

The Impact of Using Mind Map Strategy to Improve Reading Ability of Chinese EFL Students at Senior High School Level

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Abstract: The new National English Curriculum Standards for general senior high schools propose to further promote the development of students' English core accomplishment. As an essential component in English learning, reading ability is the foundation and key to cultivate students' integrative competence, which matches with the cultivation of students' independent learning ability and thinking ability emphasized in English curriculum standards. Mind map as an associative network, is considered an effective reading strategy that enables students to present complex texts in a simple way, further promoting comprehensive understanding. This study aimed to evaluate the influence of using the mind map strategy to improve the reading ability of Chinese EFL students at the senior high school level. This study utilized quantitative analysis in the West Campus of Shijiazhuang No.2 Middle School, with a sample of 40 students from Grade 10 (16 years old). The researcher incorporated proficiency test which include a vocabulary test and a reading test, pre-test, post-test to address the research question quantitatively.

Keywords: mind map strategy, reading ability, Chinese EFL students, senior high school.

1. Introduction

1.1. Background

The new National English Curriculum Standards for general senior high schools propose to further facilitate the development of students' comprehensive quality in the English subject and impose higher demands on general high school English teaching, specifying that educators should actively explore effective teaching and learning approaches. They ought to adopt a wide variety of instructional methods and means, further emphasizing an integrated approach centered on themes, anchored in discourse, and facilitated through activities. Fostering students in learning language knowledge, developing language skills, understanding cultural implications, and applying learning strategies through activities. By integrating language learning, information integration, meaning exploration, cultural comparison, and value judgment within the context of understanding textual content, one aims to foster students' lifelong learning capacity [1]. Reading ability, as a critical component in cultivating students' language proficiency, matches with the training of students' independent learning ability and thinking ability highlighted by the English Curriculum Standards [2]. Under the pressure of college entrance examination, current English teaching in most Chinese high schools is excessively focused on imparting knowledge of vocabulary and grammar, placing emphasis

on the teaching of written language. As a result, the relationship between "knowledge" and "ability" has been distorted [3,4]. Consequently, in light of these phenomena, we urgently require a novel and more effective teaching methodology to assist students in enhancing their English reading ability. A mind map mimics the brain's synaptic networks and neural pathways and therefore has a similar structure. Mind map harnesses the distinct capabilities of our left and right brains, thereby offering us the most effective means for information input and retrieval [5]. Mind map as an associative network, is considered an effective reading strategy that enables students to present complex texts in a simple way, further promoting comprehensive understanding [6].

1.2. Mind Map

Mind map was first put forward by Tony Buzan, who is a famous educator and psychologist in British, in the 1960s. Mind map is an associative network, the theme was placed in the center of the canvas, with all keywords and notes arranged around the center [5]. Due to the involvement of the brain's work on the left and right sides, the mind map is multifunctional and can be applied to all forms of cognition, including memory, creativity, learning, and all forms of thinking. The structure of the mind map mimics the brain's synaptic networks and neural pathways, and it provides the easiest way to access information and extract information. Mind map has many other advantages in Thinking, Learning, Concentrating, Organizing, Planning and Communicating, as well as Speaking [6].

1.3. The Advantages and Disadvantages of Mind Map

Although the mind map is helpful to people's understanding of the knowledge system, it also has disadvantages that cannot be ignored. Sheira Ayu Indrayani's study found the following:

- ① Mind map can improve students' thinking speed
 - ② Mind map helps students come up with new ideas.
 - ③ Mind map provides students with an easy way to communicate and work with others.
 - ④ Mind map helps students establish an in-depth understanding of complex knowledge systems.
- Cleford found the advantages and disadvantages as below: Advantages:

- ① Mind map helps generate new ideas or make connections between ideas.
- ② Mind map can help focus attention on the connections between information structures and ideas.
- ④ The process of making a mind map is more memorable than traditional note-taking.
- ⑤ Mind map can incorporate a lot of material.
- ⑥ Mind map is good for revision. It condenses memorized content into a concise format.

Disadvantages:

- ① People probably spend much time in the process of making mind map.
- ② Mind map has the characteristic of individuation, which is not conducive to others' intuitive understanding and experience reference [7].

1.4. Reading Ability

Reading literacy was defined as "the ability to understand and use written forms of language that are socially required and/or personally valued" in IEA's study in 1991 [8]. As the evaluation continues to improve, currently, PIRLS defines reading literacy as "the ability to understand and use written forms of language that are socially required and/or valued by individuals. Readers can construct meaning from various forms of text. They read to learn, to participate in the community of readers in school and daily life, and to enjoy." [8] PISA 2009 redefined reading literacy as "the ability to understand written text, think about it, and use it to achieve goals; Develop one's skills, knowledge and potential to participate actively in society." [9]. Mind map as an associative network, is

considered an effective reading strategy that enables students to present complex texts in a simple way, further promoting comprehensive understanding [6].

1.5. The Application of Mind Map Strategy in English Reading Teaching Abroad

Buzan proposed that mind map can show the background of reading material from multiple angles to help readers understand the passage. Maulana et al., [10] conducted research on college students of Stmik Royal in Kisaran and reported that mind map is considered an effective reading strategy that enables students to present complex texts in a simple way, further promoting comprehensive understanding. Nailus Sa'adah and Sri Wahyuningsih [11] conducted a one-semester research survey on four English Education students and showed that students' reading ability is positively affected by autonomous learning with mind map. Napitupuu, S., and Sinaga [12], also studied eighth grade students from SMP Negeri 12 Pematang siantar and proved that the use of mind mapping strategy has a prominent positive impact on the improvement of eighth-grade students' reading comprehension ability. Mohaidatg [13] pointed out that the use of mind map strategy has changed the traditional "teacher-centered" reading classroom model, created a more learner-centered environment, and improved the reading comprehension ability of ninth-grade students from Jordan. Ganito, S., Nugroho, A. D., and Widyarini, T. L. [14] contended that the implementation of mind map strategy can improve the reading comprehension of grade two students from SMP Taman Dewasa Ibu Pawiyatan Yogyakarta, and stimulate their enthusiasm and self-confidence in English learning.

1.6. The Application of Mind Map Strategy in English Reading Teaching at Home

In China, there are also many scholars who have applied mind map to English reading teaching and carried out experimental research.

Lu Lu [15] pointed out that the using of mind map strategy can make participants quickly understand the topic, logical framework and key information of the text, and the images in the mind map also help them associate and guess the meaning of unfamiliar words in the text. He Fengxue [16] proved that the application of mind map can enhance Chinese students' reading interest, reading strategies and self-efficacy, as well as reading ability. Ran Shuang [17] found that the application of mind map strategy made Chinese English as a Foreign Language students more interested in English reading comprehension, and their thinking was more active, and the answers were not always single but varied.

1.7. Summary

Reading ability is an essential component in English learning. Reading accounts for a significant proportion of the total score in various Chinese English exams. And it directly impacts students' academic performance and development. Reading ability is the foundation of integrative competence, a strong ability in reading can provide support for other skills [2,18]. The English Curriculum Standards put forward new requirements for the establishment of students' independent learning and thinking ability. The cultivation of self-directed reading ability matches the requirement of the new curriculum standard [1]. Some students still lack reading interest and proper reading skills. Monotonous reading strategies may make students understand the text much more hard, especially EFL students [19]. Under the pressure of college entrance examinations, some teachers excessively emphasize the test-taking strategies and tactics [20]. Many foregoing studies have shown that mind map has a positive effect on improving the language learning ability of middle school students, but there are few studies on the impact of senior high school students' reading ability. Brain development between senior high school students and junior school students is tiny. And grey matter volume decreases during adolescence [21]. However, the learning difficulty in senior high school is greatly

improved. This study is hoped to explore if mind map can help Chinese EFL students at senior high school level adapt and improve their reading ability.

1.8. Research question and Prediction

Whether using mind map strategy helps improve reading ability of Chinese EFL students at the senior high school level?

Prediction: The using of the mind map strategy had a prominent positive impact on enhancing the reading comprehension ability of Chinese English as a Foreign Language students at the senior high school level.

2. Methodology

2.1. Participants

Based on H. A. Nelumi Bandara & Gevani Prahalathan [22], the simple random sampling method was used in this study to select 40 students of the same mean level from the Grade 10 (16 years old) of the West Campus of Shijiazhuang No.2 Middle School according to the proficiency test. They were of both sexes. Before the experiment, none of them had accepted systematic mind map training. Participants would be divided into an experimental group and a control group, both of which have equal numbers of males and females.

2.2. Material

A vocabulary test and a reading test were included in the proficiency test in order to ensure participants were at the same level at the beginning. For the vocabulary test, we planned to apply The LLAMA tests [23]. And for the reading test, we planned to apply the reading part of the 2023 College Entrance Examination (National A-Test) which contained four types of questions: detail understanding, word meaning guessing, reasoning judgment and main theme. We planned to apply the reading part of the 2024 College Entrance Examination (National A-Test) for the pre-test, and the reading part of the 2024 Chinese National College Entrance Examination (National B-Test) for the post-test. They were different test papers but at the same level, and both contained four types of questions: detail understanding, word meaning guessing, reasoning judgment and main theme.

2.3. Procedure

Based on Sheira Ayu Indrayani, the research was carried out for a month [7]. Similarly, this study would last for a month, and it would be conducted during the out-of-school hour twice a week, lasting 45 minutes for each class.

The pre-test would be distributed to both the experimental group and the control group.

For the experimental group, the researcher would introduce mind map and how to draw mind map to students first, using a tutorial video in Buzan [5]. Then teacher would instruct students to analyze a passage using mind map. For the rest of the reading class, students would be asked to apply their own mind map and share it with others for discussion and revision, and then the teacher would also give students feedback on their strengths and weaknesses. The teacher needed to ensure that the students continued to use the mind map during the one month of the study.

The study of the control group would also last for a month. They would apply traditional strategies, such as the teacher explaining vocabulary, grammar and spelling teaching. In the last week, the post-test would be distributed to both the experimental group and the control group.

2.4. Data analysis

In this study, the quantitative method was adopted for data analysis. SPSS was used to analyze the data from the pre-test and post-test, and paired sample T-test was used to analyze the average values of the pre-test and post-test to detect whether mind map strategy had a prominent impact on reading ability.

3. Conclusion

3.1. Discussion

The results were divided into two types:

If the average score of the experimental group in the post-test was higher than that in the pre-test, and the p-value was less than 0.05, then the using of the mind map strategy had a significant positive impact on enhancing reading ability of Chinese English as a Foreign Language students at senior high school level.

If the average score of the experimental group in the post-test was lower than that in the pre-test, and the p-value was less than 0.05, then the using of the mind map strategy had a significant negative impact on enhancing the reading ability of Chinese English as a Foreign Language students at senior high school level.

3.2. Implications

This study shows that mind map strategy has a significant positive impact on the English reading ability of students from senior high school. Therefore, teachers can use mind map in the English reading teaching process, and students can also use mind map to deepen their understanding of the text.

3.3. Limitation

The sample of research participants was small. Because of the limitation of time, manpower and financial resources, the subjects in this study were all selected from Grade 10 (16 years old) students in the West Campus of Shijiazhuang No.2 Middle School, instead of other grades and schools. Therefore, the samples are not generally representative, which may lead to certain deviations in the experimental results.

The study lacks long-term tracking of the subject group, and this study only focuses on the short-term effects of mind map on Chinese EFL students, did not provide data on the long-term retention of skills and the sustained impact of the mind map technique on students' reading abilities. In further research, the author can focus on the influence of the long-term of using the mind map strategy on students' reading ability.

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