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RESEARCH ARTICLE

Research on the Application of Mind Maps in English Topic Review Class for Grade 3 Students

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Abstract

In response to the emphasis on core competencies in the "Compulsory Education English Curriculum Standards (2022 Edition)" and the requirement for efficient review under the "double reduction" policy, this study focuses on the application of mind maps in English topic review classes for Grade 3 students. In response to the trend of emphasizing the comprehensive use of language ability in the Chengdu high school entrance examination English, as well as the problems of fragmented knowledge, low student participation, and difficult follow-up for students with weak foundations in traditional review models, an integrated review model is proposed, which takes topics as the main line, mind maps as tools, and task-based activities as drivers. The study defines the core concepts of "mind mapping" and "topic review" through literature review, and takes the third grade of a certain middle school as the object. The study uses questionnaire survey method, interview method, and pre - and post test score comparison to empirically test the impact of this model on review efficiency. The experimental design covers typical topics such as "personal and family", and explores its effects on learning interest, classroom participation, knowledge integration ability, and academic performance through a three-stage teaching approach that constructs a knowledge network through pre class diagrams, trains language skills through situational tasks during class, and improves post class diagrams.

Keywords: mind map, junior high school English, topic review.

1 Problem posing

1.1 Background and Value of Topic Selection

The English Curriculum Standards for Compulsory Education (2022 Edition) clearly points out that under the guidance of Xi Jinping's thought of socialism with Chinese characteristics for a new era, the fundamental task of building morality and cultivating people should be implemented, and education should be emphasized. The teaching objectives of junior high school English should be based on the development of students' language knowledge, language skills, emotional attitudes, learning strategies, and cultural awareness, to cultivate their comprehensive language proficiency and comprehensively enhance their core competencies. In recent years, under the guidance of the new curriculum standards, the Chengdu

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high school entrance examination for English has weakened the focus on the examination of simple lexical, syntactic, and grammatical knowledge points. It not only emphasizes the examination of students' comprehensive language application ability, but also pays attention to their understanding of language meaning and their application in different situations. Therefore, based on the core literacy of the English subject, integrating textbooks around topics, using mind maps to transfer from unit topic review to overall review of high school English, improving review efficiency and classroom quality, has become a topic that frontline teachers are eager to explore.

1.2 Source and significance of the problem

The English test paper for the Chengdu high school entrance examination is divided into two parts: A and B. A has a maximum score of 100 points, while B has a maximum score of 50 points. By analyzing the English proficiency of the high school entrance examination in Chengdu over the past 5 years, it was found that except for a few simple questions such as multiple-choice and cloze questions that test students' language knowledge, the rest of the question types mainly test students' thinking ability and understanding and application in situations. Faced with the tedious and diverse English knowledge in the three years of junior high school, the overall review of the middle school entrance examination starts from the second half of the third year of junior high school, with a total of only over two months of review time, which is tight in time and heavy in tasks. So the review method and review efficiency are particularly important and crucial. The review method determines whether the review efficiency is efficient, and the review efficiency determines whether the high school entrance examination preparation is effective. In addition, the students in the two classes taught by the author generally have weak foundations, poor English learning habits, and relatively poor integration of English knowledge and thinking ability. Topic review requires a high level of integration of students' basic knowledge, which is suitable for students who have a solid foundation. For students with weak foundations, it is more difficult to keep up with the progress of teaching review. Although the author conforms to the new trend of reform in the district's review classes and attempts the teaching method of topic review in the third year of junior high school; But the progress is not smooth, and it is impossible to achieve a high degree of integration between teaching and learning. Therefore, to change the traditional English review mode and help students

efficiently integrate their language knowledge and grammar from three years of junior high school, and construct a complete basic knowledge framework, the author wants to use mind mapping as a breakthrough point, effectively combining mind mapping with topic review, with topic as the main line, mind mapping as the auxiliary, and task-based activity teaching as the main method, to carry out the integration and review teaching of middle school entrance examination topics.

1.3 Reasons for the problem

The introduction of the "double reduction" policy in 2021 requires a comprehensive reduction in the total amount and duration of homework, in order to alleviate students' heavy homework burden. The "Compulsory Education English Curriculum Standards (2022 Edition)" emphasizes that the English curriculum at the compulsory education stage has a dual nature of instrumentality and humanism. It not only undertakes the task of cultivating students' fundamental English literacy and developing their thinking ability, but also undertakes the task of improving students' comprehensive humanistic literacy. Guided by the "double reduction" policy and in accordance with the requirements of the new curriculum standards, we have reflected on the traditional review mode and discovered many reasons for the existing problems. Firstly, the teaching philosophy lacks innovative consciousness. Students review the textbooks in order, repeating the knowledge they have already learned. The correlation between the review content is weak, and there is a lack of integration of unit topic materials, resulting in students staying at a shallow level of memorization of the knowledge they have learned and unable to internalize it to improve their English comprehensive application ability. Secondly, the teaching method lacks overall awareness, and the review format is single, mainly focusing on practice and evaluation, with language knowledge as the unit, repeatedly reviewing vocabulary and grammar, resulting in scattered topics and knowledge, neglecting the cultivation of students' basic skills, and hindering the improvement of students' comprehensive knowledge application ability. Thirdly, the teaching content lacks awareness of expansion, and the review content is monotonous. It only focuses on reviewing the knowledge in the textbook, memorizing scattered and individual knowledge points in each unit, lacking knowledge expansion and extension, and unable to help students build a comprehensive knowledge system.   This not only does not help reduce

students' learning burden, but also hinders the improvement of students' learning interest, seriously deviating from the requirements of core literacy for teaching. Fourthly, the teaching design lacks students' subjectivity, and the review classes mainly focus on the explanation of specific knowledge points and the training of test taking skills, lacking situational settings and neglecting the students' subject status. Only the teacher's lectures and students' practice are emphasized, which makes it more difficult for students to arouse their interest in English in the tense preparation environment, deviating from the training of students' English thinking ability and understanding and application in situations.

2 Keyword definition

2.1 Mind map

In 1974, the renowned British educator Buzan [1] proposed mind maps, also known as mind maps, in his book "Using Your Brain". Buzan [1] proposed that mind mapping is based on "radial thinking" and presents output knowledge through a network of graphic structures. It is an effective thinking tool that can help people better utilize and explore their own brains. Mind maps have four basic characteristics: first, focus on the central image; Secondly, spread from the central image to the surrounding areas; Thirdly, assign keywords to each association branch and use them as nodes to continue spreading and generating new branches; Fourthly, each branch is connected through graphics, colors, etc. to form a node structure. From this, it can be seen that a mind map is a network of nodes composed of centers, branches, and nodes that present thinking. It can enhance memory, symbols, colors, and associative images through keywords, enhance visual sensory stimulation, and conform to human thinking habits. It is an effective tool for concretizing abstract radioactive thinking.

On this basis, the author believes that mind maps can be applied to the integration and review of English high school entrance examination topics, by using a variety of mind map forms to reflect thinking logic and knowledge logic. At present, the commonly used mind maps mainly include eight basic forms: circle diagram, bubble diagram, double bubble diagram, tree diagram, flowchart, composite flowchart, bracket diagram, bridge diagram, etc. Students can choose different forms of drawing according to their content needs and independent innovation in the process of integrating knowledge on topics. For example, students can first utilize the integrative nature of mind maps to actively explore the complex and varied knowledge of their junior high school years; Secondly, summarize and integrate vocabulary, sentence patterns, grammar, and other nodes around the topic to deepen understanding and memory; Finally, based on different nodes, expansion and divergence are completed to construct a complete knowledge system. On the one hand, the reasonable use of basic components such as keywords, nodes, colors, lines, annotations, and associations in mind maps not only helps students highlight key and difficult points during the review process, but also enhances their interest in the tedious preparation. On the other hand, mind maps have various forms of application in topic review, which can be completed independently under the guidance of teachers, or through group cooperation and classroom supplementation, helping students comprehensively grasp language knowledge and improve their English thinking quality.

2.2 Topic Review

Topic refers to the topic of discussion, the main theme of the discussion. The "Compulsory Education English Curriculum Standards (2022 Edition)" states that the overall goal of English curriculum is to enhance students' language abilities, promote mental development, and improve humanistic literacy. Among them, students' language ability, language skills, emotional attitude, cultural awareness, and learning strategies are important foundations for language learning. According to the requirements of the new curriculum standard, topic based teaching has emerged in junior high school. Topic based teaching links language knowledge learning with students' daily lives, stimulates students' interest through setting scenarios, participates in the exploration and discussion of specific topics in relatively real situations, and truly understands and internalizes topic related texts and language knowledge through continuous use and interaction. It improves students' listening, speaking, reading, writing, and reading skills, truly achieving "using in learning" and "learning in use". For topic review, researchers have different definitions based on different research directions. Janzen [4] proposed the definition of topic review teaching in his article "Practice and Reflection on Topic based 9th Grade English Review Teaching": "Topic review teaching method refers to using topics as carriers to reasonably integrate words, sentences, articles, and other content related to topics, while reviewing language knowledge related to topics and training students' essential language skills". Dunlosky et

al. [5] mentioned in her article "On the 'Topic based' Unit Review Mode for Junior High School English '" that topic review is: "Taking the topic as the main line, integrating relevant sentences and words into a topic, forming specific meanings and contexts, and carrying out different teaching activities and tasks in different contexts. If this method is well coordinated with effective and meaningful exercises, students can effectively consolidate and review the knowledge they have learned before". Paige et al. [6] defined topic review in "Design and Implementation of Topic based Stereoscopic Language Teaching": "Topic based review is a type of review based on different topics, which organically combines knowledge review with language skills training, emotional value understanding, cultural awareness cultivation, learning strategy training, etc., in order to improve students' cognitive level and language ability".

On this basis, the author summarized the definition of topic review. Topic review refers to creating real situations for students with topics as the main line, using task-based activities to help students summarize and integrate language knowledge, train language skills such as listening, speaking, reading, writing, and reading, enhance their ability to comprehensively apply knowledge, and cultivate and implement core competencies. Based on the reasonable combination of mind maps and topic review, with topics as the main line and mind maps as auxiliary, breaking down the barriers between textbooks and units, and re dividing and integrating the review content according to topics, conducting integrated review of high school English topics. For example, the main topic Individuals and Families includes three subtopics, involving nine units, namely subtopic 1 Personal and family members' information, which integrates three units 7AU1, 7AU2, and 7AU8; subtopic 2 Interests and Hobbies, which integrates three units 7AU9, 7BU1, and 9U9; subtopic 3 Appearance and its changes, which integrates three units 8BU9, 8AU3, and 9U4.

3 Literature Review

3.1 Research on Mind Maps at Home and Abroad

Mind maps were first proposed by Buzan [1], known as the "father of world memory," to help people break free from the constraints of linear thinking and achieve whole brain thinking by combining mind mapping with human thinking. Tony Bozan believes that the core of mind maps is imagination and association, and mind maps based on the concept of "radiation

thinking" are a very simple and effective thinking tool. Many foreign scholars believe in the power of mind maps in education, believing that mind maps can help improve understanding, thinking, and organizational efficiency. Yan et al. [7] believes that the application of mind maps can help enhance memory, improve learning efficiency, and creatively solve problems in the learning process. Madu et al. [8] believes that through mind mapping, people can effectively improve their note taking ability and creativity, and enjoy the learning process. In Singapore and the UK, mind maps have been included in compulsory courses for primary and secondary schools. In Japan and South Korea, the concept of mind mapping has been adopted by some schools to improve teaching efficiency.

Compared to other countries, the research on mind mapping in China began in the early 21st century and can be roughly divided into three stages of development. The first stage was when some famous scholars discovered this new method and began researching it. The second stage was when a group of scholars and professors actively promoted and introduced mind maps through teacher training, expert lectures, and other methods. The third stage was when some big cities introduced mind maps into their teaching reforms, bringing them into the teaching practice stage and achieving regional development. Eppler [2] believes that using mind maps means simultaneously utilizing all our resources to express the concepts, ideas, and theories in our minds in a graphical manner, making intangible knowledge explicit and visual, and promoting communication and expression of our thinking. Davies [3] first introduced the theoretical basis and production process of mind maps in 2000, and applied the mind map note taking method to lesson plan writing and classroom teaching. Sutanto et al. [9] defined mind mapping as a visual thinking tool that can promote brainstorming, showcase thinking processes, and be applied in teaching to enhance students' interest in learning, improve their learning initiative, and maintain their learning enthusiasm. With the flourishing development of mind maps, many scholars have combined mind maps with English teaching, and have achieved many research results in English listening, speaking, vocabulary, reading, and grammar teaching research. Through these studies, it has been found that mind maps have the characteristics of simplicity, intuitiveness, and systematicity, which can efficiently integrate knowledge, train students' logical thinking, and vividly enhance students' interest.

However, there is relatively little research on the application of mind maps in middle school English review classes, and most of it focuses on vocabulary and grammar review classes. There is almost no research on the combination of mind maps with middle school comprehensive review classes. Therefore, in topic integration review, using mind maps to emphasize the overall nature of the review has great research value.

3.2 Topic Review: Relevant Research at Home and Abroad

The research on topic review in foreign countries can be traced back to a long time ago, and scholars have expressed their opinions on topic review in each period. Since the beginning of the 21st century, more and more frontline teachers have begun to participate in the research and application of topic based teaching, achieving certain theoretical and practical results. However, there is still relatively little specific practical research in related fields. Topic review started relatively late in China, and attention to topic review only began in 2006. In 2007, Forget et al. [10] introduced that topic review is a teaching method that revolves around a certain topic, uses the text as a carrier, and widely carries out learning activities. Its purpose is to allow students to accumulate a large amount of relevant materials, participate in teaching activities on specific topics, and thus deeply understand the content of the text. In 2022, Virranmäki [11] constructed 2-3 learning tasks based on hot natural and cultural events to achieve the purpose of geography review, cultivate students' geographical awareness, and improve their ability to think independently. After entering 2017, Chinese scholars have gradually increased their research on topic review. Wette et al. [12] proposed using mind maps with topics as the main thread in vocabulary and grammar class, listening and speaking class, and reading and writing class to guide students to form three different mind maps. Zhu et al. [13] explored the relationship between "context" and "topic" in her English topic review class, as well as how to use context as the main thread for topic review to enhance students' interest and review efficiency. Based on the core competencies of the English subject, Huang et al. [14] integrates textbooks around topics, sets up exploratory activities and tasks related to words, sentences, articles, and writing, and enhances core competencies while reviewing knowledge. These studies on topic review mainly focus on unit topic review, teaching context setting, activity design, and teaching modes, and most of them are valuable experience summaries from frontline teachers on topic review. There is relatively little research on the application of mind maps combined with the review of middle school entrance examination topics. The scope of integrated review of middle school entrance examination topics is larger and the content is more extensive. How to make topic review more effective and achieve the mastery of language knowledge and the improvement of language ability needs to be explored.

4 Content planning

4.1 Research objective

Reviewing in the third year of junior high school is the most crucial step in the process of learning junior high school English, which determines students' English exam scores. An efficient third year English review class requires a holistic teaching philosophy and a scientifically effective teaching model to help students solve difficulties in the review process, consolidate knowledge, and cultivate abilities in a mutually reinforcing manner. This study attempts to effectively combine mind maps and topic review, with topics as the main thread, mind maps as auxiliary, and task-based activity teaching as the main method, to carry out integrated review teaching for the third year of junior high school topics. Specifically, exploring the application of mind maps in the teaching mode of topic review classes for junior high school students, on the one hand, exploring the impact of mind maps on students' English learning interest, classroom participation, and learning strategies on review efficiency, and on the other hand, exploring the impact of mind maps on students' knowledge level and language ability on English grades, in order to provide constructive assistance for the review classroom teaching of junior high school students.

4.2 Research content

Based on the research objectives, this study focuses on the third year of junior high school and uses research tools such as questionnaires, interviews, and tests to collect and analyze data. Two sets of comparative experiments are used to study the application practice of mind maps and topic review, exploring whether mind maps can improve the review efficiency, language ability, and academic performance of third year English topic review classes.

5 Process planning

5.1 Research Methods

This study utilized questionnaire survey, interview, and testing methods. Firstly, the questionnaire survey method was developed based on the research objectives of this study. A total of two questionnaires were designed, which included three dimensions: students' interest in English topic review classes, their participation in classroom activities, and changes in students' learning strategies. Through pre - and post questionnaire surveys, we aim to understand the changes in students' interest in review classes, classroom participation, and learning strategies after a combination of mind mapping and topic review classes. Based on this, we can draw corresponding research conclusions. Secondly, interview method is one of the important ways to collect research data. Through communication and dialogue with the research subjects, we can have a clearer understanding of their thoughts and further understand the effectiveness of the experiment. This study is based on the research purpose and combines mind maps with topic review to design targeted interview questions. Some students in the experimental class were asked questions to gain a deeper understanding of the attitudes of students at different levels towards using mind maps in topic review classes in Grade 3 English, changes in course participation and learning strategies. Then, the responses of students at different levels were compiled and summarized, and timely feedback was given to the topic review class and the teaching mode was quickly adjusted to better meet the teaching content and students' learning situation. Thirdly, the testing method involves obtaining changes in student grades through testing data. The testing of this study can be divided into three parts: pre-test, mid test, and post test. The pre-test is a simulated exam for ninth grade students, and this exam is organized and marked by the district organization. The results are objective, authentic, and reliable. The post experiment test is a simulated exam after a round of review. The exam is set by the lesson preparation team, organized by the entire grade, and randomly marked by teachers. The exam results are relatively objective and effective. The entire experiment was conducted using SPSS 22.0 to compare and analyze the exam scores of two classes in the same test. Based on the analysis of the difference in scores, it was demonstrated whether mind mapping can be beneficial for improving students' grades in topic review classes.

5.2 Implementation steps

This study will take one year and is planned to be completed in three steps, as follows:

Phase 1: Organizational Preparation Phase (March 2024 August 2024)

1. Carefully study the new curriculum standards, actively participate in district teaching and research, absorb the latest teaching concepts, determine topic selection, and develop plans and schemes.

2. Consolidate knowledge and theoretical learning, read and organize relevant literature, actively listen to expert lectures, and understand the latest theoretical knowledge.

3. We will use literature review and survey research methods to conduct in-depth discussions and arguments on the relevant background of the topic and the identified research subjects, and develop corresponding survey questionnaires.

Phase 2: Research and Exploration Phase (September 2024 April 2025)

1. Based on the first stage survey questionnaire, conduct preliminary survey, summarize and organize the survey results, analyze and formulate the next plan.

2. Based on the "one diagnosis" scores of two classes of students, combined with the actual situation, a specific plan will be implemented for the selected research subjects, that is, using topics as the main line, mind maps as auxiliary, and task-based activity teaching as the main method, to carry out integrated review teaching of middle school entrance examination topics.

3. In the specific implementation process, use conversation and testing methods to timely understand changes in students' attitudes and efficiency in English review, constantly reflect on teaching models, and adjust corresponding plans.

Phase 3: Summary Phase (May 2025- July 2025)

1. Based on the weekly exams of each grade and the "second diagnosis" in the district, compare and analyze all test scores, and summarize the final results.

2. Summarize all the information and prepare a research report to conclude the topic.

6 Expected results and outcomes

6.1 Expected results

This study is based on relevant research theories, combining mind maps with comprehensive topic review for middle school English exams, and creating an English topic review classroom teaching model based on mind maps. Before class, use mind maps to integrate knowledge around the topic. During class, design listening, speaking, reading, and writing activities based on the topic. Introduce situational review of vocabulary, listening training to review sentence patterns and grammar, dialogue practice to improve comprehensive language output ability, topic reading training to enhance writing skills, and improve the mind maps for each topic after class. Therefore, the presentation forms of research results are relatively diverse, which can be teachers' reflections on each stage of teaching, students' mind maps for reviewing each topic, or records of conversations between teachers and research subjects during the mid-term implementation.

6.2 Expected results

Through the entire study, it can be concluded that the use of mind maps is an effective supplement and powerful aid for comprehensive topic review. In topic review, creating appropriate contexts based on the significance of the topic can not only help students improve their ability to apply English knowledge, but also help them strengthen and consolidate the necessary skills for the exam, and use a more complete mind map to complete the later stage of high school entrance examination preparation. Therefore, based on background policies and environmental analysis, combined with relevant literature research, this study proposes the following expected research results. Firstly, combining mind maps with topic review can improve students' language knowledge memory level and ability. The systematic integration of mind maps can effectively help students understand and memorize scattered knowledge points, while concise visualization can help students reproduce knowledge in a timely manner and achieve rapid integration of new and old knowledge. Secondly, combining mind maps with topic review can improve the teaching efficiency of review classes. Mind maps can increase students' interest in reviewing, reduce the difficulty of topic review, provide opportunities for cooperative learning, and help each student find their strengths in topic review, gradually forming a sense of self-directed learning, improving the efficiency of English review and preparation, and gaining a great sense of achievement and satisfaction. Thirdly, combining mind maps with topic review can enhance teachers' teaching abilities. Topic review integration tests teachers' grasp of textbooks and understanding of students, correctly integrating main topics and corresponding sub topics, and guiding students to review efficiently, which can quickly improve teachers' teaching abilities. Fourthly, the combination of mind maps and topic review can improve the success rate of English proficiency in school entrance exams. Through effective review and preparation, students' English learning scores can be improved, which in turn promotes the improvement of the success rate of English proficiency in the entrance exams.

Data Availability Statement

Data will be made available on request.

Funding

Conflicts of Interest

The author declares no conflicts of interest.

Ethical Approval and Consent to Participate

Not applicable.

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