# Research on the Curriculum Reform of Visualizing Writing Thinking in Junior Middle School Chinese Empowered by AI Technology

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**Abstract: Integrating AI technology into visual thinking training for junior high Chinese writing enables data-driven decision-making in writing instruction, timely student feedback evaluation, multidimensional classroom interaction, and intelligent learning resource promotion. This study constructs an AI-supported writing process consisting of "AI pre-analysis, in-depth classroom discussion, and student self-modeling," which also facilitates virtualized previews of writing teaching scenarios. Through teaching practices within the curriculum reform aimed at visualizing writing thinking in junior middle school Chinese, this research explores how AI analytical tools can be leveraged to establish a new student-centered paradigm for Chinese writing curriculum innovation.**

**Keywords: AI Technology; Junior Middle School Chinese; Writing Thinking; Visualization**

## 1. Introduction

In November 2024, the General Office of the Ministry of Education of China issued the Notice on Strengthening Artificial Intelligence Education in Primary and Secondary Schools, which set the goal of essentially popularizing AI education in primary and secondary schools by 2030. The document also outlined six major tasks: constructing a curriculum system, implementing teaching and evaluation, developing teaching resources, building a teaching environment, promoting teacher supply, and organizing exchange activities. In May 2025, the Ministry of Education released two new guidelines: the General Education Guidelines for Artificial Intelligence in Primary and Secondary Schools (2025 Edition) and the Guidelines for the Use of Generative Artificial Intelligence by Primary and Secondary School Students (2025 Edition). These guidelines established different usage standards for primary, junior middle, and senior middle school students. Regions across the country are also conducting regional pilot programs at various levels and formulating related action plans. Digitally empowering primary and secondary school classrooms has become an inevitable trend, and AI literacy has become a fundamental competency for future talent.

The cultivation of writing skills among junior middle school students is crucial both for enhancing their personal abilities and for their performance in the middle school entrance examination. However, there is currently no systematic teaching methodology or step-by-step approach for composition instruction in junior middle school Chinese. This has led to a situation where teachers struggle to teach effectively, and students find it difficult to improve their writing. Additionally, grading a single composition takes Chinese teachers at least five minutes, making it challenging to provide detailed, timely feedback and personalized suggestions for improvement for each student. The emergence of AI-powered text analysis technology offers a promising solution to these challenges.

At the same time, since the generation of ChatGPT, DeepSeek and other large language models (LLM), AI's generative ability in natural language text processing and human-like thinking or logical reasoning has had a huge impact on Chinese education and teaching, especially on the production of Chinese writing education. On the one hand, AI's natural language processing can inspire teachers and students in the writing paradigm; On the other hand, it will also make students' dependence on AI impede the development of

writing thinking. Junior middle school Chinese writing not only accounts for a large proportion of scores in the exam, but also has a significant impact on students' reading, expression, and thinking generation. At present, junior middle school Chinese writing is facing many difficulties, such as students' limited vocabulary, difficulty in overall command of language, and the implicit and abstract nature of their thinking. Thinking training has become the biggest problem in Chinese writing.

How to harness AI to positively influence students' reading, expression, and cognitive development requires deep reflection among language educators. Based on this, this paper proposes the application of AI-powered text analysis technology in the reform of writing thinking visualization courses in junior middle school Chinese. By leveraging AI technology to visualize abstract writing thinking, it aims to stimulate students' interest in writing and generate a positive effect on their expression and thought generation.

This study adopts a technology-driven approach, starting from the objectives of writing instruction and focusing on enhancing technical application skills. It reconstructs a visualization training model for writing thinking in junior high school Chinese language education. First, different methods are applied according to various genres—such as narrative, expository, and argumentative writing—closely integrated with the 36 writing units across all three grades of junior high school Chinese. It employs AI text analysis technology to cultivate students' digital literacy, collaborative skills, expressive abilities, and innovative thinking. The approach prioritizes learning outcomes and refines assessment methodologies.

## 2. Domestic and International Research Status

### 2.1 Research on Existing Problems in Middle School Chinese Writing Teaching

The problem is the root of teaching research and the guidance of teaching practice proposed by strategies. According to teaching observation and research, Rong found that the fundamental problem is the immobilization and patterning of writing teaching. If the composition model is placed in the classroom for analysis, the students' writing "for writing" can not reflect the value and advantages in the end [1]. Jiang proposed in the research that writing teaching should not "overcorrect", and students need to accumulate and apply materials in the writing process. But if we only pay attention to whether students accumulate materials and ignore the cultivation of other writing abilities, there will be teaching deviation [2]. Yang raised several common problems in Teaching: outdated teaching methods and poor display of online writing materials; The writing evaluation is divorced from the goal and fails to realize the life of classroom teaching. In short, teachers' teaching failed to inspire students' writing [3].

### 2.2 Research on Instructional Strategies for Middle School Chinese Writing

Zhang proposed in the research that writing teaching content should be transformed into online teaching content according to teaching materials in the era of digital transformation of education, and students should combine the teaching materials to expand the content, slowly accumulate and observe in depth. At the same time, the writing instruction process requires students to accumulate material through personal reflection and to infuse genuine emotions into their compositions [4]. Lei proposed that writing needs students' reading accumulation, reading texts need to be selected and studied with students, and then establish the integrated teaching of reading and writing [5]. Lu and others proposed similar teaching strategies in their research: teachers need to guide students to observe, understand, and accumulate materials independently [6]. Chen explores how the Internet and AI technology can reshape language teaching, analyzes the main changes in language life in the Internet era, and proposes strategies for junior high school language teaching, including updating teaching content, strengthening students' online language skills, using AI for personalized teaching, and building language learning communities [7]. Huang proposes to change the thinking of writing in the age of AI towards "real writing", pointing to students' thinking and optimizing the quality of thinking in writing training. Creating a situation to stimulate pre-writing empathy, so that thinking is effective; cross-media integration, extending in the writing material, so that thinking has temperature; set up a chain of writing tasks, in

the unification of the planning of training in a hierarchical progression, so that thinking has a gradient [8]. Li proposed to first analyze the role of AI technology in junior high school language classroom teaching, that is, its ability to analyze students' learning data to realize the intelligence of the teaching process, so as to provide each student with a tailor-made learning experience [9]. Zhao proposed to leverage the use of AI technology to boost the reform of the language classroom, which has become the focus of educators' attention. Teachers should be based on the digital background, combined with the current situation of middle school language teaching, focusing on the cultivation of students' core literacy [10]. The existing research has the following shortcomings: the separation between the application of AI technology and writing teaching strategies, the study of multi tendency knowledge transfer, and the lack of vertical research on how to establish the association between AI technology and writing teaching strategies of different text types in junior middle school Chinese; The classroom teaching resources are inadequate, and teachers' acceptance of new ideas and other practical constraints; The empirical evidence is weak, the teaching effect depends on subjective description, and the multi-dimensional data verification is lacking.

Therefore, the rapid advancement of AI technology is driving the digital transformation of education. In junior high Chinese writing instruction, leveraging artificial intelligence enables student-driven learning, personalized learning, and interdisciplinary learning—a current hot topic in teaching research. Integrating writing thinking visualization represents a significant current research direction. Leveraging AI enables the formation of learning formats centered on interactive thinking, identifying students' learning states both inside and outside the classroom, and providing personalized learning experiences to enhance learning outcomes. However, analysis of the current state of junior high Chinese writing instruction reveals that teaching methods targeting thinking visualization training still face challenges such as weak dialogue and communication capabilities, suboptimal application of core functions like video learning and intelligent Q&A, and students' insufficient engagement in questioning and interaction with AI teaching assistants. This study continues to analyze the impact of the application of AI text intelligent parsing technology on students' thinking visualization training from the perspective of junior high school language writing teaching, and to sort out the advantages and opportunities brought by AI text intelligent parsing technology to junior high school language writing teaching. Through theoretical research, we clarify the important path of broadening junior high school language writing teaching by relying on AI text intelligent parsing technology. Combine the observation data and teaching practice to condense and put forward the feasible plan for the application of AI analysis tools. The research results are supplemented into the teaching application of AI technology, and the resulting program provides a reference for the reform of middle school language writing teaching.

## 3. Design of Reform Plan for Visualization Course of Middle School Chinese Writing Thinking

### 3.1 Delimitation of Core Concepts
AI Text Intelligent Parsing Technology: is a technology system based on artificial intelligence (especially natural language processing, NLP) and machine learning, which realizes allowing computers to automatically understand, analyze and extract the deep semantic information in text through the processes of participle annotation and recognition, semantic understanding and analysis, and text summarization or similarity computation, so as to transform the unstructured or semi-structured text content into structured, representable This will transform unstructured or semi-structured text content into structured, characterizable language or frame structure, providing support for various intelligent applications. This study is based on AI technology that can realize the writing process of "AI pre-parsing - in-depth classroom discussion - students' independent modeling" and support a virtualized preview of writing teaching scenarios. This includes but is not limited to generative AI, APP, intelligent teaching platform, etc.

### 3.2 Curriculum Reform Program Design
The application of artificial intelligence in

language learning has great potential, especially in junior middle school Chinese writing teaching. The main manifestations of AI text intelligent parsing technology are as follows: first, the generation of personalized writing materials. Based on interactive learning, the composition model is customized according to the different ability levels of students in the class. Second, enhance the interactive learning experience. Complete the real-time interaction of AI in the application scenario, get feedback and correction in the interaction, and truly integrate reading comprehension and writing thinking comprehension. Third: strengthen the contextual learning effect. In writing teaching, we should consider the use of language and characters, and provide students with examples of the use of excellent model words in time, so as to form a thinking chain. Fourth, dynamically adjust the path of text writing. Dynamically adjust the learning plan according to the students' personalized learning progress, and form a targeted adaptive learning scheme.

In this paper, the design of junior middle school Chinese writing thinking visualization curriculum reform based on AI text intelligent parsing technology is shown in Figure 1. First, use AI analysis tools (such as topic extraction and logical relationship map generation) to transform the writing text into "argument thinking map", "emotional tendency heat map", and "cultural background knowledge pop-up

window" to help students deconstruct the writing logic (such as argumentative logical chain and symbolic meaning of literary works). Second, design the writing process of "AI pre-analysis - in-depth discussion in class - students' independent modeling", verify the improvement effect of AI visualization tools on students' writing speed, accuracy of theme capture, and critical thinking skills (such as vocabulary usage and text restructuring), and develop intelligent writing scaffolds suitable for different styles. Third, the whole process of students' writing is collected, stored, and analyzed in real time. Leveraging AI analysis of students' in-class learning behaviors to assess writing proficiency, precisely identifying gaps in content, scope, and genre mastery, thereby providing personalized, data-driven support for post-class learning. Fourth, virtualize the rehearsal of writing teaching scenarios, and provide a challenging and practical writing understanding environment through context generation and scenario simulation technology. Or use intelligent modeling technology to carry out intelligent modeling of students' writing behavior characteristics and thinking development process, so as to restore the writing learning process, depict the writing learning subject, and achieve precise control of teaching activities and push teaching resources.
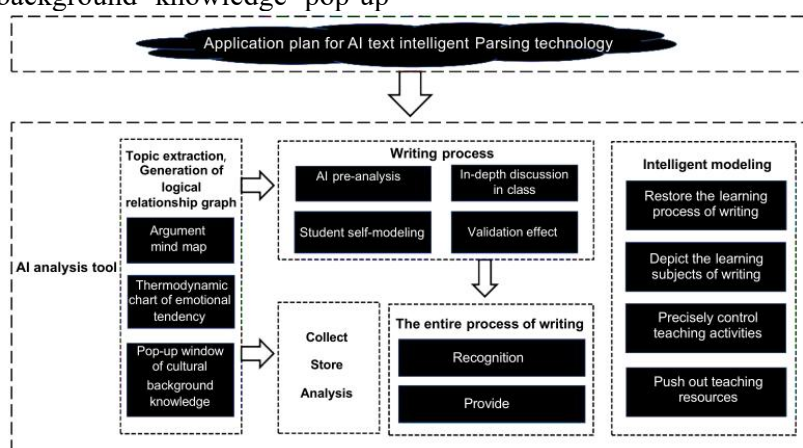


**Figure 1. Design of the Curriculum Reform Plan for Visualizing Writing Thinking in Junior Middle School Chinese**

The application process of AI text intelligent parsing technology needs to realize the quality control of the whole application scheme through the evaluation of the results, and form a junior middle school Chinese writing teaching case resource library under the application of AI text intelligent parsing

technology through teaching.

**4. Teaching Practice of the Curriculum Reform on Visualization of Writing Thinking in Junior Secondary Chinese**

According to the requirements of the unified textbook, the writing theme is listed according

to different styles, and the writing teaching is carried out.

The teaching practice of narrative writing helps students master the visual expression of "six elements" (time, place, character, cause, process, and result) of narrative. Given the students' theme, the teacher guides the students to build writing branches according to AI thinking analysis, that is, time axis (when), scene bubble chart (where), character feature cloud (who), and completes AI real-time feedback to score the students' writing branches. Students need to realize the visualization of narrative logic to complete the narrative writing. First, they can analyze the emotional fluctuations of the character description in the model text. Students use the AI tool "Kumu.io" to draw the emotional curve of their own story. Teachers help students build a narrative coherence radar chart. After the completion of the composition, emphasis should shift to visualizing peer evaluations, with both formative and summative assessments concluding the writing critique process. The process evaluation needs to analyze the integrity of the mind map (using AI scores), the rationality of the emotion curve (teachers' comments), and the richness of the detail bubble chart (group mutual evaluation). The result evaluation needs to analyze the "visual traces" of the final composition (keep

the guide/curve as an attachment if necessary), and then generate a comparison report before and after AI language polishing.

The teaching practice of argumentative writing is the same as that of narrative writing. It should be noted that, different from the six elements of narrative writing, argumentative writing needs to master the three-dimensional visual structure of "argument argument argument argument", use AI to build an argument database and logical diagram, and improve the rigor of the argument through AI fallacy detection. In the teaching process, XMIND, Mindmaster, PBiShen Composition, ChatGPT, Visual Collaboration Platform.

The teaching practice of expository writing focuses on the accurate description of the characteristics of the description object, the logical presentation of the description sequence, and the three-dimensional visualization training of the scientific application of the description method. Using Padlet dynamic cloud, AI automatically captures and classifies the characteristic terminologies, generates a color block matrix according to different dimensions, and uses AI exception interceptors to intercept false expressions.

Taking narrative teaching as an example, the specific application before class, during class, and after class is shown in the figure 2.
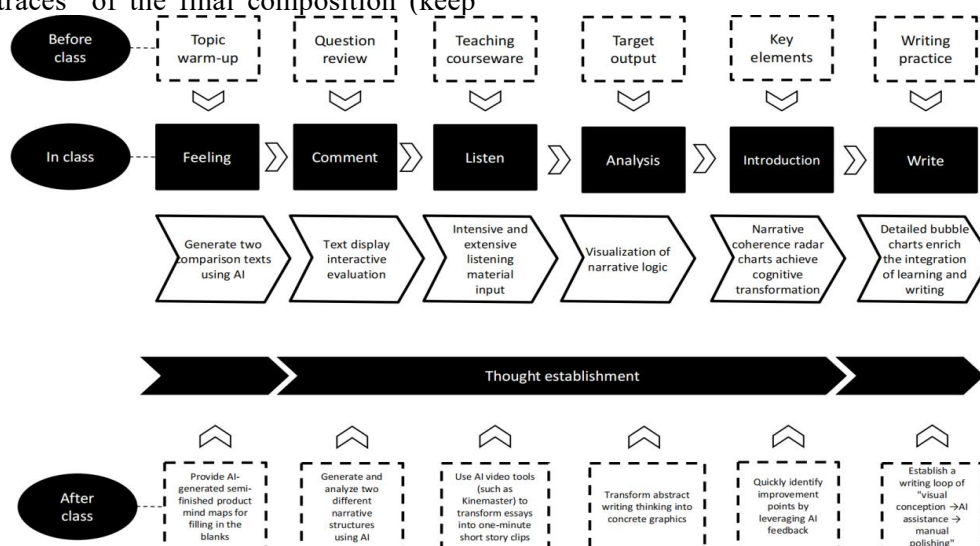


**Figure 2. A teaching practice case of the curriculum reform for visualizing writing thinking in Junior Middle school Chinese**

## 5. Conclusion
This paper, empowered by AI technology, designs a curriculum reform plan for visualizing writing thinking in junior middle

school Chinese. The program transforms written texts into "argument mind maps," "sentiment heatmaps," and "cultural knowledge pop-up windows" to help students deconstruct writing logic. Design the writing process of

"AI pre-analysis — in-depth classroom discussion — student self-modeling", collect, store, and analyze the entire process of students' writing in real time, identify students' writing ability based on students' classroom learning behavior through AI analysis, virtualize the writing teaching scenarios, and provide challenging and meaningful writing understanding through context generation and situation simulation technology. Moreover, in light of various writing themes in junior high school Chinese courses, teaching practices of curriculum reform on visualizing writing thinking have been implemented, yielding favorable teaching outcomes.

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