind map and complete the key information.

Design intention: The design intention of this step is to help students better understand and master the overall content of the article through mutual teaching and group discussion. By completing the mind map, students can integrate the key information in each paragraph and deepen their understanding of the structure and theme of the article, while promoting cooperation and interaction among group members. During the process, the teacher observes students' performance.

Step 3 Post-reading (32 minutes)

1. Class discussion (18 minutes):

The teacher randomly selects a few students from each of the six groups to share their answers regarding the content in the mind map. During this process, students are again asked relevant questions about the content of the text.

T: I believe that through discussion, everyone should have gained a deeper understanding of this article. Now I would like to invite some classmates to Now I would like to invite some classmates to share your answers.

Q1: What key transformations do you think the main character undergoes?

Q2: How will these shifts affect him in the future?

Q3: What details in the essay best show the growth of the main character?

Design intention: by randomly asking students questions, the teacher tests the results of students' group learning and also leads them to further analyze the overall structure and theme of the article.

2. Testing (10 minutes)

The teacher issues test questions and asks students to complete the test independently.

T: There are 5 sentences here, and I would like you to judge whether they are correct based on the content of the article.

Design intention: to test students' mastery of the content of the article.

Determine if these five statements are true or false.

(1) When the author first entered college, he was confident about doing well in his study.
(2) The author felt comfortable and familiar with the people around them in the initial days of college.
(3) The author realized early on that he needed to take control of his own life and make decisions independently.
(4) According to the passage, the author's initial mistakes in college were primarily related to academic performance.
(5) The author, by the end of the college experience, was uncertain about their future but confident in handling it due to the growth achieved during the transition.

3. Teacher's supplement (3 minutes)

The teacher will provide additional explanations on topics and text related points based on the test and classroom performance. Students may also ask the teacher any questions they may have.

Step 4 Homework (1 minute)

Write a short essay on "My Transition to Higher Education" that incorporates the language and topics learned in class.

APPENDIX F

The Item-Objective Congruence Index of Lesson Plans

Week	Topic	Expert Evaluation			IOC Value	Meaning
		A	B	C		
1	Keep Close to Nature	1	1	1	1	1
2	Social Responsibility	1	1	1	1	1
3	College Life	1	1	1	1	1
4	Believe and Achieve	1	1	1	1	1
5	Love	1	1	1	1	1
6	Handling Stress	1	1	1	1	1
7	Career Pursuit	1	1	1	1	1
8	Nothing Is Impossible	1	1	1	1	1

APPENDIX G

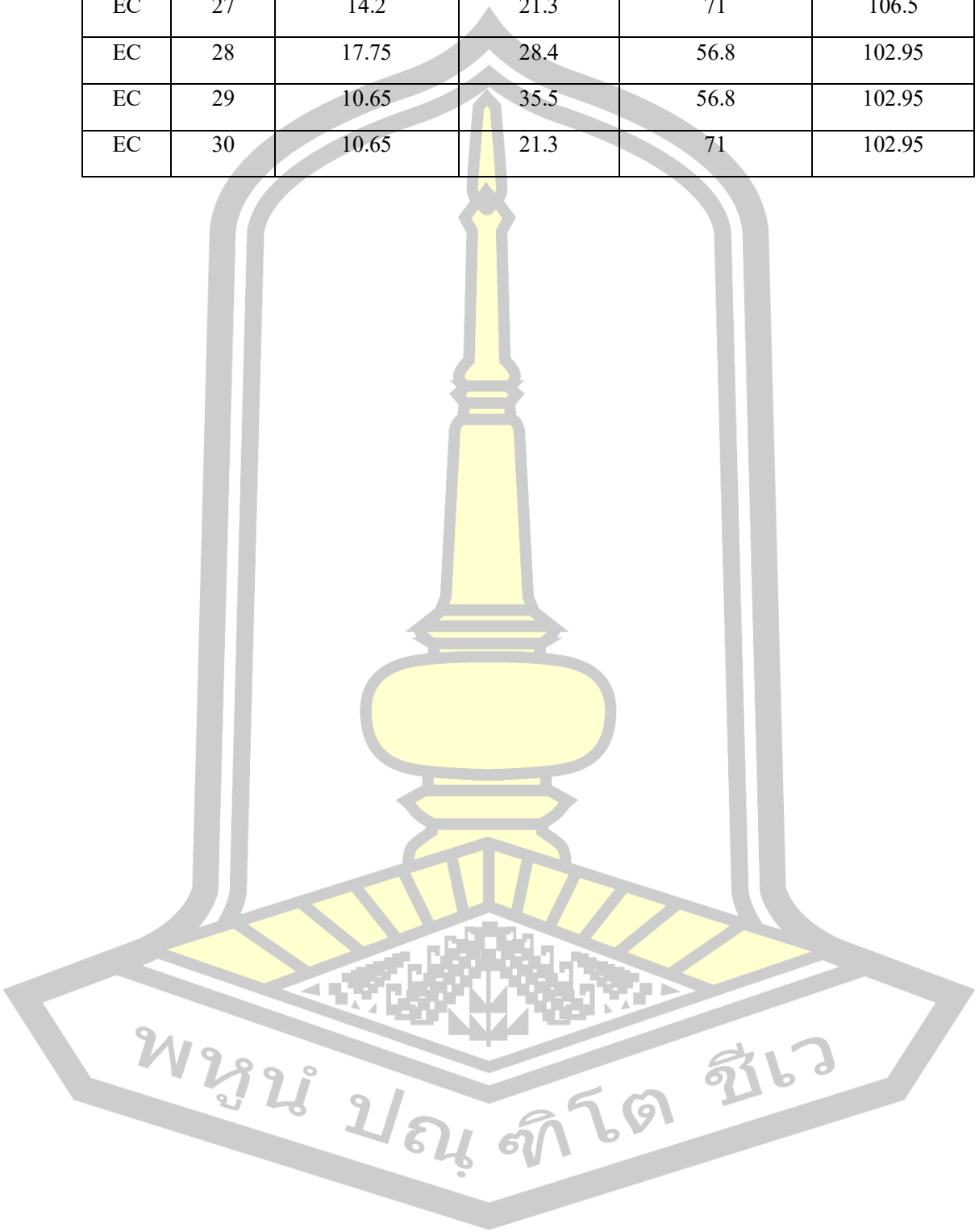
Pre-test Scores of CC and EC

Class	Number	Banked Cloze	Matching	Reading in Depth	Total Score
CC	1	17.75	56.8	99.4	173.95
CC	2	24.85	49.7	99.4	173.95
CC	3	17.75	49.7	99.4	166.85
CC	4	21.3	42.6	99.4	163.3
CC	5	21.3	49.7	85.2	156.2
CC	6	24.85	42.6	85.2	152.65
CC	7	21.3	42.6	85.2	149.1
CC	8	21.3	42.6	85.2	149.1
CC	9	21.3	35.5	85.2	142
CC	10	14.2	35.5	85.2	134.9
CC	11	10.65	35.5	85.2	131.35
CC	12	14.2	42.6	71	127.8
CC	13	17.75	35.5	71	124.25
CC	14	10.65	42.6	71	124.25
CC	15	17.75	35.5	71	124.25
CC	16	14.2	35.5	71	120.7
CC	17	14.2	21.3	85.2	120.7
CC	18	17.75	28.4	71	117.15
CC	19	17.75	28.4	71	117.15
CC	20	17.75	42.6	56.8	117.15
CC	21	14.2	28.4	71	113.6
CC	22	14.2	42.6	56.8	113.6
CC	23	17.75	35.5	56.8	110.05
CC	24	17.75	35.5	56.8	110.05
CC	25	10.65	28.4	71	110.05
CC	26	17.75	35.5	56.8	110.05
CC	27	14.2	35.5	56.8	106.5

CC	28	14.2	21.3	71	106.5
CC	29	14.2	35.5	56.8	106.5
CC	30	10.65	21.3	71	102.95

Class	Number	Banked Cloze	Matching	Reading in Depth	Total Score
EC	1	21.3	42.6	113.6	177.5
EC	2	24.85	49.7	99.4	173.95
EC	3	21.3	42.6	99.4	163.3
EC	4	17.75	42.6	99.4	159.75
EC	5	24.85	42.6	85.2	152.65
EC	6	21.3	42.6	85.2	149.1
EC	7	28.4	49.7	71	149.1
EC	8	17.75	35.5	85.2	138.45
EC	9	14.2	35.5	85.2	134.9
EC	10	17.75	42.6	71	131.35
EC	11	17.75	28.4	85.2	131.35
EC	12	21.3	35.5	71	127.8
EC	13	14.2	28.4	85.2	127.8
EC	14	17.75	35.5	71	124.25
EC	15	17.75	35.5	71	124.25
EC	16	14.2	35.5	71	120.7
EC	17	10.65	35.5	71	117.15
EC	18	17.75	28.4	71	117.15
EC	19	14.2	28.4	71	113.6
EC	20	7.1	35.5	71	113.6
EC	21	21.3	49.7	42.6	113.6
EC	22	10.65	28.4	71	110.05
EC	23	17.75	35.5	56.8	110.05
EC	24	17.75	35.5	56.8	110.05
EC	25	10.65	28.4	71	110.05

EC	26	14.2	35.5	56.8	106.5
EC	27	14.2	21.3	71	106.5
EC	28	17.75	28.4	56.8	102.95
EC	29	10.65	35.5	56.8	102.95
EC	30	10.65	21.3	71	102.95



APPENDIX H

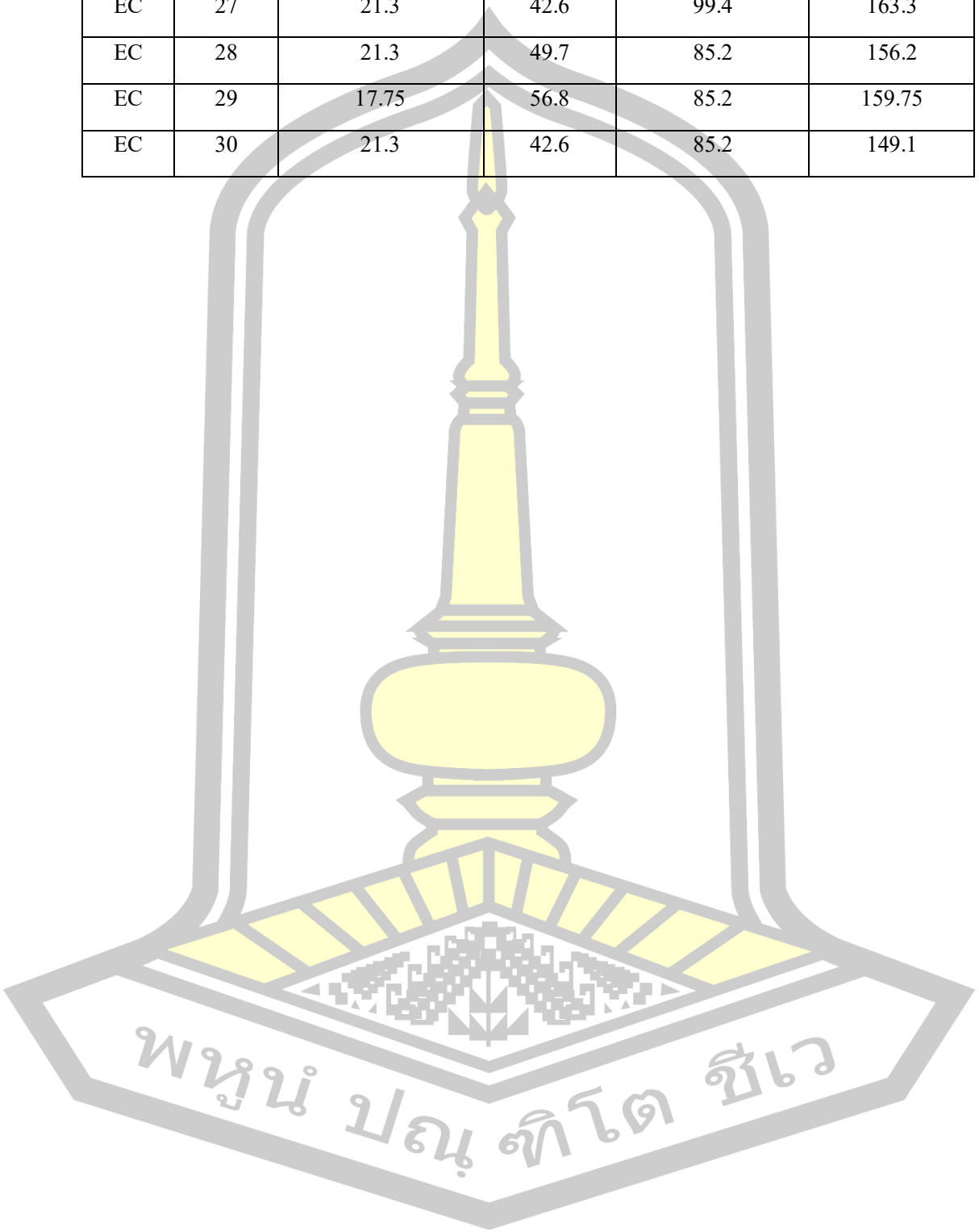
Post-test Scores of CC and EC

Class	Number	Banked Cloze	Matching	Reading in Depth	Total Score
CC	1	21.3	63.9	113.6	198.8
CC	2	24.85	49.7	99.4	173.95
CC	3	21.3	56.8	99.4	177.5
CC	4	21.3	49.7	113.6	184.6
CC	5	28.4	49.7	85.2	163.3
CC	6	28.4	49.7	85.2	163.3
CC	7	21.3	49.7	85.2	156.2
CC	8	21.3	42.6	85.2	149.1
CC	9	28.4	35.5	85.2	149.1
CC	10	17.75	35.5	99.4	152.65
CC	11	14.2	42.6	99.4	156.2
CC	12	21.3	42.6	71	134.9
CC	13	21.3	42.6	85.2	149.1
CC	14	17.75	42.6	71	131.35
CC	15	17.75	35.5	71	124.25
CC	16	17.75	35.5	85.2	138.45
CC	17	17.75	28.4	85.2	131.35
CC	18	21.3	35.5	85.2	142
CC	19	17.75	42.6	71	131.35
CC	20	21.3	42.6	71	134.9
CC	21	14.2	35.5	85.2	134.9
CC	22	14.2	42.6	56.8	113.6
CC	23	17.75	42.6	56.8	117.15
CC	24	21.3	35.5	71	127.8
CC	25	10.65	35.5	71	117.15
CC	26	21.3	42.6	56.8	120.7
CC	27	14.2	35.5	56.8	106.5

CC	28	17.75	21.3	71	110.05
CC	29	14.2	35.5	56.8	106.5
CC	30	14.2	21.3	71	106.5

Class	Number	Banked Cloze	Matching	Reading in Depth	Total Score
EC	1	28.4	63.9	127.8	220.1
EC	2	31.95	63.9	127.8	223.65
EC	3	28.4	63.9	113.6	205.9
EC	4	28.4	56.8	127.8	213
EC	5	31.95	56.8	113.6	202.35
EC	6	28.4	56.8	113.6	198.8
EC	7	31.95	63.9	99.4	195.25
EC	8	28.4	63.9	99.4	191.7
EC	9	21.3	56.8	113.6	191.7
EC	10	21.3	63.9	99.4	184.6
EC	11	24.85	49.7	113.6	188.15
EC	12	28.4	63.9	99.4	191.7
EC	13	24.85	49.7	113.6	188.15
EC	14	21.3	56.8	99.4	177.5
EC	15	24.85	63.9	99.4	188.15
EC	16	24.85	49.7	99.4	173.95
EC	17	17.75	56.8	99.4	173.95
EC	18	21.3	49.7	99.4	170.4
EC	19	24.85	49.7	99.4	173.95
EC	20	17.75	49.7	99.4	166.85
EC	21	28.4	63.9	71	163.3
EC	22	17.75	49.7	99.4	166.85
EC	23	21.3	49.7	85.2	156.2
EC	24	24.85	56.8	85.2	166.85
EC	25	21.3	56.8	85.2	163.3

EC	26	21.3	42.6	85.2	149.1
EC	27	21.3	42.6	99.4	163.3
EC	28	21.3	49.7	85.2	156.2
EC	29	17.75	56.8	85.2	159.75
EC	30	21.3	42.6	85.2	149.1



APPENDIX I

Syllabus for College English Test —Band Four (CET-4) (2016 revised edition)

Reading Comprehension

Composition of College English Test—Band Four

2. 全国大学英语四级考试

2.1 四级笔试

2.1.1 试卷构成

大学英语四级试卷由四个部分构成，依次为：1）写作；2）听力理解；3）阅读理解；4）翻译。各部分测试内容、题型和所占分值比例等如下表所示：

试卷结构	测试内容	测试题型	题目数量	分值比例	考试时间
写作	写作	短文写作	1	15%	30 分钟
听力理解	短篇新闻	选择题（单选题）	7	7%	25 分钟
	长对话	选择题（单选题）	8	8%	
	听力篇章	选择题（单选题）	10	20%	
阅读理解	词汇理解	选词填空	10	5%	40 分钟
	长篇阅读	匹配	10	10%	
	仔细阅读	选择题（单选题）	10	20%	
翻译	汉译英	段落翻译	1	15%	30 分钟
总计			57	100%	125 分钟

3）**阅读理解**

阅读理解部分由词汇理解（1 篇）、长篇阅读（1 篇）和仔细阅读（2 篇）构成。词汇理解的篇章长度为 200－250 词；长篇阅读的篇章长度约 1000 词；仔细阅读的每篇长度为 300－350 词。阅读理解部分的分值比例为 35%，其中词汇理解占 5%，长篇阅读占 10%，仔细阅读占 20%。考试时间 40 分钟。

➢ 词汇理解：采用选词填空题型，考核学生对篇章语境中词汇的理解和运用能力。篇章中删去了 10 个词汇，并在篇章后提供 15 个词汇选项。要求考生在对篇章理解的基础上从所给的词汇选项中选择正确的词汇填空，使篇章复原。

➢ 长篇阅读理解：采用段落匹配题型，考核学生运用略读和查读的技能从篇章中获取信息的能力。略读要求学生通过快速阅读获取文章主旨大意或中心思想；查读要求学生快速查找篇章中的特定信息。篇章后附有 10 个句子，每句 1 题。每句所含的信息出自篇章中的某一段落，要求考生找出与每句所含信息相匹配的段落。有的段落可能对应两题，有的段落可能不对应任何一题。

➢ 仔细阅读理解：采用选择题（单选题）题型，考核学生在不同层面上的阅读理解能力，包括理解主旨大意和重要细节、综合分析、推测判断以及根据上下文推测词义等。每个篇章后有 5 个问题，要求考生根据对篇章的理解从每题的四个选项中选择最佳答案。

APPENDIX J
Higher Vocational Education: English Curriculum Standards (2021 Edition)

5. 尊重个体差异，促进学生全面与个性化发展

学生是英语学习的主体，英语教学要以学生为主体，以学习为中心，促进学生的全面发展。教师要根据学生认知特点和能力水平组织教学，尊重生源差异和个体差异，满足学生的不同需求，构建适合学生个性化学习和自主学习的教学模式，鼓励学生开展自主学习、合作学习和探究式学习，促进学生的全面发展和个性化发展。教师要重视对学生学习方法和学习策略的指导，调动学生学习的积极性；组织丰富多彩的英语课外活动，营造良好的英语学习氛围；指

表 5　高等职业教育专科英语学业质量水平具体要求

水平分类	质量描述
水平一（一般要求）	1-1 能基本听懂发音清晰、语速较慢的日常生活语篇和职场话题的语篇，能借助语音、语调、背景知识、语境等因素理解大意，获取关键信息。
	1-2 能基本读懂、看懂职场中的书面或视频英文资料，理解主要内容，获取关键信息，区分事实和观点，并进行简单推断，领会文化内涵；能识别职场常用语篇的篇章结构与逻辑关联。
	1-3 能在日常生活和职场中就比较熟悉的话题与他人进行语言交流，表达基本准确、流畅；能借助工具或他人帮助参与工作讨论；能简单介绍职场文化和企业文化；能简单用英语讲述中国故事。

BIOGRAPHY

NAME	Yang Yu
DATE OF BIRTH	July 17th, 1990
PLACE OF BIRTH	Zigong City, Sichuan Province, China
ADDRESS	Building 4, Huashang Park Community, Zigong City, Sichuan Province, China
POSITION	Teacher
PLACE OF WORK	Sichuan Vocational College of Health and Rehabilitation
EDUCATION	2005-2008 Zigong Shuguang Middle School 2008-2013 Yibin University, majoring in English