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Development of Historical Learning Achievement Using Multimedia Interactive Teaching Method for First Grade Students in Tianhe Middle School of Guangdong Province

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Abstract

Background and Aim: 1) compare the students' historical learning achievement before and after learning through the multimedia interactive teaching method, 2) compare the students' historical learning achievement after learning through the multimedia interactive teaching method with the determined criterion set at 70 percent, and 3) assess the students' satisfaction after learning through the multimedia interactive teaching method.

Materials and Methods: The sample of this study was a class of 30 first-grade students at Tianhe Middle School of Guangdong Province, which was derived by using the cluster random sampling method. 1) six lesson plans using a multimedia interactive teaching method with a congruence index of 4.61, 2) a historical learning achievement test with a reliability index of .847, and 3) a student satisfaction questionnaire with a reliability index of .855. The statistics used to analyze data were mean, standard deviation, t-test for dependent samples, and t-test for one sample.

Results: The results revealed that 1)using the multimedia interactive teaching method, the students' historical learning achievements multimedia interactive teaching method was higher than before at a statistically significant level of .05 (t = 4.551, p = .000), 2) the student's historical learning achievements was higher than the determined criterion of 70% at a significance level of .05 (t = 2.105, p = .022), and 3) the students' satisfaction after learning through using multimedia interactive teaching methods was at a high level (M =4 .44, SD = 0.53).

Conclusion: The knowledge gained from the research is that five-step learning management using multimedia interactive teaching, which consists of 1) Determining teaching objectives, 2) Multimedia Presentation and Explanation, 3) Group Discussion and Sharing, 4) Virtual Reality Experience and Interactive Game, 5) Summary and End of Class. The five-step multimedia interactive teaching method enhances students' learning achievement. Incorporating multimedia, group discussions, virtual reality experiences, and class summaries comprehensively improves their overall skills.

Keywords: Multimedia Interactive Teaching; Historical Learning Achievement; Student Satisfaction

Introduction

With the progress of the new curriculum reform, junior middle school history instruction is likewise undergoing a gradual transformation. Traditional teaching methods, including simple blackboard writing and dictation, have been unable to meet the needs of modern teaching. To improve the efficiency and quality of history teaching, many schools began to try to introduce multimedia technology into history teaching, to provide richer and vivid teaching content and help students better understand and remember historical knowledge. In the Outline of Basic Education Curriculum Reform, the Ministry of Education proposed that the application of information technology in teaching should be vigorously promoted to improve students' information literacy and comprehensive quality. In addition, the Outline of the National Medium - and Long-term Education Reform and Development Plan (2010-2020) also emphasizes the importance of using multimedia technology in teaching and proposes to promote education informatization to realize education modernization.

In their article "Multimedia Tools in the Teaching and Learning Processes: A Systematic Review", Abdulrahman et al. (2020) proposed that multimedia courseware can enhance the interest and interaction of learning and improve students' learning motivation.

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Weay and Masood (2015) found in their thesis "The 'Big Picture' of Thematic Multimedia Information Representation in Enhancing Learners' Critical Thinking and History Reasoning" that multimedia-assisted teaching can expand students' thinking and imagination.

Daryanes et al. (2023) found in their thesis "The development of articulate storyline interactive learning media based on case methods to train students' problem-solving ability" that multimedia can enhance the intuitiveness of teaching and improve students' comprehension and memory ability.

When the current teaching method still has some problems and needs to be improved, multimedia interactive teaching methods can be an effective strategy.

(1) Low student engagement: multimedia elements (such as video, audio, and animation) are used to attract students' attention. Design interactive teaching activities that allow students to actively participate and interact with the material. Provide a personalized learning experience, such as motivating students through gamification elements.

(2) Limited knowledge transfer effect: multimedia is used to display rich images, audio, and video materials to enhance the visual presentation of teaching content. Use multimedia tools such as animation and simulation to vividly explain abstract or complex concepts. Online resources and digital archives are provided to encourage independent exploration and in-depth understanding.

(3) Large differences in students' understanding: personalized learning paths are designed to provide customized teaching content according to the different levels and learning styles of students. Use multimedia tools to provide a variety of expressions to meet the learning needs of different students, such as text, images, audio, and video. Introduce online discussion and collaboration platforms to facilitate interaction and knowledge sharing among students.

(4) Difficulty in remembering historical concepts and events: Using multimedia interactive teaching methods to create memory curves and strengthen memory and association through visual and auditory stimuli. Use interactive multimedia tools to create memory games, mock exams, and other activities that stimulate students' interest in historical concepts and help them consolidate their memories. (Huang, 2013)

Multimedia interactive teaching methods are highly practical and can effectively improve students' learning interest and efficiency. At the same time, its rich and diverse teaching methods also provide teachers with more teaching choices and space for innovation.

(1) Situation simulation: Use multimedia tools to create real or simulated situations, allowing students to perform role-playing, decision-making, and other activities to understand and apply knowledge more deeply.

(2) Interactive: Through multimedia courseware or online platforms, an interactive; session is set up so that students can answer questions instantly and get feedback, increasing the interactivity of the class.

(3) Gamified teaching: combine learning content with games, such as designing knowledge competitions, level-breaking games, etc., so that students can learn in a relaxed and pleasant atmosphere.

(4) Adaptive teaching: Based on students' learning progress and feedback, the multimedia interactive teaching system can automatically adjust teaching content and difficulty to provide personalized learning paths.

(5) Visual tools: Use visual tools such as charts and animations to help students understand abstract concepts and processes more intuitively.

In history learning, students are prone to the following problems:

First, due to the complexity and abstractness of historical events, it is often difficult for junior middle school students to establish an intuitive understanding. Historical events take place in the past and are far removed from students' daily lives, which makes it difficult for them to experience the sense of reality and vividness of history. As a result, they may find history courses boring and difficult to interest them.

Second, junior middle school history courses usually involve a large number of basic knowledge points, such as times, people, events, and so on. These knowledge points are trivial and easy to confuse, especially for junior middle school students whose memory ability is not mature. They may be confused about how to connect these knowledge points to form a complete historical context.

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Third, history teaching in junior middle schools often adopts traditional teaching methods and lacks interaction and practice. This kind of teaching method makes it easy to make students fall into a state of passive acceptance and lack of active thinking and exploration opportunities. They may be resistant to history courses, thinking that history is a boring subject.

To sum up, junior middle school students are faced with problems such as difficulty in understanding, pressure of memory, and unitary teaching methods when learning history. To solve these problems, teachers can try to introduce media interactive teaching methods, make use of the advantages of new media technology to present more vivid and intuitive history teaching content for students, increase interaction and practice links, and stimulate students' learning interest and initiative. At the same time, teachers can also adopt a variety of teaching methods and strategies, such as situational teaching and gamification teaching, to help students better understand and remember historical knowledge.

The research background highlights the evolving challenges in junior middle school history education, emphasizing a shift from traditional teaching methods to the integration of multimedia technology in response to recent curriculum reforms. Traditional techniques such as blackboard writing and rote learning no longer meet contemporary educational needs, prompting a call for multimedia approaches that can enhance engagement, comprehension, and retention. National policies, including the Ministry of Education's initiatives and the Education Reform and Development Plan (2010-2020), advocate for digital literacy and enriched learning experiences through information technology. Research supports that multimedia tools expand student engagement, thinking, and memory by making history more vivid and interactive. Strategies like simulation, gamification, and adaptive learning are proposed to address learning challenges, particularly the abstract and complex nature of historical concepts. These methods hold promise for improving student interest, efficiency, and overall learning outcomes in history, bridging the gap between traditional methods and the demands of modern education.

Recognizing the potential of multimedia interactive teaching, this study aims to investigate its impact on the history scores of Grade 1 students at Tianhe Middle School. Research on multimedia interactive teaching is crucial not only for advancing educational modernization and enhancing teaching quality but also for improving learning efficiency, enriching the learning experience, promoting educational equity, and preparing students to meet the demands of a future-oriented society.

Research questions

1. How are students' historical learning achievements before and after learning through multimedia interactive teaching methods?
2. How are students' historical learning achievements after learning through multimedia interactive teaching methods, with the criterion set at 70 percent?
3. What is the student's satisfaction after learning through the multimedia interactive teaching methods?

Objectives

1. To compare the students' historical learning achievement before and after learning through the multimedia interactive teaching methods.
2. To compare the students' historical learning achievement after learning through multimedia interactive teaching methods with the determined criterion set at 70 percent.
3. To assess the students' satisfaction after learning through the multimedia interactive teaching methods.

Literature review

Multimedia interactive teaching method refers to a teaching method in which teachers use multimedia tools and technologies to interact with students to facilitate learning and knowledge transfer. This teaching method combines multimedia resources (such as audio, video, images, etc.) and interactivity to provide a rich, engaging learning experience and to engage students actively in the learning process.

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Through the use of multimedia resources, teachers can present information and concepts to communicate content more clearly and stimulate students' interest and curiosity. At the same time, through interactivity, students can participate in discussions, ask questions, and solve problems to better understand and apply the knowledge. Multimedia interactive teaching methods can improve learning effectiveness and participation, stimulate students' thinking and creativity, and cultivate their ability to cooperate and learn independently.

Teaching steps: Multimedia interactive teaching method is a teaching method that combines multimedia resources and interactivity (Aljezawi & Albashtawy, 2015; Dai & Fan, 2012; Kuruca Ozdemir & Dinc, 2022), which can be implemented through the following steps:

1. Determine teaching objectives: Define the learning objectives and objectives to be achieved.
2. Multimedia Presentation and Explanation: Through multimedia resources such as images, videos, and audio, the historical background, social culture, and important events of each dynasty are vividly displayed.
3. Group Discussion and Sharing: Students can be guided to think, communicate, and cooperate through questions, discussions, group activities, problem-solving, and other ways.
4. Virtual Reality Experience and Interactive Game： Utilizing virtual reality (VR) experiences and interactive games can significantly enhance the learning process, providing students with an immersive and engaging approach.
5. Summary and End of Class： Online quizzes, group presentations, and individual assignments can be used to assess students' learning outcomes.

The core of the multimedia interactive teaching method is to leverage multimedia resources and interactive tools to create an engaging, participatory, and customized learning environment. This approach seeks to boost students' motivation and active involvement, enhancing their ability to comprehend, retain, and master content. Additionally, multimedia interactive teaching fosters cooperative interaction and encourages creative thinking while developing students' problem-solving abilities and critical thinking skills. (Hartley & Bendixen, 2003; Kay, 2012; Wang, 2019)

Multimedia instruction can be effective for all students with different learning abilities and individual differences. Therefore, addressing individual differences is crucial during multimedia-integrated instruction. (Griffiths & Soruç, 2021)

Hybrid learning effectively combines in-person and online instruction, resulting in a flexible educational environment that meets the diverse needs of students. This approach improves engagement and outcomes, paving the way for more personalized and effective learning experiences in today's educational environment. (Sisouvong & Pasanchay, 2024; Niyomves et al., 2024)

The significance of multimedia interactive teaching methods is evident in their ability to promote deep learning, enhance feedback, spark creativity and imagination, and meet the evolving educational needs of the information age. This approach supports students in developing effective learning skills, critical thinking, and well-rounded competencies, providing a strong foundation for them to become lifelong learners and innovators. (Kiernan, 2022; Peters, 2020; Tiffany, 2018)

Conceptual Framework

The cognitive theory behind multimedia teaching is primarily based on Richard Mayer's Cognitive Theory of Multimedia Learning (Mayer, 2012), which consists of 12 principles aimed at optimizing the design of educational content to enhance learning outcomes. These principles, grounded in cognitive load theory, emphasize the limited capacity of learners to process information and advocate for active learner engagement in the learning process. They recommend combining text and images, providing clear signaling, avoiding redundant information, maintaining spatial and temporal contiguity in information presentation, segmenting content, introducing key concepts in advance, favoring verbal explanations over on-screen text, and using conversational style and friendly human voices in narration. Mayer's theory has been widely applied in the field of educational technology to design more effective digital teaching materials.

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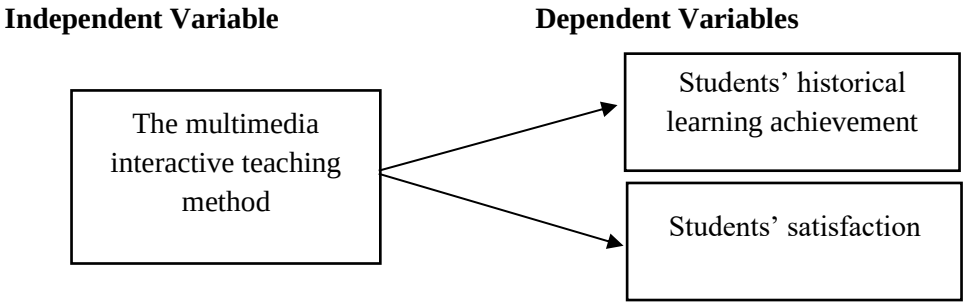

Figure 1 Conceptual Framework

Methodology

1. Population and sample

1.1 The population in this study was 100 first-grade students in Tianhe Middle School of Guangdong Province.

1.2 The sample of this study was 30 first-grade students (1 classroom) of first-grade students in Tianhe Middle School of Guangdong Province, which was derived by using the cluster random sampling method.

2. Research instruments

Research instruments were the tools for collecting data. The research instruments, which were used in this study, were 2 main parts of the instruments: 1) the instrument for the experiment, and 2) the instrument for data collection.

2.1 Lesson plan

Lesson plan: There are 6 lesson plans for the History course, allotted with 3 hours per lesson plan, and 18 hours in total.

Table 1 Lesson plan

Lesson	Topic	Time Duration
1	The Establishment and Characteristics of the Xia Dynasty	3 hours
2	The Politics and Economy of the Shang Dynasty	3 hours
3	The Religion and Sacrificial Rituals of the Shang Dynasty	3 hours
4	The Enfeoffment System and Patriarchal Clan System of the Western Zhou Dynasty	3 hours
5	The Rivalry and Transformation of the Spring and Autumn Period	3 hours
6	The Decline of the Zhou Dynasty and the Beginning of the Eastern Zhou Period	3 hours
	Total	18 hours

2.1.1 An expert group composed of five experts evaluates the evaluation form. After collecting data, analyze the collected data to determine the appropriateness and consistency of the lesson plans. If the average score of appropriateness and consistency assessed by a group of experts is higher than 3.51, it means that the components of the lesson plans have good appropriateness quality and internal consistency. After obtaining the expert evaluation results, the developed teaching model was revised and improved according to the expert's suggestions.

2.1.2 It was found that the mean score of appropriateness was at 4.61 and the standard deviation was at 0.55 which means the lesson plans had the quality at a very high level. Therefore, the

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application of multimedia interactive teaching Methods to the teaching of historical learning ability can improve the students' historical learning achievement.

2.2 Constructing the History Learning Achievement Test

The steps of the historical learning achievement test are as follows：

2.2.1 Studying the construction of the historical learning achievement, multiple choice test construction, and related documents is studied. The key considerations are the purpose, type, and content of the test. Construct tests involving project analysis to clarify the project differentiation and project difficulty of the tests, as well as the validity and reliability of the tests. Analyzing the curriculum contents and the learning objectives by constructing an analysis table of the curriculum regarding the coverage of objectives and content of the curriculum. The test items consisted of four types of cognitive domains. Knowledge 2) comprehension, 3) application, and 4) analysis.

2.2.2 Constructing the achievement test on "Multimedia interactive history teaching". The test consists of 30 items of multiple-choice questions, each of which has one correct answer. Draft multiple-choice tests are submitted to essay advisors for their advice on the appropriateness, accuracy, ambiguity, and wording of the tests. Then, based on the advice of the thesis consultant, the draft test was revised. Provide tests and test evaluation forms to three experts, conduct content validity checks, and make recommendations on question types, test accuracy, and wording. The quality of the test is derived from the Index of Item Objective Congruence (IOC) obtained from the performance test evaluation form.

If the Index of Item Objective Congruence (IOC) of each item of the test is higher than 0.5 that means it can be used in the test. The result of analyzing the IOC index showed that all test items were appropriate and could be used in the test.

2.2.3 Revising the test according to the experts' comments and suggestions. Measuring the item difficulty (p) and item discrimination (r), including reliability by trying out the test on students who had learned this content. Analyzing each item of the test to find out the item difficulty (p) and item discrimination (r), including reliability. Item difficulty (p) should range from 0.20-0.80, and item discrimination (r) should be more than 0.20. The reliability of the test was computed using the formula of Kuder and Richardson formula 20 and should be more than 0.7 (Kuder & Richardson, 1939).

The test had difficulty (p) between 0.23-0.80, item discrimination (r) between 0.20-0.87, and KR20 equal 0.847 which means the test can be used.

2.3 Satisfaction questionnaire

If the Index of Item Objective Congruence (IOC) of each item of the questionnaire is higher than 0.5, that means it can be used in the questionnaire. The result of analyzing the IOC index showed that all questionnaire items were appropriate and could be used in the test. The results of the IOC index analysis showed that the IOC for each item of the knowledge test ranges from 0.80 to 1.00 and is greater than 0.50, which makes it usable for teaching and learning. Try out with 30 students for assessing reliability by using Cronbach's alpha coefficient. 30 students were selected to assess reliability by using Cronbach's alpha coefficient. The students' satisfaction questionnaire with a reliability of 0.53.

3. Data collection

The procedures of data collection were as follows:

3.1 The sample was given a pretest by measuring historical learning achievement with a multiple-choice test for historical problem-solving ability.

3.2 The sample was taught by a multimedia interactive teaching method.

3.3 After finishing the instruction, the samples received the posttest by using the same instrument that was used in the pretest.

3.4 The students were given the students' satisfaction questionnaire.

4. Data Analysis

In this study, data were analyzed using the statistical program according to the research objectives.

4.1 Compare historical learning achievement before and after receiving multimedia interactive teaching by using a t-test for the dependent sample.

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4.2 Compare historical learning achievement with the determined criteria set at 70 percent by using a t-test for one sample.

4.3 Assess the student's satisfaction with the multimedia interactive teaching method by using mean and standard deviation.

Results

The results were presented according to the research objectives as follows:

1. Comparing the average scores of historical learning achievement before and after multimedia interactive teaching. The following table shows the descriptive statistics and t-tests analyzed by the statistical package program. This table aims to answer the purpose of the research on whether multimedia interactive teaching can improve historical learning achievement.

Table 2 The result of comparing the mean score of historical learning achievement before and after learning through multimedia interactive teaching

Group	n	Pretest scores		Posttest scores		*t*	*p*
		M	*SD*	*M*	*SD*		
Experimental group	30	21.43	4.22	22.43	3.73	4.551**	.000

** The significance level $p < 0.01$.

As presented in Table 2, the mean score of the pretest of students' historical learning achievement was 21.43 (*SD* = 4.22), and the posttest of students' historical learning achievement was 22.43 (*SD* = 3.73). The results in Table 4.1 show that after the implementation of historical courses based on multimedia interactive teaching in the classroom, the post-test scores of students' historical learning achievement were greater than pre-test scores at .01 level of statistical significance ($t = 4.551$, $p = .000$). When the significance level is .01, the value of p-value is Sig = .01, indicating that there was a significant correlation between pre-test scores and post-test scores, which applied to paired sample T-test for dependent samples. The average scores of the study developed increasingly higher than pre-test scores in historical learning achievement.

2. Average teaching historical learning achievement through multimedia interactive teaching, 70% results. The following table shows the descriptive statistics and t-tests analyzed by the statistical package program. This table aims to answer the research objectives of whether multimedia interactive teaching can improve historical learning achievement.

Table 3 Pass multimedia interactive after teaching the average score of historical learning achievement with a 70% standard result

Group	n	Full score	Criteria score	*M*	*SD*	*t*	*p*
Experimental group	30	30	21	22.43	3.73	2.105*	.022

* The significance level $p<0.05$

As presented in Table 3, the mean scores of t students' historical learning achievement after learning through multimedia interactive teaching was 22.43 from possible full marks of 30 and the standard deviation was 3.73 which was statistically higher than the criterion of 70% at .05 level of statistical significance ($t = 2.105$ $p = .022$).

3. Findings of assessing students' satisfaction with learning through a multimedia interactive teaching design.

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Table 4 Average score and satisfaction level of students' satisfaction

NO.		ITEM	*M*	*SD*	Level of Appropriateness
Instructional strategy	1	Satisfied with the teaching objectives of teachers using multimedia interactive teaching	4.07	0.78	High level
	2	Satisfied with the teaching content of teachers using multimedia interactive teaching	4.17	0.79	High level
	3	Satisfied with the teaching methods of teachers using multimedia interactive teaching	4.27	0.58	High level
	4	Satisfied with the time allocation of teachers using multimedia interactive teaching	4.47	0.51	High level
Instructional resources	5	Satisfied with the teaching resources of teachers using multimedia interactive teaching	4.40	0.62	High level
	6	Satisfied with the team and resource allocation during teachers' use of multimedia interactive teaching	4.53	0.51	Very high level
	7	Satisfied with the lesson plan during teachers' use of multimedia interactive teaching	4.47	0.51	High level
Teaching efficiency	8	Satisfied with the learning efficiency of teachers using multimedia interactive teaching	4.57	0.50	Very high level
	9	Satisfied with the learning achievement of teachers using multimedia interactive teaching	4.60	0.50	Very high level
	10	Satisfied with the overall status of teachers using multimedia interactive teaching	4.43	0.50	High level
	11	Satisfied with the Interest of teachers using multimedia interactive teaching, Interest in learning increased	4.47	0.51	High level
Instructional evaluation	12	Satisfied with the practical skills of teachers using multimedia interactive teaching	4.57	0.50	Very high level
	13	Satisfied with the problem-solving skills of teachers using multimedia interactive teaching	4.63	0.49	Very high level
	14	Satisfied with the self-directed learning ability of teachers using multimedia interactive teaching	4.47	0.57	High level
	15	Satisfied with the improvement in academic achievements through teachers using multimedia interactive teaching	4.50	0.51	High level
Overall Total			4.44	0.53	High level

As presented in Table 4.3, in the 15 items of the satisfaction questionnaire, the lowest mean score was 4.07 (*SD* = 0.78), and the highest mean score was 4.63 (*SD* = 0.49). The result of this Table showed that the students' satisfaction was high level (*M* = 4.44, *SD* = 0.53).

Discussion

1. This study shows that the multimedia interactive teaching method is an effective teaching method to improve students' historical learning achievement. The mean score of the pre-test of students' historical learning achievement was 21.43 (*SD* = 4.22) the mean score of the post-test of students' historical learning achievement was 22.43 (*SD* = 3.73) and the mean scores of t students' historical learning achievement after learning through multimedia interactive teaching was 22.43 from possible full marks of 30 and the standard

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deviation was 3.73 which was statistically higher than the criterion of 70% at .05 level of statistical significance.

The integration of multimedia interactive teaching methods has been found to significantly enhance students' academic achievements in the field of history. The pre-test scores indicate a baseline performance, which saw a notable increase post-implementation of multimedia interactive teaching. This improvement can be attributed to the engaging and dynamic nature of multimedia content, which captures students' attention and facilitates better retention of historical information (Syahputra, & Maksum, 2020).

Moreover, using interactive multimedia in history education offers a more enriched learning experience by merging visual, auditory, and interactive components. Research by Ilmiah et al. (2023) suggests that this method is more effective than traditional teaching, which often depends on textbooks and lectures alone. Interactive multimedia has the potential to make historical events more accessible and relatable to students, thus contributing to higher academic outcomes.

2. The study's findings reveal that the mean post-test scores of 22.43 outperformed the predefined criterion of 70%, indicating that multimedia interactive teaching not only improves students' historical knowledge but also surpasses expected educational standards. This achievement can be linked to the personalized learning experiences offered by interactive multimedia, which caters to various learning styles and paces (Nur Indah Sari et al., 2022). By offering a variety of interactive exercises, multimedia teaching tools enable students to engage with historical content at their own pace, leading to a deeper understanding and better performance. This personalized approach is particularly beneficial for students who may struggle with traditional teaching methods, providing them with the opportunity to excel and achieve beyond the standard criteria (Ilmiah et al., 2023). The 70% education standard serves as a basic passing score, ensuring that students have mastered essential knowledge and skills after completing a certain stage of learning. This standard is significant for ensuring educational quality, achieving educational goals, promoting educational equity, conducting educational assessments, and motivating student learning. It reflects the basic expectations of the education system on student learning outcomes and is an important measure of the quality, development level, and competitiveness of educational work. It is also a key reference for the formulation and assessment of educational policies. Through this standard, educators can ensure that all students reach a certain academic level, laying a solid foundation for their future development and contributions to society.

3. The students were satisfied with the learning management using multimedia interactive teaching at a high level (M = 4.44, SD =0.53). The mean score of students' satisfaction using the satisfaction questionnaire was 4.44 and the standard deviation was 0.53 indicating that multimedia interactive teaching is both well-received and valued by learners. This positive response is likely due to the engaging and interactive characteristics of multimedia content, which make history lessons more enjoyable and reduce the monotony often associated with traditional methods (Syahputra & Maksum, 2020).

Interactive multimedia teaching tools frequently include features like quizzes, games, and simulations that not only assess students' grasp of historical events but also add an element of dynamism to the learning process. These interactive components enhance student engagement and satisfaction by creating a learning environment that students perceive as more attuned to their interests and needs (Ilmiah et al., 2023).

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Conclusion

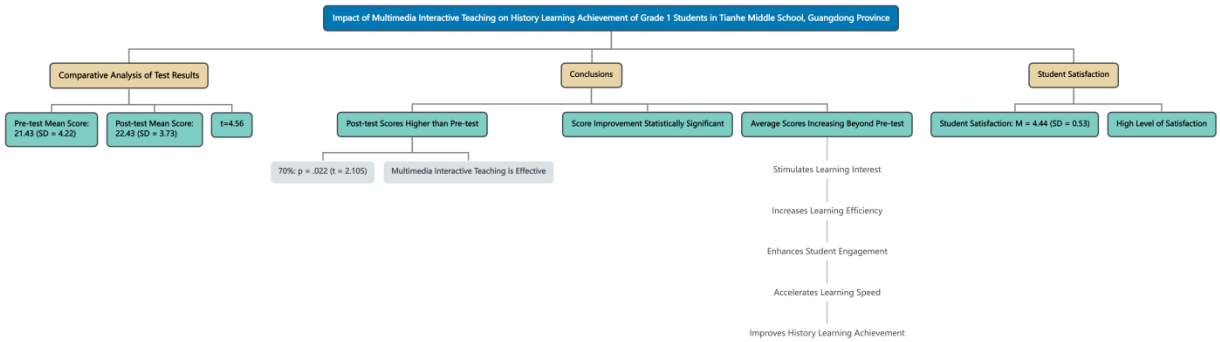

Figure 2 Conclusion

Figure 2 can be summarized as follows: Through comparative analysis of the test results before and after the multimedia interactive teaching course, the influence of multimedia interactive teaching methods on the historical learning achievement of 1st-grade students in Tianhe Middle School of Guangdong province is obtained. The conclusion is as follows:

1. The mean score of the pre-test of students' historical learning achievement was 21.43 (*SD* = 4.22), and the mean score of the post-test of students' historical learning achievement was 22.43 (*SD* = 3.73). After the implementation of historical courses based on multimedia interactive teaching in the classroom, the post-test scores of students' historical learning achievement were greater than pre-test scores at a .01 level of statistical significance ($t = 4.56$, $p = .000$). The average scores of the study developed increasingly higher than pre-test scores about historical learning achievement.

2. The mean scores of students' historical learning achievement after learning through multimedia interactive teaching was 22.43 from possible full marks of 30 and the standard deviation was 3.73 which was statistically higher than the criterion of 70% at .05 level of statistical significance ($t = 2.105$, $p = .022$).

3. The students were satisfied with the learning management using multimedia interactive teaching at a high level ($M = 4.44$, $SD = 0.53$). The mean score of students' satisfaction using the satisfaction questionnaire was 4.44 and the standard deviation was 0.53.

Therefore, the multimedia interactive teaching method is feasible in teaching Grade one of middle and high school history and helps to improve students' learning achievement and ability. The experimental results verified the research hypotheses. In addition, students had higher satisfaction with multimedia interactive teaching methods. In the classroom practice of the multimedia interactive teaching method, students' interest in learning was stimulated, learning efficiency was increased, and students were more likely to be engaged in learning. Students will learn faster, which helps to improve their historical learning achievement of students.

Recommendation

Recommendation for implication

Based on the findings, the following recommendations are proposed to enhance the use of multimedia interactive teaching in history classes:

1. Utilize a variety of multimedia resources: Teachers should incorporate a wide range of multimedia materials, such as videos, animations, and interactive timelines, to provide a rich and diverse learning experience.

2. Encourage student participation: Teachers should design lessons that encourage students to actively participate in the learning process through discussions, group work, and interactive activities.

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3. Provide personalized feedback: Teachers should use the data collected from interactive multimedia tools to provide personalized feedback to students, helping them understand their strengths and areas for improvement.

4. Continuously update content: To keep the material relevant and engaging, teachers should regularly update the multimedia content to reflect current historical research and events.

5. Train teachers: Schools should provide training for teachers to effectively use multimedia interactive tools in their teaching practices.

Recommendation for further research

With the deepening of educational reform, the following suggestions are made for future research to further improve the teaching effectiveness of Simpson's teaching method:

1. Long-term impact study: Future research should examine the long-term effects of multimedia interactive teaching on students' historical knowledge and academic achievements.

2. Comparative studies: Research should be conducted to compare the effectiveness of multimedia interactive teaching with other teaching methods in history education.

3. Student diversity: Future studies should explore how multimedia interactive teaching affects students of different learning styles, abilities, and backgrounds.

4. Integration with technology: Research should investigate the potential of integrating multimedia interactive teaching with emerging technologies, such as virtual reality and augmented reality, in history education.

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