Scientific Research Publishing

Chinese Studies, 2026, 15(4), 336-351
https://www.scirp.org/journal/chnstd
ISSN Online: 2168-541X
ISSN Print: 2168-5428

A Prospective Study on the Construction of a Resource Repository for Classical Chinese in Middle Schools in the Context of Digital Transformation

Limao Chen, Liyan Huang

School of Literature and Media, Lingnan Normal University, Zhanjiang, China
Email: chenlimao@126.com

How to cite this paper: Chen, L. M., & Huang, L. Y. (2026). A Prospective Study on the Construction of a Resource Repository for Classical Chinese in Middle Schools in the Context of Digital Transformation. *Chinese Studies, 15,* 336-351.
https://doi.org/10.4236/chnstd.2026.154017

Received: October 9, 2026
Accepted: November 21, 2026
Published: November 24, 2026

Copyright © 2026 by author(s) and Scientific Research Publishing Inc.
This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).
http://creativecommons.org/licenses/by/4.0/

Open Access

Abstract

At present, there is no dedicated resource repository for the teaching of classical Chinese in middle schools. This is at odds with the requirements of educational development in the current era of digital transformation. Drawing on first-hand data obtained from a questionnaire survey, this paper presents a discussion and puts forward some forward-looking proposals regarding the construction of a resource repository for the teaching of classical Chinese in middle schools, with a view to inspiring new approaches within the academic community for the development of such a repository. Firstly, the development of a teaching resource repository for classical Chinese in middle schools is essential: it can assist teachers and students in organising their knowledge of classical Chinese, enrich teaching content, and promote independent learning among students. Secondly, this paper highlights the current issues: no dedicated resource repository for secondary school classical Chinese teaching has yet been established; the quality of existing repositories has not been optimised; their formats remain limited; and their dissemination has not yet reached a broad audience. Finally, the paper proposes the following strategies: to establish a dedicated resource repository for secondary school classical Chinese teaching; to ensure the quality of its content; to diversify its presentation formats; and to facilitate the sharing and promotion of the repository.

Keywords

Digital Transformation Perspective, Middle School Classical Chinese Teaching, Teaching Resource Repository, Development Strategies, Interest in Learning

1. Introduction

The development of a teaching resource repository for classical Chinese in middle schools aims to support teaching and enhance teaching quality. Previously, there have been some research findings on utilising teaching resources to improve the efficiency of classical Chinese teaching. For instance, Huang Aoxing proposed using extracurricular resources to stimulate students' interest, thereby enhancing the efficiency of classical Chinese recitation (Huang, 2002); Xu Guozheng suggested that the development and utilisation of course resources in classical Chinese teaching should adhere to the principles of "appropriate topics", "appropriate timing" and "appropriate degree" (Xu, 2016). However, there are very few articles on the development of classical Chinese resource repositories. Guan Lihong's 2024 article, "The Development of Teaching Resource Repositories for Chinese Language Majors in Higher Education in the Context of Big Data", whilst focusing on the development of resource repositories for Chinese language and literature majors, pertains to higher education and does not address the development of resource repositories for classical Chinese teaching in middle schools (Guan, 2024). To date, no research specifically examining the development of resource repositories for classical Chinese teaching in middle schools has been identified. Is there, then, a need to establish such a resource repository? And what form should it take? This paper attempts to address these questions, primarily through a questionnaire survey. It analyses the necessity of such a repository from the perspectives of the characteristics of classical Chinese, teachers and students; identifies existing problems in the development of resource repositories for classical Chinese teaching; and finally proposes corresponding strategies to address these issues. This questionnaire focuses on the theme of "Current Status of Classical Chinese Texts Teaching in Middle Schools," with a survey scope covering Guangdong Province, including both the western region and the Pearl River Delta and northeastern Guangdong areas. A total of 430 questionnaires were distributed, yielding 413 valid responses. The surveyed population includes: 242 students, 127 parents, and 44 teachers. The students are secondary school students, the parents are parents of secondary school students, and the teachers are secondary school Chinese language teachers. The respondents were informed that the survey results would solely be used for scientific research purposes and not for any other purposes. The questionnaire comprises 18 questions, including 15 objective questions and 3 subjective questions. The corresponding questions to be answered by each group of respondents are distinct and clearly specified in the questions to avoid confusion. The questionnaire design includes two dimensions: the difficulties in learning ancient texts and the resources for ancient Chinese texts teaching. Based on the questionnaire data, the necessity of constructing a resource database for ancient Chinese texts teaching is analyzed. As an auxiliary tool for ancient Chinese texts teaching, the resource database cannot directly address issues such as teachers' limited proficiency in ancient texts, but it can provide relevant learning resources for both teachers and students, thereby improving teaching effectiveness

to some extent. Given the extensive scope of the survey and the large number of staff involved in its implementation, it is not possible to list all their names individually; we would like to express our sincere gratitude to them all.

2. The Necessity of Establishing a Resource Repository for Classical Chinese Teaching in Middle Schools

Classical Chinese constitutes a vital component of secondary school education, often embodying profound national spirit. Examples include the concepts of "benevolence" (ren) and "ritual propriety" (li) as reflected in the *Analects*, the spirit of elegance and refinement evident in the *Book of Songs*, and the noble, pure, independent and unyielding characters portrayed in the *Li Sao*. These texts, distinguished by both literary merit and moral substance, foster a sense of identity with and pride in national culture among future generations. In addition to spiritual enrichment, classical Chinese texts also help students develop critical thinking skills. For instance, the *Strategies of the Warring States* records the political views and strategies employed by strategists and advisors during their deliberations and debates, whilst *Xunzi* is characterised by its rigorous logic and mastery of the art of argumentation. Reading classical Chinese texts encourages students to think independently and enhances their ability to think rigorously. The necessity of establishing a teaching resource repository for classical Chinese encompasses, but is not limited to, the following aspects:

2.1. Systematising Relevant Classical Chinese Knowledge

It is essential to systematise relevant knowledge of classical Chinese. For secondary school students, the subject matter is quite challenging, encompassing aspects such as archaic and modern characters, phonetic loan characters, words with differing meanings across ancient and modern contexts, and the original and derived meanings of words. From a grammatical perspective, classical Chinese features phenomena such as the flexible usage of word classes, the fronting of objects, and the postposition of attributives. In terms of sentence structure, it includes inverted sentences, elliptical sentences and declarative sentences. The study of classical Chinese is often perceived as rather dry. This is a common difficulty encountered by secondary school students when learning the subject. In a questionnaire on the teaching of classical Chinese in middle schools, in response to the multiple-choice question "In your opinion, where does the difficulty of learning classical Chinese primarily lie?", the option with the highest percentage was "obsolete and obscure characters and vocabulary", accounting for 68.28 per cent, followed by "significant differences in grammar compared to modern Chinese" and "lack of background knowledge", accounting for 60.29 per cent and 49.39 per cent respectively. As shown in Table 1.

The results show that secondary school students currently rely primarily on teachers' explanations in class, as well as on extracurricular reading materials before and after lessons, to make sense of classical Chinese texts. The survey findings

revealed that the primary teaching methods for classical Chinese encountered by students are sentence-by-sentence explanations by teachers, independent translation by students, and multimedia (animations/videos) support. In this multiple-choice question, the proportions of these three teaching methods were 83.29 per cent, 59.08 per cent and 62.95 per cent respectively. Whilst learning classical Chinese through teachers' explanations and independent translation enables students to become familiar with the material relatively quickly, it is clearly insufficient for achieving a thorough grasp of the subject. The development of a teaching resource repository for classical Chinese in middle schools can assist teachers and students in organising the content of classical texts and distinguishing the differences between classical and modern Chinese, thereby helping them to resolve the challenges encountered in the teaching of classical Chinese. As shown in Table 2.

Table 1. In your opinion, where does the difficulty of studying classical Chinese primarily lie?

Option	Subtotal	Proportion
A. Unfamiliar and difficult-to-understand characters and vocabulary	282	68.28%
B. Significant differences from modern Chinese grammar	249	60.29%
C. Lack of background knowledge	204	49.39%
D. Lack of interest	163	39.47%
E. Monotonous teaching methods	98	23.73%
F. Other	20	4.84%
Number of valid responses to this question	413	

Table 2. What are the main forms of classical Chinese teaching you have encountered?

Option	Subtotal	Proportion
A. Teacher- led sentence- by- sentence explanation	344	83.29%
B. Students translating independently	244	59.08%
C. Multimedia (anim ations/videos) support	260	62.95%
D. Scenario- based activities/role- play	152	36.8%
E. Extracurricular reading	175	42.37%
Number of valid responses to this question	413	

2.2. Enriching Teachers' Teaching Content

In the teaching of classical Chinese in middle schools, the texts selected for the textbook are the primary source for students' study of classical Chinese. However, as the content of the textbook is to some extent limited and teaching time is constrained, students find it difficult to develop expansive thinking. Survey data indicates that the greatest challenges faced by teachers in classical Chinese education include students' weak foundational knowledge, insufficient teaching resources, their own limited proficiency in classical Chinese, and heavy examination pres-

sure, accounting for 61.36 per cent, 20.45 per cent, 13.64 per cent and 4.55 per cent respectively. Establishing a resource repository for classical Chinese literature can, to some extent, mitigate the shortage of teaching resources. Although the table shows that 61.36% of students have a weak foundation, we believe that improving their basic skills still relies on building specialized databases to enhance their learning motivation, thereby promoting their studies and ultimately strengthening their foundation in classical Chinese. During lesson preparation, teachers can utilise resources such as audio, video and images provided by the repository to enrich their teaching content. Through the use of multimedia, students can "transcend time and space" whilst studying classical Chinese; multimedia presentations of the historical and cultural contexts in which the works were created allow students to feel as though they are there, offering an immersive experience of the artistic atmosphere and emotions conveyed by the authors in their classical prose and poetry. For instance, when teaching *Pipa Xing*(Song of a Pipa Player), incorporating a video that introduces the plot of the text can stimulate students' interest in the subject, or one that explains the historical context in which the author, Bai Juyi, wrote the piece, illustrating why he felt such a deep connection with the pipa player. The appropriate use of relevant video or audio materials can spark students' interest, foster an interactive classroom environment, and thereby enhance classroom efficiency and improve the quality of teaching. Whilst the establishment of a resource repository cannot directly resolve issues such as students "weak foundational knowledge or teachers" limited proficiency in classical Chinese, it can provide teaching resources for classical Chinese instruction, offering learning channels for both teachers and students and enabling teachers to enhance their own capabilities. The teaching resources within the repository can enrich the content of lessons; by selecting different teaching materials based on students' learning situations, teachers can better address the challenge of students' weak foundational knowledge. As shown in Table 3.

Table 3. (Teachers' responses) What is the greatest challenge you face in teaching classical Chinese?

Option	Subtotal	Proportion
A. Students' weak foundational knowledge	27	61.36%
B. Insufficient teaching resources	9	20.45%
C. High exam pressure	2	4.55%
D. Limited knowledge of classical Chinese	6	13.64%
E. Other	0	0%
Number of valid responses to this question	44	

This table reflects responses from surveyed teachers only; the total number is 44.

2.3. Promoting Students' Independent Learning

In the study of classical Chinese, if secondary school students remain in a passive

state of knowledge acquisition for an extended period, this will dampen their interest in the subject. Survey data indicates that 64.46 per cent of students reported having a "moderate" interest in classical Chinese lessons, whilst only 26 per cent expressed a "high" level of interest. It is evident, therefore, that students' interest in studying classical Chinese still needs to be enhanced. The development of a resource repository may help to stimulate students' enthusiasm for studying classical Chinese, allowing them to make independent choices. Students can select topics of interest or areas where they are struggling for targeted study, based on their own learning progress, comprehension levels and personal interests. As shown in Table 4.

Table 4. (Student responses) How interested are you in classical Chinese lessons?

Option	Subtotal	Proportion
A. Very interested	63	26.03%
B. Somewhat interested	156	64.46%
C. Not interested	14	5.79%
D. Dislike	9	3.72%
Number of valid responses to this question	242	

This table reflects responses from surveyed students only; therefore, the total is 242. The same applies to subsequent entries and will not be repeated.

In terms of the frequency of classical Chinese study, 43.39 per cent of students study classical Chinese 1 - 2 times a week, 24.79 per cent study 3 - 4 times a week, 20.25 per cent study every day, and 11.57 per cent study it almost never. The resource repository offers a variety of resources, enabling students to choose the learning method that suits them best. For example: animations illustrating character usage in classical texts, explanations of how word meanings have evolved over time, and the evolution of Chinese character forms. Furthermore, the resource repository provides materials for building a foundation of knowledge, explanations of classical texts, and biographical sketches of historical figures. These diverse educational resources explain key concepts to students from various perspectives, allowing them to select resources that suit their individual needs. This helps to enhance students' initiative in learning, boost their confidence, and improve their ability to learn independently. As shown in Table 5.

Table 5. (Student responses) How often do you currently study classical Chinese texts?

Option	Subtotal	Proportion
A. 1-2 times a week	105	43.39%
B. 3-4 times a week	60	24.79%
C. Every day	49	20.25%
D. Hardly ever	28	11.57%
Number of valid responses to this question	242	

3. Current Issues with Resources for Classical Chinese

The existing resources available for middle school classical Chinese texts primarily include the National Smart Education Platform for Primary and Secondary Schools, the Chinese Classics Resource Library, Gu Shi Wen Net, Subject Net, Jingyou Net, Han Dian, and Guoxue Master Net. However, these are merely general collections of materials, lacking a dedicated database specifically designed for middle school classical Chinese instruction, which fails to meet the precise needs for specialized teaching resources required in classical Chinese education.

The National Smart Education Platform for Primary and middle schools provides excellent teaching resources for teachers and students. Upon logging into this resource repository, users can choose between "Student Self-directed Learning" and "Teacher Lesson Preparation and Delivery". The resources available on the Student Self-directed Learning page include textbooks, video lessons, presentation slides, lesson plans, learning task sheets and post-lesson exercises. Resources provided for Chinese language teachers include high-quality basic education courses, foundational assignments and a question bank. The Chinese Classics Resource Repository presents classic texts through a combination of recitation, commentary and calligraphy. Users can search for resources of interest by textbook distribution, dynasty, the Four Branches of Literature (Classics, History, Philosophy and Literature), or various schools of thought, facilitating classroom enrichment and teachers' professional development. The Ancient Poetry and Prose Website focuses primarily on the translation, annotation, appreciation, pronunciation and memorisation aids for classical Chinese texts, but does not highlight the key points and difficulties that students need to master during the teaching process. Zxxk.com provides a wide variety of teaching presentations, lesson plans and examination question resources, thereby enhancing teaching efficiency. Jingyou.com is characterised by its extensive collection of examination questions; teachers can identify relevant exercises for key and difficult topics and compile them into examination papers. Handian is a tool for learning Classical Chinese, providing detailed explanations of characters and words, as well as the evolution of character forms. Guoxue Master is a database of classical texts with a broad scope of coverage; however, it is too profound and difficult for secondary school students to comprehend and is therefore unsuitable for their learning. Although each resource repository has its own distinctive features, they all have limitations to varying degrees.

3.1. A Dedicated Resource Repository for Secondary School Classical Chinese Teaching Has yet to Be Established

The dual-coding theory posits that the integration of non-verbal systems is more effective than verbal systems alone in stimulating learners' interest and creating a more lasting impression. None of the aforementioned resource repositories have been tailored to the characteristics of secondary school students, and thus fail to address the common challenge of low levels of interest in classical Chinese teaching at this level. Traditional teaching methods for translating classical Chinese

texts in middle schools focus solely on the linguistic system; moreover, the subject matter is rather abstruse, making it difficult to stimulate interest of students. Although own level of students may not be high and may affect their interest in learning, we believe that this is an individual difference. If the vast majority of students have low interest in a course, it is highly likely that it is not due to individual differences, but rather that the course has not effectively stimulated interest of students. The introduction of non-verbal systems—such as images, audio and video materials tailored to the lesson texts—would undoubtedly enhance students' interest in learning classical Chinese, improve their learning outcomes, and help resolve this common issue. At present, however, there is a lack of websites dedicated to classical poetry and prose commonly used by secondary school students, where users can search by category (such as the *Book of Songs*, *Yuefu* or *Chu Ci*), author, dynasty or form (poetry, ci, qu or classical prose) to quickly locate the multimedia resources they require; yet no such resource repository for secondary school classical Chinese literature teaching currently exists. In terms of content, existing websites for classical poetry and prose primarily focus on translations, annotations, literary appreciation, pronunciation and memorisation aids, without highlighting the key points and difficulties that students need to master during the teaching process. When studying classical Chinese, secondary school students must not only be able to translate texts at a basic level but also understand the historical and philosophical issues embedded within them. There is currently a lack of a resource repository that provides rich materials to expand the scope of the texts beyond the study of a single classical piece.

At the same time, secondary school teachers rely on online resources when preparing lessons. With the rapid development of artificial intelligence, online resources are abundant but scattered across various websites. For example, when searching for translations of classical Chinese texts for secondary school, teachers might turn to the "Classical Poetry and Prose Network"; when researching the evolution of Chinese characters, they might consult "Han Dian"; and when gathering exercises related to classical texts, they might use "Jingyou" or "Xueke". As teaching resources for classical Chinese are scattered across different websites, teachers often have to navigate between various repositories to gather relevant materials. This process is time-consuming, labour-intensive and inefficient, and they frequently fail to find suitable audio, video or image resources that match the text.

3.2. The Quality of Content in Existing Resource Repositories Has yet to Be Optimised

Some of the content included in the aforementioned resource repository is inaccurate; for example, the annotations provided do not correspond to the teaching materials. In the case of "jī jī fù jī jī" in *The Ballad of Mulan*, some interpretations suggest that "jī jī" refers to "the chirping of crickets", whilst others suggest it refers to "the sound of weaving". The content included in the resource repository is therefore controversial and lacks authority. Richard E. Mayer considers the "Coherence

Principle" to be one of the principles of multimedia information design. This principle states that learners achieve better results when irrelevant material is excluded rather than included. This is because irrelevant material competes for cognitive resources in working memory, distracting learners from important material; it interferes with the organisation and processing of material, and misleads learners into organising material around inappropriate themes (Fu et al., 2006). The content included in the resource repository is controversial and contravenes the Coherence Principle, with irrelevant or erroneous information appearing simultaneously. For example, the differing interpretations of "ji ji" in the phrase "ji ji fu ji ji" require students to independently discern information during the learning process, thereby increasing their cognitive load. In such instances, the resource repository fails to fulfil its intended function; therefore, the Coherence Principle should be adhered to during the development of the repository to ensure the accuracy of the resources.

In terms of quantity, the number of resources included in the aforementioned repositories is relatively small. For example, although the National Smart Education Platform for Primary and middle schools focuses on teaching in these levels, there are few Chinese language course resources available. When students engage in independent study and click on the Year 7, First Term text "An Exhortation to Learning", the search results yield only one video lesson and one presentation; this is the case for every text, indicating that the content is not particularly rich.

3.3. Existing Resource Repositories Lack Diversity in Format

In existing classical Chinese teaching resource repositories, the presentation formats are rather monotonous. In terms of format, most classical Chinese teaching resources present translations of classical texts and textual analysis in written form, as seen on the "Classical Poetry and Prose" website. Similarly, "Han Dian" lists the evolution of character forms in written form without providing further engaging resources such as videos, audio recordings or images. Richard Mayer, in *Multimedia Learning*, proposed the "Modality Principle": students learn more effectively from multimedia presentations comprising animations and narration than from those comprising animations and on-screen text (Fu et al., 2006). Humans possess two independent information channels: visual processing and auditory processing. Resources such as the Classical Poetry and Prose Network and Handian are presented solely in text form. When all resources are presented in text form, information can only be processed through the visual channel; consequently, the visual channel becomes overloaded, which reduces students' learning effectiveness. Diverse resources can inject vitality into Chinese language lessons and stimulate students' interest in studying classical Chinese. According to the questionnaire survey, only 26 per cent of students expressed a strong interest in classical Chinese lessons, whilst the majority reported only a moderate level of interest. Furthermore, the survey data indicates that both teachers and students wish to see an increase in content related to classical Chinese, such as engaging historical anecdotes, the appreciation of classic literary works, the analysis of writ-

ing techniques, and interdisciplinary approaches (e.g. integration with music and art). The needs of teachers and students in the study of classical Chinese can serve as a guiding principle for the development of teaching resource repositories.

3.4. Existing Resource Repositories Have yet to Become Widely Adopted

Some educationally advanced regions have "smart classrooms" that cover the three key phases of pre-lesson, in-lesson and post-lesson activities; the wealth of resources brings Chinese language lessons to life and enhances classroom efficiency. However, in most regions, teachers still rely on collecting scattered resources individually, with the majority continuing to prepare lessons using paper-based materials. This situation reduces the efficiency of lesson preparation, as teachers need to spend a great deal of time searching for teaching resources across various platforms. As for students, they also find it difficult to quickly locate learning resources suited to their own learning pace and comprehension levels.

In addition to uneven distribution, the development and promotion of the resource repository have also encountered the problem of low awareness among teachers and students regarding its use. Surveys have found that only 20.1 per cent of those who learn or teach classical Chinese regularly use digital tools (such as classical poetry and prose apps or online courses), whilst 61.26 per cent use them occasionally and 18.64 per cent have never used them. The data suggests that, at present, relatively few people are able to make flexible use of online resources and utilise the repository effectively. On the one hand, the development of the resource repository is still in its early stages and has not yet reached maturity. On the other hand, utilising the repository places certain demands on both teachers and students; they need to understand where the repository can be applied and in which aspects of teaching the resources within it can be utilised. Collecting digital resources requires proficiency in using electronic devices, a skill which some teachers lack. This hinders teachers' use of the repository to a certain extent, leading them to continue relying on existing paper-based resources. For some students, rigid teaching models have led them to become accustomed to passively absorbing knowledge; they lack a sense of independent inquiry and, when studying classical Chinese texts, merely fulfil the requirements set out in the textbooks. Furthermore, students often feel daunted by the challenges of learning; when faced with difficult problems, they are prone to giving up and rarely turn to resources to help them overcome these difficulties. The lack of awareness among teachers and students regarding the use of the resource repository hinders the development and promotion of the repository.

4. Proposed Strategies

4.1. Launch a Dedicated Resource Repository for the Teaching of Classical Chinese in Middle Schools

A dedicated resource repository for the teaching of classical Chinese in middle

schools should be established, organised in a "school stage-unit" sequence, with content divided into foundational and extension materials, and managed centrally in accordance with the principle of organisation. The creation of a specialised resource repository for classical Chinese in middle schools will help address the issue that the development of such repositories has not yet formed a comprehensive system. When developing the repository, the objectives must first be clearly defined. The development of a secondary school classical Chinese teaching resource repository centres on the curriculum texts, collecting resources related to these texts to stimulate students' interest in learning and facilitate teachers' instruction. When building the classical Chinese teaching resource repository, materials should be collected from multimedia repositories in the order of each educational stage, based on the requirements of the classical Chinese texts within each unit. These should be categorised as "foundational materials", covering aspects such as lesson preparation support, translation of words and phrases, emotional understanding, and the summarisation and connection of knowledge, whilst clearly marking key points and difficulties to allow students to make their own choices according to their individual learning abilities. Once this work is completed, "extension materials" should be provided for students to explore further and conduct independent research outside of class. Extension materials may include biographical information on the authors of classical texts, other works by the same author, or other classical texts similar to the current one. The development of these supplementary resources may draw on the model established by the Chinese Classics Resource Network. As these serve as extension materials for students, mastery of them is not mandatory. Organising the resource repository by educational stage enables teachers and students to locate relevant resources quickly; the division into foundational and extension materials aligns with a progressive learning process.

The classical Chinese teaching resource repository should be systematic, and its development must adhere to digital standards. Standardised management is a scientific approach; in the context of information system development, standardisation enables the effective management of multi-source, heterogeneous data, integrating data adoption, conversion and loading, and ensuring the secure application and exchange of data across various systems (Zhu, Xu & Wu, 2021). Within the same resource repository, each classical text should include explanations of characters and vocabulary, a translation of the text, and a search engine enabling users to look up difficult characters and terms directly; post-lesson exercises should be provided following the corresponding text. Once the scope has been determined, a large volume of high-quality resources should be included wherever possible to provide teachers and students with greater choice. At the same time, the development of the resource repository should adhere to the "principle of organisation". As noted in *The Application of Digital Online Teaching Resources*, the scattered, fragmented and decentralised nature of online teaching content can disrupt students' normal learning; therefore, the repository should follow the "principle of organisation" by strictly defining the scope of content to focus stu-

dents' attention, and by systematically consolidating dispersed resources into a unified access interface or distributing them throughout the teaching process (Feng, Wang & Jiang, 2011). This will help to resolve the issue of resource fragmentation. When users log in to the Classical Chinese Teaching Resource Repository, the search section is presented in the order of educational stage followed by unit. Built in accordance with the principle of organisation, the repository groups disparate resources together, allowing users to locate the desired content by following the sequence of educational stage—unit. Each text includes foundational and extension materials, with key points and difficulties clearly marked within the repository, enabling students to independently select learning content suited to their needs. Foundational materials comprise the classical text, translations of words and phrases, emotional interpretation, and knowledge summarisation and connections; extension materials refer to content related to the text but not required by the textbook. In addition to resources designed to support learning, the new repository should also include a collection of post-lesson exercises and examination papers, enabling teachers to compile their own test papers. A search engine should also be provided, allowing users to look up difficult characters and terms at any time.

4.2. Ensuring the Quality of Content in the Secondary School Classical Chinese Teaching Resource Repository

Optimising the quality of the teaching resource repository helps to address the issue of a lack of rigour in existing resources, whilst establishing a verification system helps to ensure the scientific validity and accuracy of the resources. Improving the quality of the repository's content requires theoretical guidance; from selection through to review and feedback, this ensures that the repository's content is constantly updated and optimised.

In accordance with Richard E. Mayer's Coherence Principle, the process of building the resource repository should exclude irrelevant and erroneous information, necessitating the establishment of selection criteria for its content. As the content of the secondary school classical Chinese teaching resource repository primarily originates from multimedia material repositories, applying the Coherence Principle as a selection criterion ensures that content is both accurate and authoritative. The content is aligned with Chinese language textbooks and the Chinese language curriculum standards, and any material inconsistent with the textbooks is excluded. Screening resources helps to ensure the scientific rigour of the repository and enables it to fulfil its supportive function. Furthermore, resources require further review. The "Education Informatisation 2.0 Action Plan" issued by the Ministry of Education also emphasises the need to promote the organic integration of information and intelligent technologies into the educational process to drive teaching reform. Teachers and academic experts may be invited to participate in the development of the repository by forming a review team to assess existing resources. Finally, feedback channels should be established within the re-

pository to encourage user feedback. Digital feedback mechanisms can promptly gather feedback from teachers and students on the use of the teaching resource repository, enabling dynamic adjustments and optimization of the repository (Jiang 2024). Feedback channels facilitate resource updates, ensuring the repository remains in a state of continuous renewal, which is conducive to its long-term development. In line with the above theories, a resource review team should be established, comprising senior secondary school Chinese language teachers and academic scholars specializing in classical Chinese. Selection criteria for the repository should be established, and content to be included must undergo two rounds of review. Ensuring the quality of the teaching resource repository's content requires reducing the error rate; for controversial annotations in classical Chinese texts, the textbook should be taken as the primary reference.

4.3. Enriching the Presentation Formats of the Secondary School Classical Chinese Teaching Resource Repository

The resource repository should be developed in accordance with the principles of multimedia cognition and the Modality Principle, moving away from a purely text-based model. It should fully engage users' visual and auditory channels to diversify content presentation, thereby overcoming the limitations of the existing repository's monotonous presentation format.

Multimedia cognitive principles emphasize that students achieve better learning outcomes when presented with a combination of text and images than when presented with text alone (Fu et al., 2006). Multimedia cognitive theory suggests that the development of the resource repository should move beyond a purely text-based model, providing a rich and diverse range of resources to make Chinese language teaching more engaging through the use of images, videos and other media. For obscure or difficult-to-understand characters and vocabulary, explanations should be provided by linking them to real-life contexts or using engaging methods such as animations. To address the challenges encountered in the study of classical Chinese, a variety of learning methods should be provided, such as videos on relevant historical allusions and visual materials for the appreciation of famous literary works, from which teachers and students can choose.

Humans possess two independent channels for processing information: the visual and the auditory. Some existing resource repositories rely solely on text-based presentation. When developing new resource repositories, we can avoid the limitations of existing ones by combining text, images and other visual elements with audio. The video footage provided should correspond to the audio, and this diverse range of presentation methods will fully engage both the visual and auditory senses, thereby enhancing students' learning efficiency. Survey results indicate that, during the teaching process, both teachers and students consider the distinction between characters with ancient and modern meanings (such as "走", which originally meant "to run"), the identification of homophonic substitutes/distinguishing between ancient and modern forms of the same character (e.g. "说" used

as a substitute for "悦"), the usage of classical Chinese function words (e.g. "之", "乎", "者", "也"), understanding traditional Chinese characters or the evolution of character forms, and the cultural connotations behind words and characters (e.g. the deeper meanings of "孝" and "仁") as particularly challenging. Therefore, when developing the resource repository, emphasis should be placed on these areas, with detailed explanations and diverse presentations of the relevant content. For example, when explaining the archaic-modern difference in the character "走", the resource repository could use images of "running" and "walking" to illustrate the distinction, or employ animated videos with voice-over commentary to clarify such differences. Optimising the classical Chinese teaching resource repository will enhance its quality and better meet users' needs.

4.4. Sharing and Promoting the Secondary School Classical Chinese Teaching Resource Repository

Professor Zhou Hongyu has emphasized that educational equity is a fundamental component of social equity; educational equity refers to every member of society being treated fairly and equally when accessing public educational resources (Zhou, 2005). We believe that the sharing and promotion of the secondary school classical Chinese teaching resource repository also puts the theory of educational equity into practice. Regarding the issue of uneven distribution in the development of such repositories, teachers and students in educationally underdeveloped regions should actively learn advanced technologies, organize teacher exchanges to educationally developed regions, share existing resource repositories, and exchange efficient and scientifically sound teaching resources with one another. Regions with underdeveloped education systems should provide support for the equipment required to access these resources, ensuring that both teachers and students have the means to access them, thereby avoiding an educational divide caused by equipment limitations (Zheng & Ma, 2025). Educationally underdeveloped regions must actively respond to the call for the development of subject-specific resource repositories, priorities the issues surrounding their construction, and encourage local teachers to participate actively in their development. If the secondary school classical Chinese teaching resource repository can be shared, teaching resources across different regions will become less reliant on individual teachers' personal collections, thereby alleviating the problem of uneven distribution of educational resources.

5. Conclusion

With the development of digital and intelligent technologies, artificial intelligence will gradually and effectively assist in teaching. Once the resource repository for secondary school classical Chinese literature has been established and refined, it can be piloted in specific regions; following the pilot phase, the repository should be vigorously promoted so that a wide range of secondary school teachers and students can draw upon its rich resources to inject new vitality into teaching. In

accordance with the principle set out in *The Application of Digital Network Teaching Resources* that "teachers should adhere to the principle of exploration and practice in tandem", training must be prioritised as a key means during the development and promotion of the resource repository (Zhu, Xu & Wu, 2021). Once teachers are aware of the available resources, training should be provided to equip them with the knowledge of how to apply them. Such training requires the development of multifaceted skills, combining online and offline sessions to enhance their ability to utilise the resource repository. As teachers' proficiency in using the resource repository improves, they will not only be able to participate in its development but will also contribute to the realisation of resource sharing.

As circumstances evolve, the establishment of a specialised resource repository for secondary school classical Chinese teaching will become an inevitable trend. Secondary school classical Chinese teaching should not be confined to traditional teaching models; secondary school teachers can utilise the resource repository to innovate teaching methods, whilst secondary school students can also find classical Chinese learning resources suited to their needs within it. The development of the secondary school classical Chinese teaching resource repository must also incorporate feedback from teachers and students, with the repository first being established in its basic form before being optimised, and only promoted once a certain level of quality has been achieved. We have reason to believe that if a dedicated resource library for teaching ancient Chinese in middle schools can be built and promoted, it will greatly improve the quality of teaching ancient Chinese in a large range of middle schools. As for the expected application effect of the middle school ancient Chinese teaching resource library, we will continue to conduct research on it, conduct relevant experiments at an appropriate time, and write other papers to explore.

Funding

The Sailing Plan Project of Graduate Research Innovation of Lingnan Normal University "On the Building a Resource Library for Middle School Classical Chinese Teaching Empowered by Artificial Intelligence" (26QHYB002); The Professional Degree Graduate Teaching Case Library Construction Project of Lingnan Normal University "Based on the Construction of a Student-centered, Same Course, Heterogeneous' History of Chinese Education Development' Case Library".

Author Contributions

Conceptualization, Limao Chen, Liyan Huang; methodology, Limao Chen; software, Jieli Chen; validation, Liyan Huang; formal analysis, Liyan Huang; investigation, investigation team; resources, investigation team; data curation, Liyan Huang; writing—original draft preparation, Liyan Huang; writing—review and editing, Liyan Huang, Limao Chen; visualization, Liyan Huang; supervision, Limao Chen; project administration, Limao Chen; funding acquisition, Limao

Chen. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

Feng, H. Q., Wang, J. L., Jiang, Y. S. et al. (2011). *Application of Digital Network Teaching Resources*. Tsinghua University Press.

Fu, X. L. et al. (2006). *Multimedia Learning*. Commercial Press.

Guan, L. H. (2024). Construction of Teaching Resource Database for Chinese Language Majors in Higher Education under the Background of Big Data. *Language Planning, No. 3,* 88. (In Chinese)

Huang, A. X. (2002). Classical Chinese Recitation: Utilization of Extracurricular Resources. *Language Planning, No. 6,* 38. (In Chinese)

Jiang, S. (2024). A Preliminary Study on the Construction of Teaching Resource Databases for Ideological and Political Theory Courses under the Background of Educational Digitalization. *Ideological & Theoretical Education, No. 1,* 77-82. (In Chinese)

Xu, G. Z. (2016). Three Requirements for the Development and Utilization of Curriculum Resources in Classical Chinese Teaching. *Language Teaching in Middle School, No. 5,* 64-65. (In Chinese)

Zheng, W. Q., & Ma, X. L. (2025). Research on the Development Strategy of Digital Curriculum Resources for Chinese Excellent Traditional Culture: A Perspective from Supply-Side Structural Reform. *Curriculum, Teaching Material and Method, 45,* 101-105+159. (In Chinese)

Zhou, H. Y. (2005). Educational Equity: Important Content, Foundation, and Implementation Path of a Harmonious Society. *People's Education, No. 7,* 7-10. (In Chinese)

Zhu, Z. T., Xu, Q. X., & Wu, Y. W. (2021). Standard Requirements and Action Suggestions for New Infrastructure of Educational Informatization. *Chinese Journal of Distance Education, No. 10,* 1-11+76. (In Chinese)