

Innovative Interdisciplinary Approaches: Frontline Chinese Teaching Practices in the Digital Age

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Abstract

This article examines the integration of interdisciplinary thinking within the Chinese language curriculum in middle schools during the digitalization of education, particularly in the context of the 2022 edition of the "Chinese Curriculum Standards for Compulsory Education." The focus is on the current trends in interdisciplinary teaching, using case studies to explore how teachers can leverage interdisciplinary knowledge to enhance students' understanding of the Chinese language curriculum amidst digital transformation. The article underscores the significance of interdisciplinary thinking in Chinese education, highlighting its practical applications in areas such as blackboard design and overall lesson planning. By incorporating the international features of the Qingbaijiang District, it presents case studies that further illustrate the role of interdisciplinary thinking in advancing international education. The article aims to align theory with practice, adapt to the demands of educational digitalization, and concludes that interdisciplinary thinking effectively promotes subject integration, complements educational digitalization, enriches teaching content, strengthens students' global awareness, and lays a solid foundation for their comprehensive development and future career planning.

Keywords

Digital Education, Interdisciplinary Thinking, International Understanding Education

1. Introduction

In the context of educational digital transformation, innovating teaching methods and content has become a crucial direction for the development of academic disciplines. This study addresses the practical needs of the Chinese language curriculum in compulsory education by conducting in-depth research on frontline teaching practices in the digital age. The goal is to explore effective strategies for integrating interdisciplinary thinking to deepen students' comprehensive understanding of curriculum content. This introduction outlines the origin and background of the research topic, clarifies the research objectives, and highlights the significance and innovations of the study.

1.1 Source and background of the topic

In the current phase of educational digital transformation, interdisciplinary teaching has increasingly become a focal point of research in the field of education. The implementation of the "Compulsory Education Chinese Curriculum Standards" (2022 edition) and the "Action Plan for Deepening the Reform of Basic Education Curriculum and Teaching" (2023) has created broader opportunities for promoting

interdisciplinary thinking. This development is particularly significant within the context of internationalization in the Qingbaijiang District.

As an internationally-oriented region, the Qingbaijiang District's education system must align with global trends. The ongoing digital transformation of education and the integration of interdisciplinary thinking are not merely theoretical considerations but practical necessities that support the district's international development. Students in Qingbaijiang District are increasingly exposed to international competition and exchanges, making the cultivation of interdisciplinary thinking essential for their ability to adapt to a diverse and rapidly evolving future society. Consequently, how teachers can effectively incorporate interdisciplinary thinking into frontline teaching practices has become an urgent and critical issue.

1.2 The objectives and content of the research paper

This study seeks to explore the effective integration of interdisciplinary thinking into frontline teaching during the era of educational digital transformation. Specifically, the research will focus on how teachers can leverage interdisciplinary knowledge to enhance students' comprehensive and in-depth understanding of curriculum content. Through detailed case analysis, this study aims to equip educators with practical and feasible strategies to address the challenges of the current teaching environment.

1.3 Scope and object of study

This study will focus on the frontline teaching practices of middle school Chinese language courses. By selecting the Chinese language curriculum as the research subject, the study aims to delve into the intrinsic connections between the Chinese language and other disciplines, exploring how interdisciplinary thinking can enhance the level of subject integration.

1.4 Research significance

Through in-depth research on interdisciplinary teaching during the digital transformation of education, this study aims to offer valuable theoretical insights and practical experiences to educational policymakers, administrators, and frontline teachers. The goal is to help educational practices better align with the evolving demands of the modern era.

2. The Current State of Interdisciplinary Education Research: A Comparative Analysis of Domestic and International Perspectives

2.1 Foreign STEAM education

International research on interdisciplinary education predominantly centers around STEAM (Science, Technology, Engineering, Arts, and Mathematics) education. STEAM education integrates multiple disciplines to foster students' comprehensive literacy and problem-solving skills through a holistic educational approach (Peng, 2023). In contrast to domestic research, which has primarily focused on the practical implementation and application of interdisciplinary teaching within the framework of educational reforms, there remains a paucity of in-depth studies on the targeted application of interdisciplinary thinking during the digital transformation of education. Consequently, the practices and insights from international STEAM education offer valuable references for guiding educational reforms in our own context (Ye, 2023).

2.2 Current status of domestic interdisciplinary research

In China, the education system exhibits significant regional variability due to differences in regional contexts and cultural environments. These regional disparities manifest in variations in teaching philosophies and methods, including the conceptualization and application of interdisciplinary thinking (Huang, 2023).

The field of language and literature education in China encompasses numerous academic disciplines, leading to a gradual shift from traditional, discrete unit teaching to a more integrated approach. This transition emphasizes the holistic application and integration of knowledge. Such a shift not only signifies

advancements in language education but also presents an opportunity for the effective application of interdisciplinary thinking within this domain. In response to these developments, the Ministry of Education has issued several policies aimed at encouraging educators to incorporate interdisciplinary elements into their teaching practice (Qiu, 2023).

3. Case Study Discussion

The primary objective of this section of the study is to investigate the integration of interdisciplinary thinking within the context of educational digital transformation, specifically through the design and implementation of chalkboard work in frontline teaching. This research aims to examine how teachers can leverage chalkboard design to subtly enhance students' awareness of interdisciplinary connections, thereby fostering a more integrated understanding of subject matter. Even in cases where specific courses do not explicitly incorporate interdisciplinary elements into their core content, teachers can use innovative chalkboard strategies to bridge subject areas and provide students with a more holistic educational experience.

3.1 The manifestation of interdisciplinary thinking in blackboard design

3.1.1 Case 1 the second unit of grade 7, ' laoshanjie '

In this lesson, students are tasked with mastering essential vocabulary and understanding the historical context of the Red Army's passage through the old mountain range. The lesson aims to help students grasp the narrative structure and the challenges faced during this historical event. The integration of geographical concepts into the lesson plan is facilitated through the design of the blackboard, which is strategically aligned with the text's content. Given that students have previously studied contour topographic maps and color-layered topographic maps in the fourth section of the first chapter of the Grade 7 geography textbook, incorporating these geographical elements into the blackboard design aligns with their existing knowledge and supports their comprehension of the historical material.

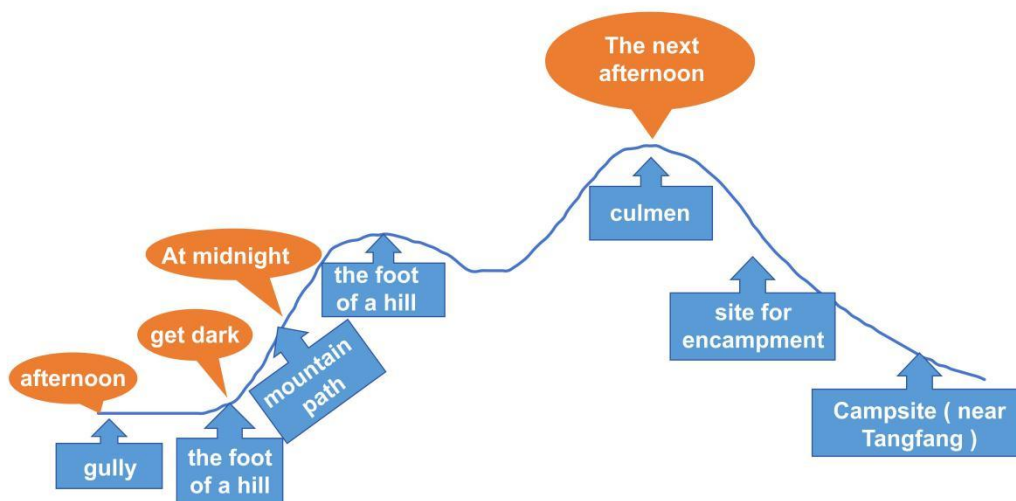


Figure 1: Illustrative Example of the March Route Map Across the Laoshan Range ¹

¹ The image is derived from SMART EDUCATION OF CHINA (smartedu.cn). The original version is Chinese, and the English version is translated by the author.

3.1.2 Case 2, unit 2, ' language of nature ', grade 8'

The expository text "The Language of Nature" follows a logical progression from observable phenomena to underlying principles. However, in paragraphs six through ten, the author shifts to a logical structure that prioritizes primary factors over secondary ones when explaining the determinants of phenological events. During the initial design phase, the mathematical concept of 'coordinate graphs' was employed to illustrate the text's sequence of writing. This approach helps to visually represent the logical flow of the content and enhances students' understanding of the text's structure.

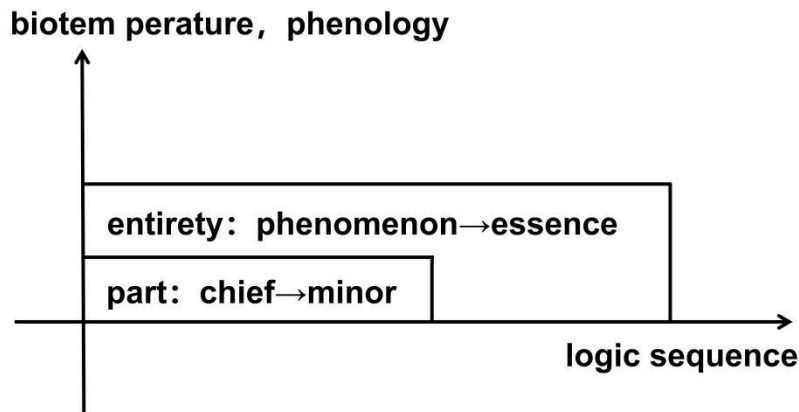


Figure 2: Example of Article Structure Diagram for 'The Language of Nature' in an Academic Context

In a coordinate graph, the horizontal (X-axis) and vertical (Y-axis) coordinates typically represent distinct variables or datasets. These coordinates can denote various types of data, such as numerical values, textual information, dates, or percentages, depending on the information being visualized. In classroom instruction, it is crucial to illustrate that the text's writing sequence adheres to a logical structure. While some sections of the text are organized from primary to secondary factors, the majority follow a sequence from observable phenomena to underlying principles. Thus, it is more appropriate to represent this structure using mathematical set theory concepts. Accordingly, it is recommended to adjust the blackboard design to reflect this conceptual framework, as depicted in the following figure.

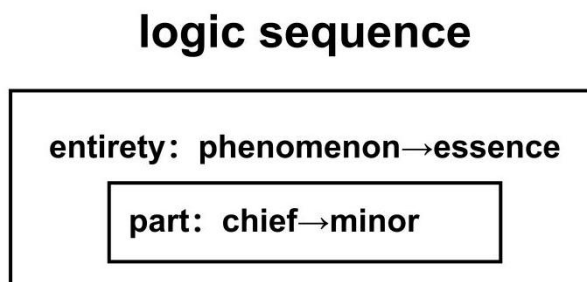
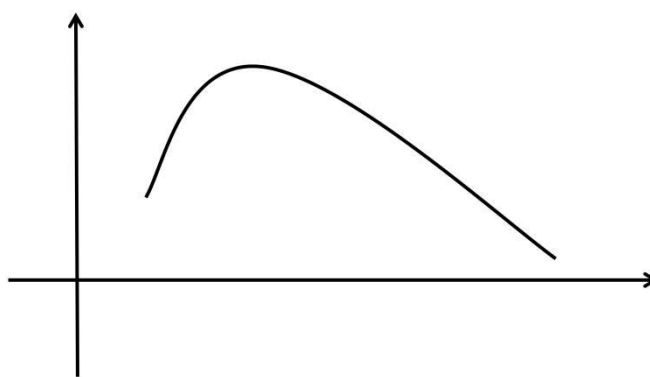


Figure 3: Example of Article Structure Diagram for 'The Language of Nature' in an Academic Context

3.1.3 Case 3 grade 9 unit 4 ' my uncle jules '

In prior discussions, it was noted that coordinate graphs are commonly employed to illustrate "changes" among different variables or data values. In the instructional process for the text "My Uncle Jules," a

thoughtfully designed blackboard presentation can facilitate students' ability to efficiently review and synthesize Jules's life experiences. Specifically, students can be guided to create line graphs that represent the trajectory of Jules's life, thereby analyzing the various changes he experienced. It is essential to emphasize that these line graphs are not provided directly but are to be constructed by the students based on their comprehension of the text. This approach not only enhances students' reading comprehension but also fosters greater engagement with literary works.



Jules 's life vertical and horizontal figure

Figure 4: Example of Life Trajectory Diagram Board for 'My Uncle Jules' in an Academic Context ²

3.1.4 Case 4 grade 9 volume 1 unit 6 learning to rewrite

In the context of "Learning to Rewrite," altering the narrative perspective is a crucial rewriting technique. To visually illustrate the concept of perspective change, the lesson begins by referencing Su Shi's poem "Written on the Wall at West Forest Temple," particularly the line: "It's a range viewed from the front and peaks viewed from the side, assuming different shapes when viewed from various distances." This excerpt serves to guide students in understanding how differing viewpoints can influence perception.

In the classroom, the teacher illustrated this concept by drawing a "ridge" on the blackboard, represented as a triangle. Three arrows were used to symbolize "different perspectives," demonstrating how the same event can appear differently depending on the angle from which it is viewed. This visualization underscores the idea that different perspectives can yield varying interpretations and meanings, thereby introducing the term "narrative perspective." The following figure represents the blackboard design used in this lesson:

² The picture is the lesson content of Zhang Qiqi 's teacher in Zhijia Middle School of Qingbaijiang District - reading " My Uncle Jules " from the perspective of " change and unchanged. "

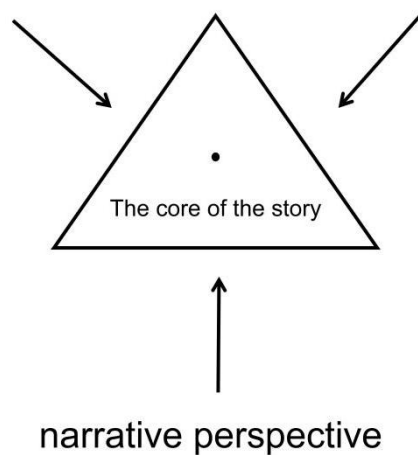


Figure 5: Illustration Board Example of Core Concepts in Narrative Perspective for 'Learning to Rewrite' in an Academic Context ³

3.2 Integration of interdisciplinary thinking in comprehensive teaching design

During the translation of the ancient text "Journal on Small Rock Pond" by Liu Zongyuan, students encountered confusion regarding the expressions 'chi,' 'yu,' 'kan,' and 'yan' which they perceived as redundant and repetitive. Generally, students interpreted "chi" and "yu" as referring to "land in the water" and combined "kan" and "yan" as "rock."

Liu Zongyuan used these terms—'chi,' 'yu,' 'kan,' and 'yan'—to depict the various shapes of stones emerging from the shore of Xiaoshitan. Consulting dictionaries and annotations reveals that these terms each describe distinct forms of stone, with 'chi,' 'yu,' 'kan,' and 'yan' reflecting different heights and sizes of the rocks surrounding the small rock pool.

However, relying solely on textual descriptions can limit students' ability to visualize the terrain, as the text alone does not provide a complete representation of the small rock pool. To enhance students' comprehension, the teaching design incorporates geographical knowledge, encouraging students to apply geographical concepts to interpret the elements described in the text. This interdisciplinary approach not only deepens students' understanding of the Chinese language but also fosters their development of interdisciplinary thinking.

By addressing geographical elements such as 'chi,' 'yu,' 'kan,' and 'yan' through translation tasks, students engage in interdisciplinary inquiry that connects geographical concepts with literary descriptions. This method enriches students' understanding of how geographical knowledge is embedded in literary texts and provides a more vivid and comprehensive insight into the topography of the Small Rock Pond.

4. The importance of interdisciplinary thinking in education for international understanding

As globalization progresses, the importance of international understanding education becomes increasingly pronounced. Cultivating interdisciplinary thinking is a fundamental component of this educational approach. By analyzing issues from multiple perspectives, levels, and disciplines, students can develop a more nuanced and comprehensive understanding of international affairs and diverse cultures. This, in turn, enhances their overall competencies and establishes a solid foundation for their future careers and personal development.

³ Figure 2, Figure 3 and Figure 5 are the author's original blackboard writing.

Specifically, interdisciplinary thinking contributes to improving students' overall quality, fostering innovative thinking, deepening their appreciation of multiculturalism, and enhancing their international competitiveness. Consequently, educational institutions and educators must prioritize the cultivation of interdisciplinary thinking. They should encourage students to approach problems from various disciplinary viewpoints, thereby enhancing their overall capabilities and innovative potential. This approach will provide a robust foundation for navigating and thriving in an increasingly globalized world.

4.1 The regional characteristics of the internationalization of qingbaijiang district

Qingbaijiang District, situated in the northern part of Chengdu, is a significant area within the Chengdu-Chongqing economic circle. It has emerged as a key international urban node as outlined in the "14th Five-Year Plan" (Chengdu Qingbaijiang: Building a Modern and International Center in Northern Chengdu, n.d.). The district is characterized by its role as an international transportation hub, an open industrial cluster, a free trade pilot zone, and an environment conducive to international business, as well as its focus on ecological sustainability and livability. Qingbaijiang District is actively pursuing reforms within the free trade pilot zone and prioritizing ecological construction, thereby striving to balance urban development with quality of life. These attributes have positioned Qingbaijiang District prominently in the "14th Five-Year Plan" and make it a significant case study for examining the development of internationalized cities and regional strategic planning across various disciplines (Chengdu's Qingbaijiang: A Decade of Transformation into a Diverse International Hub, n.d.).

4.2 Case ' the metamorphosis of a monkey - Chinese Sun Wukong V.S Indian Hanuman '

Table 1: Brief Overview of Teaching Case: "The Metamorphosis of a Monkey: Comparing Chinese Sun Wukong and Indian Hanuman"

Brief Overview of Teaching Case: "The Metamorphosis of a Monkey: Comparing Chinese Sun Wukong and Indian Hanuman"	
Import section	As the adage suggests, a character that can be identified solely by its silhouette is considered iconic. This lesson introduces the title: "The Metamorphosis of a Monkey: Comparing Chinese Sun Wukong and Indian Hanuman," by examining and contrasting the visual representations of these two figures.
Pre-learning	Question: Hu Shi vs. Lu Xun: What is the Origin of Sun Wukong? Related Texts: Review the annotations in Ramayana within the text Golden Flower and introduce the content of Ramayana: Monkey Kingdom. Visual Presentation: Display a segment from the Indian film Brother Bajrangi to actively engage students and provide a more concrete representation of Hanuman. Conclude with a summary of Hanuman's character.
Inquiry-based learning 1	Question Review: Hu Shi vs. Lu Xun: What is the Origin of Sun Wukong? Explanation: Examine why Hu Shi posited that Sun Wukong originated from India. (Students will provide responses based on prior knowledge.) Dialectical Thinking: Discuss why Lu Xun disagrees with Hu Shi ' s perspective. (Teachers will provide guiding hints to facilitate student understanding.)
Inquiry-based learning 2	Summary Review: Inventory of the Origins of Sun Wukong's Image. In-Depth Analysis: Explore why Hanuman evolved into the figure of Sun Wukong. (Facilitate student discussion.) Content Summary: Examine the aesthetic differences, historical cultural influences, regional environment, and human activities that contributed to the development of Sun Wukong's image.
Inquiry-based learning 3	If Hanuman came to Thailand, how might it evolve ?
Strengthen learning	Cultural Exchange: Examine and extend the understanding of how Journey to the West has influenced Thai culture. Classroom Discussion: Analyze and compare the similarities and differences between Hanuman as depicted in Thailand, Sun Wukong in China, and Hanuman in India.
Conclusion	To gain a comprehensive understanding of the world, facilitate global recognition of

China through your actions.

This case study has fundamentally transformed traditional pedagogical approaches to "Journey to the West". It highlights a shift from treating "Journey to the West" merely as a literary textbook to utilizing it as a tool for cultural comparison, thereby enriching and broadening the learning experience for students (Table 1). This innovative pedagogical method revitalizes traditional literary education by enabling students to engage with literary works through an interdisciplinary lens.

By moving beyond the conventional model of reading and appreciation, this teaching case introduces comparative cultural studies as a novel approach. It guides students in exploring and analyzing the cultural similarities and differences between Sun Wukong from China and Hanuman from India.

Furthermore, the course transcends the traditional confines of literary instruction, treating novels as multifaceted educational resources that integrate geography, history, humanities, and other disciplines. This approach allows students to amalgamate knowledge from various fields and engage in cultural comparisons during their study of the novels.

This pedagogical model not only enhances students' subject-specific knowledge but also promotes a deeper understanding and respect for diverse cultures. The case demonstrates that literary works can serve not only as reading material but also as instruments for exploring and understanding different cultures. This approach fosters the development of interdisciplinary thinking, providing students with a richer, more integrated learning experience and expanding the application of literary studies. This innovative method injects new dynamism into traditional literary education, facilitating more flexible application of knowledge across disciplines.

5. Conclusions and Discussion

5.1 Main conclusion

During the period of educational digital transformation, this article, through a comprehensive examination of integrating interdisciplinary thinking into middle school Chinese language courses, has drawn the following key conclusions:

(1) Enhancement of Subject Integration through Interdisciplinary Thinking: The effective incorporation of interdisciplinary thinking, facilitated by innovative blackboard writing and comprehensive teaching design, has significantly improved the integration of subject knowledge. This approach has enabled students to achieve a deeper and more nuanced understanding of the Chinese language curriculum.

(2) Complementarity between Interdisciplinary Teaching and Educational Digitalization: The advent of educational digitalization has created expanded opportunities for interdisciplinary teaching. The interplay between digital transformation and interdisciplinary methods enhances the learning experience, making it more dynamic and engaging for students.

(3) Advancement of International Understanding Education: Within the context of internationally oriented regional characteristics, the case study "The Metamorphosis of a Monkey" has effectively fostered students' international awareness and broadened their perspectives. This approach has contributed to their overall development and provided a solid foundation for their future career paths.

5.2 The innovative aspects of this article

This article presents several innovative contributions to the field, notably:

(1) Depth and Breadth of Interdisciplinary Practice: The article provides an in-depth exploration of the integration of interdisciplinary thinking within middle school Chinese language courses. By analyzing detailed case studies, it elucidates specific applications of interdisciplinary methods, from blackboard writing design to overall teaching strategies. This comprehensive approach has led to the development of a systematic framework for practical implementation in front-line teaching.

(2)Integration of Global Understanding Education: Through the case study "The Metamorphosis of a Monkey," the article integrates global understanding education with the Chinese language curriculum. This innovative approach facilitates comparative studies of literary works, thereby enhancing students' awareness and respect for diverse cultures and promoting a broader international perspective.

(3)Practical Application Aligned with Regional Characteristics: Addressing the international context of the Qingbaijiang District, the article proposes targeted research and practices that are specifically tailored to local educational needs. This focus on regional characteristics ensures that theoretical insights are grounded in practical applicability, making the research more relevant and instructive for local educational contexts.

5.3 Areas for improvement and issues that require further research

While this article has made significant contributions to the field of interdisciplinary practice and international understanding education, several areas require further exploration and refinement:

(1)Sustainability of Interdisciplinary Practice: This article primarily addresses the short-term effects of interdisciplinary methods in frontline teaching. Further research is needed to examine the long-term sustainability of these practices, including their enduring impact on students' ability to integrate and apply interdisciplinary knowledge over extended periods.

(2)Development of Additional Interdisciplinary Integration Models: The cases discussed in this article predominantly focus on language courses. There is a need to explore and develop interdisciplinary integration models across a broader range of subjects. Future research should investigate practical methods for implementing interdisciplinary approaches in various academic disciplines beyond language studies.

(3)Evaluation Criteria for International Understanding Education: While the article presents cases such as "The Metamorphosis of a Monkey" that successfully foster international understanding, there is a lack of established evaluation criteria. Further research is required to develop quantitative and qualitative metrics for assessing students' international understanding abilities, ensuring that these skills can be reliably measured and evaluated.

(4)Empirical Research in Broader Contexts: The article primarily examines the Qingbaijiang District as a case study. To enhance the generalizability of the findings, additional empirical research is needed across different geographical and educational contexts. Comparative studies could elucidate how interdisciplinary practices vary and adapt to the unique characteristics of diverse regions.

Addressing these areas will enhance the applicability and instructional value of the theories and practices presented in this article, contributing to a more comprehensive understanding of interdisciplinary and international education.

In the context of educational digitization, this article addresses the practical realities of Chinese language instruction by proposing strategies for integrating interdisciplinary thinking from both theoretical and practical standpoints. Through detailed case analysis, the article underscores the significance of incorporating interdisciplinary knowledge into teaching practices during the digital transformation period. It emphasizes the need for educators to employ interdisciplinary approaches to facilitate a more comprehensive and nuanced understanding of Chinese language content among students.

The article highlights the critical role of interdisciplinary thinking in Chinese language education by presenting examples of innovative blackboard writing designs and comprehensive teaching strategies. These examples illustrate how interdisciplinary approaches can be effectively manifested and the value they bring to the educational process. Additionally, the study considers the international characteristics of the Qingbaijiang District, proposing specific cases that demonstrate the essential role of interdisciplinary thinking in fostering international understanding.

The aim of this study is to offer practical insights for educational policymakers, administrators, and frontline educators, summarizing relevant theoretical frameworks to align educational practices with contemporary needs. By advocating for the integration of interdisciplinary thinking, the study seeks to enhance students' ability to integrate subject knowledge, cultivate innovative thinking, and develop a global perspective.

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Funding

This research received no external funding.

Conflicts of Interest

The authors declare no conflict of interest.

Acknowledgment

The paper was awarded the first-class municipal prize in Chengdu for educational reform papers.

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