

The Application of Mind Mapping in Junior High School English Reading Teaching in China

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Abstract

Reading is one of the key skills in English learning and is of great significance to middle school English teaching. Mind map, as an effective graphical reading tool, help improve students' reading comprehension ability and learning interest. However, at present, there are relatively few studies on the application of mind mapping in English reading teaching at the middle school level. Therefore, this study adopts a mixed research method such as classroom observation, questionnaire survey and interview to conduct a systematic investigation on the application of mind mapping in middle school English reading teaching. The research results show that: (1) Most teachers and students hold a positive attitude towards the application of mind maps. (2) Mind maps are commonly used in junior high school English reading teaching, especially in the classroom for the structural analysis and expression of logical relationships. (3) The effective use of mind maps still faces challenges, including students' lack of autonomous use, teachers' lack of feedback after class, and teachers' limited time for lesson plans. This research aims to provide effective teaching references for junior high school English teachers and promote the reasonable application of mind maps in junior high school English reading teaching.

Keywords: Mind Mapping, Junior High School, English Reading Teaching

Introduction

Research Background

Under the wave of globalization, the importance of English as the main language of international communication is self-evident. For junior high school students, English learning is an important window to broaden their horizons and get in touch with diversified cultures, and reading ability is one of the core abilities of English learning. Reading in English not only helps students acquire knowledge and improve their comprehensive language literacy, but also cultivates logical thinking and critical thinking. Therefore, how to effectively improve junior high school students' English reading ability has become an important topic in English teaching. However, the status of junior high school English reading teaching is not optimistic. On the one hand, under the influence of traditional exam-oriented education, some teachers pay too much attention to students' examination results in the teaching process, and put a lot of time and energy into the explanation of grammar and vocabulary, neglecting the cultivation of students' reading skills and strategies. This teaching mode makes the classroom

atmosphere dull, students in reading learning in a passive position, lack of active exploration and thinking motivation, reading ability to improve slowly. As an innovative learning tool, mind maps have gradually gained attention in the field of education in recent years. It was proposed by British psychologist Tony Buzan in the late 1960s. It takes a central theme as the core and organically connects related keywords, images, colors and other elements through branches to form a radioactive knowledge network.

Problem Statement

Studies have shown that mind maps can help students visualize abstract knowledge and establish the intrinsic connection between knowledge, thus improving learning efficiency. However, most of the existing research focuses on college students, and there are relatively few studies on junior high school students. In addition, most of the existing studies focus on the theoretical discussion and experimental study of mind maps, and lack in-depth analysis of specific problems and coping strategies in actual teaching. Therefore, this study aims to fill this research gap by exploring the application of Mind Map in junior high school English reading teaching through a mixed research method.

Research Objectives and Scope

This study is a semester-long observational study with 200 students and 36 English teachers in a junior high school, covering a group of teachers with different grades and teaching experiences. Through a mixed research method combining questionnaires, classroom observation and interviews, the current situation and problems of the application of mind map in junior high school English reading teaching were comprehensively explored. The focus of the study is to analyze the effects of the application of mind map in junior high school English reading teaching, especially on students' reading comprehension ability, divergent thinking ability, and teachers' teaching efficiency, and to put forward corresponding suggestions for improvement. Based on the above background, this study aims to explore the following key questions:

- [1] What are the attitudes of teachers and students towards the use of mind map in English reading teaching?
- [2] What is the current status of the use of mind map in junior high school English reading classrooms?
- [3] What are the challenges in integrating mind map into English reading teaching?

The Significance of the Research

This study holds dual significance for middle school English education - both theoretical and practical. From a theoretical perspective, it enriches the research on the application of mind maps in second language acquisition, particularly filling the unexplored areas regarding their implementation in the middle school educational environment. From a practical standpoint, the research provides empirical evidence on the current usage patterns and challenges of mind maps in English reading teaching, offering actionable insights for curriculum designers and teacher training programs. Through a systematic examination of the views of teachers and students using a mixed-method approach, the research results help to effectively integrate the theory of mind maps with classroom practice.

Literature Review

Mind maps, as a visual learning tool, have gained widespread attention in the field of education in recent years. Their application in English reading instruction, especially regarding their impact on junior high school students' reading abilities, has become a research focus. This section reviews domestic and international studies on mind maps and their application in English reading instruction to clarify the current research status. Their application in English reading instruction, especially regarding their impact on junior high school students' reading abilities, has become a research focus. This section reviews domestic and international studies on mind maps and their application in English reading instruction to clarify the current research status, existing issues, and future research directions.

Mind Map

Mind maps, proposed by British psychologist Tony Buzan in the 1960s, are tools for organizing information through keywords, images, colors, and hierarchical relationships (Buzan, 1993). Their core feature is radiant thinking, which helps learners integrate information and enhance creativity (Goldberg, 2004).

In China, Chen Min (2005) classified mind maps into hierarchical maps, conceptual maps, sequential maps, and cyclic maps, emphasizing their educational applications. Ma Wulin and Chen Yu (2008) suggested that integrating mind maps with multimedia technology could enhance learning efficiency. The functions of mind maps in English reading instruction, including divergent thinking, information integration, logical structure presentation, and more.

Teaching of English Reading

English reading teaching has been proposed earlier in foreign countries, and scholars' studies have enriched its methodology and the cultivation of learning ability. Dole and Duffy (1991) believe that English reading teaching is a constructive process, in which readers comprehend the text through cognitive and metacognitive strategies. Mao Zan (2012) emphasized that teaching English reading is an active process in which readers use their background knowledge to understand the text and are able to comprehend the content more effectively with teacher guidance. Bing Fangge (2015) pointed out that English reading teaching is a comprehensive and focused process that requires balancing textual information, thinking development and language teaching. Wang Dan (2018) argued that English reading teaching is not only limited to textbooks, but appropriate English newspapers and online resources can also improve students' English proficiency. Sun Rongli (2019) suggested that English reading teaching can develop students' reading ability, help them adjust their learning strategies and improve their language learning ability. Gao Bo (2021) emphasized that the combination of teachers' teaching strategies and students' reading strategies can effectively improve reading ability. To summarize, English reading teaching is an active and interactive process in which students improve their reading skills and learning abilities through prior knowledge, cultural background, strategies and teacher guidance.

Schema Theory

Schema theory was first proposed by Evans (1967) and refers to a collection of features of a group of objects, psychological and cognitive term describing patterns of thinking and behavior, arguing that schemas are organized knowledge structures that help people

organize information and facilitate understanding and problem solving. Ajideh (2003) traced the development of schema theory, pointing out that the concept originated from Plato's Ideal Doctrine, which was refined by Kant and introduced the term "schema" was refined and introduced by Kant, and Brewer Bartlett put forward the theory of schema construction in the 1920s, which had a profound influence on cognitive psychology and cognitive science in the 1970s and 1980s. Widmayer (2004) argued that schema is not only used for information description, but also has a predictive function. Zheng Jing et al. (2017) pointed out that the cultivation of verbal and nonverbal schemas should be emphasized to enhance students' reading comprehension. Song Yuping (2019) believes that teachers can help students effectively absorb new knowledge and improve their language skills by activating and constructing schemas. Mind maps are closely related to schema theory and can help students systematically organize information and enhance their understanding of English texts by activating existing schemas.

Constructivist Theory

Piaget, a Swiss psychologist, first proposed the Constructive Theory of learning, which emphasizes that learning is a process of actively constructing knowledge. Marlowe and Page (2005) define learning as the process of asking questions, interpreting, analyzing information, and constructing and altering understanding of concepts by combining old and new experiences. Gagnon and Collay (2005) argued that learners actively construct their own understanding when acquiring knowledge, and that learning is a process of co-construction of meaning between the individual and society. Knowledge is constructed through negotiation within the community. Jia Qiong (2010) points out that knowledge is an assumption, and as new ideas emerge, old knowledge is replaced, and learning is a cognitive construction process in which new and old knowledge interact. Students enter the classroom with experience and their own understanding of the problem, teachers should become the guide of learning and the designer of the environment, abandoning the traditional model of teacher-centered teaching and shifting to student-centered teaching. Suhendi (2018) emphasized that constructivist learning focuses on authentic situations, learning process, social experience and experience construction, focuses on students' needs, initiative and cooperation, and promotes inquiry and self-directed learning.

Application of Mind Map in English Reading Teaching

International research mainly focuses on the effects of mind maps on reading comprehension, learning strategies, and memory. Nesbit & Adesope (2006) found that mind maps reduce cognitive load and improve information integration. Mind maps reduce cognitive load and improve information integration. Crowe & Sheppard (2012) suggested that mind maps aid in teaching reading strategies by helping students grasp text structures. Buran & Filyukov (2015) found that using mind maps in classrooms enhances students' learning interest and comprehension.

Chinese research mainly focuses on the practical application of mind maps in junior and senior high school English instruction. Wang Yuyin (2020) suggested that mind maps emphasize cognitive training rather than mere note-taking. Jiang Dan (2021) indicated that mind maps integrate linguistic, mathematical, and creative thinking to enhance students' overall abilities.

The above study reveals that although foreign research in the field of mind mapping started early and covered a wide range of areas, it seldom touched on the actual situation of Chinese English learners. In contrast, although domestic studies have some depth, they mostly focus on college students, and there is a relative lack of research on junior high school students. Although both domestic and international studies have emphasized the positive effects of mind maps on reading ability, there is still limited research specifically targeting junior high school students, and there is a lack of in-depth discussion on teachers' teaching strategies. It is especially noteworthy that the research on the application of mind mapping in the areas of English vocabulary and writing is quite rich, while it is relatively weak in the area of reading. A review of past research shows that students tend to build mind maps on the basis of existing cognitive frameworks and actively mobilize their own initiative to integrate information.

In view of this, teachers should consider how to apply mind mapping more effectively in English reading teaching. In order to fill the gap in this research area and help teachers improve the effectiveness of the application of mind maps, this study selected students from a junior high school in Dazhou City, China, as the object of investigation, aiming at exploring the practical application strategies of Thinking Maps in junior high school English reading teaching.

Proposed Methodology

Research Strategy

This study adopts a combination of quantitative and qualitative research methods, with questionnaires, classroom observations and interviews as the main data collection means, to explore the application of mind map in junior high school English reading teaching. Based on schema theory and constructive learning theory, the study aims to analyze teachers' and students' attitudes toward mind maps, the current status of their application, and their problems and countermeasures.

Research Population and Sample

In this study, 200 middle school students and 36 middle school English teachers were randomly selected from a middle school in Dazhou City, Sichuan Province, China. The students' ages ranged from 13 to 15 years old and were selected by random sampling with a balanced gender ratio. The teachers' ages ranged from under 30 to over 50 years old, and their teaching experience ranged from 2 to 30 years. All the study participants were aware of the purpose of the study and participated voluntarily.

Research Instruments

The questionnaire was used to collect teachers' and students' attitudes towards the use of mind maps in teaching English reading and their actual use. The questionnaire design was based on the ABC (Affective, Behavioral, and Cognitive) model proposed by Rosenberg and Hovland (1960), and each question was provided with a five-point Likert scale (ranging from "Strongly Agree" to "Strongly Disagree") in order to obtain the subjects' true attitudes. The student questionnaire contained six dimensions: familiarity with mind maps; interest in mind maps; willingness to use mind maps in English reading learning; frequency of use; ability to use and impact effects. The teacher's questionnaire contained six dimensions: familiarity with mind maps; interest in mind maps; willingness to use them in teaching; frequency of use; ability to use them and impact effects.

In this study, classroom observation was conducted on 30 lessons of six English teachers through classroom observation, focusing on: types of articles, types of Thinking Maps, contents of Thinking Maps and effects of mind maps.

In order to gain a deeper understanding of the application problems and countermeasures of mind maps, the researcher conducted semi-structured interviews with six teachers and six students. Each interview lasted about 10 minutes and centered on the following questions:

(1)How do you see the role of mind maps in English reading teaching?

(2)What difficulties do you encounter in using mind maps?

(3)How do you think the use of mind maps can be improved?

Research Procedures

The study was conducted between September and January 2024 and was divided into the following three phases:

Preparatory phase (September): designing the questionnaire and conducting reliability tests; finalizing the classroom observation and interview protocols; selecting study participants and obtaining consent for participation

Implementation phase (October-December): distribution and collection of questionnaires (161 valid responses to student questionnaires and 36 valid responses to teacher questionnaires); classroom observation (30 lessons in total); interviews (6 teachers, 6 students)

Data analysis phase (January): statistical analysis of questionnaire data using SPSS 23; collation of interview data using content analysis; summarization of classroom observation records and cross-validation with questionnaire and interview data

Data Collection and Analysis

SPSS 23 was used for statistical analysis of the questionnaire data, which mainly included descriptive statistical analysis (such as mean value, standard deviation, and percentage) to outline the data distribution; Reliability analysis: Cronbach's Alpha value and KMO value of the questionnaire were 0.866 and 0.852 respectively. Cronbach's Alpha value was 0.876 and KMO value was 0.767 of the teacher questionnaire, both of which indicated that the questionnaires had high reliability; independent samples t-test and analysis of variance (ANOVA) were used to explore the effects of different variables (e.g., gender, teaching experience) on the use of mind maps.

Classroom observation and interview data were processed using content analysis and thematic analysis; interview data were first transcribed and then categorized using open coding; classroom observation notes were summarized to identify commonalities and differences in the classroom application of mind maps; and questionnaires, classroom observation, and interview data were cross-referenced through triangulation (triangulation) to improve the reliability of the study.

Ethical Considerations

The study followed the principle of informed consent and all participants were aware of the purpose of the study and could withdraw from the study at any time. All data were kept strictly confidential and used for academic research only.

Research limitations

Despite the fact that this study utilized multiple methods of data collection to ensure the scientific validity and reliability of the findings, certain limitations still exist:

Limited sample size: The study involved only one junior secondary school and could be expanded to different districts and schools in the future to improve the representativeness of the study.

Time constraints: due to the short duration of the study, the effectiveness of the application of mind mapping could not be tracked over time, and longitudinal research methods could be used for future studies.

Influencing factors were not fully examined: the influence of teachers' age, gender, and education on the use of mind mapping was not fully explored, and future research could further analyze these variables in depth.

Results

Teachers' and Students' Attitudes Towards Mind Map

The results of the survey show that the vast majority of students have a positive attitude towards mind maps. More than 63.36% of the students interviewed said they were familiar with mind mappings; 67.08% thought they were more interested in English reading classes after using Thinking Maps; and more than 70% hoped that teachers would use Thinking Maps in class. However, although students generally showed interest in mind maps, their willingness to use them independently after class was relatively low, with only 44.72% of students indicating that they would use mind maps independently after class.

The survey found that most teachers had a positive attitude towards the use of mind maps. 66.67% of the teachers said they were familiar with mind maps, 72.22% were interested in their application, and 86.11% hoped to receive further training on mind maps. However, 41.67% of the teachers thought that the use of mind maps in the classroom would increase the burden of lesson preparation, which to a certain extent affected the teachers' willingness to use them in actual teaching.

The Current Application of Mind Map in Middle School 's English Reading Teaching

The majority of students used mind maps more frequently in the classroom, with more than 53.42% of students indicating that they often used mind maps in the classroom. However, when it comes to making mind maps on their own, only 36.03% of the students believed that they were able to skillfully draw mind maps by hand, and 22.36% of the students still had difficulties in reading comprehension. In addition, more than 70% of the students thought that mind maps could help improve their reading ability and performance, enhance their reading comprehension and generalization skills, and help clarify the structure of articles and promote divergent thinking.

Teachers generally agreed that mind maps were more widely used in teaching, with 86.12% of teachers indicating that they used mind maps in the classroom. However, in terms of usage, teachers mainly relied on ready-made mind maps rather than encouraging students to create their own. In addition, teachers tended to use mind maps to teach expository texts, and

hierarchical diagrams were the most common type of mind map, mainly used to show the logical structure of texts.

Main Problems in Applying Mind Map

(1) Weak ability of students to use it on their own: although students are interested in mind maps, they lack the motivation and ability to use them on their own after class. (2) Higher pressure on teachers' lesson preparation: some teachers think that making mind maps requires extra time, which leads to a heavier burden of lesson preparation. (3) Inadequate classroom feedback mechanism: students are difficult to get effective feedback from teachers after class, which affects the long-term application effect of mind maps.

Discussion

This study explores the practical application of mind maps from the perspective of junior high school English reading teaching, which makes up for the inadequacy of previous studies that mainly focused on the university level. The results of the study not only verify the positive role of mind mapping in English reading teaching, but also reveal the challenges faced in its practical application, and provide the following suggestions for future teaching practice: (1) Enhance students' independent learning ability: Teachers should consciously cultivate students' ability to independently create and use mind maps in teaching, for example, by enhancing students' sense of participation through group cooperation and classroom presentations. (2) Optimize teachers' way of preparing lessons: Educational institutions can provide training in mind mapping software to improve teachers' digital teaching ability, thus reducing the time spent on manual production and improving the efficiency of classroom teaching. (3) Establish an effective feedback mechanism: through online learning platforms or social software, teacher-student interaction mechanisms can be established so that students can receive timely feedback and suggestions for improvement after class.

Conclusion

Although this study reveals the positive effects of mind maps in middle school English reading teaching, there are still some limitations. First, the study was limited to junior high school students and teachers in a certain area, and future research could expand the sample to obtain more generalized conclusions. Second, this study mainly relied on questionnaire and interview data, and future research can combine with experimental studies to observe the learning effectiveness of students after using mind maps for a long period of time in order to further validate its effects. In addition, the applicability of mind maps in different types of reading materials, such as literary works, expository texts, and argumentative essays, can be explored to optimize its application strategies in reading teaching.

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