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Innovative Pathways for Interdisciplinary Teaching of Senior High School English in the Era of Artificial Intelligence

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Abstract

With the rapid development of artificial intelligence technology, interdisciplinary teaching of senior high school English is undergoing profound digital transformation. Taking 186 A-category/core journal articles on interdisciplinary teaching of senior high school English as the research object, this study employs content analysis to statistically examine and analyze their publication status, research perspectives, and conclusions, thereby reviewing the current situation, achievements, and shortcomings of research on interdisciplinary teaching of senior high school English in China. The findings indicate that existing research in China has achieved certain results in the field of interdisciplinary teaching of senior high school English, but practical difficulties at the teacher level and in terms of teaching software and hardware remain relatively prominent. On this basis, this study systematically analyzes innovative pathways for interdisciplinary teaching of senior high school English. From the two aspects of a teacher training program featuring "three modules and one mechanism" and the development and optimization of AI tools, it provides support for promoting the transformation of senior high school English teaching methods and realizing the deep integration of AI and interdisciplinary teaching.

Keywords

Artificial Intelligence; Senior High School English; Interdisciplinary Teaching; Core Competencies; Transformation of Teaching Methods

1. Basic Concepts of English Interdisciplinary Teaching and Artificial Intelligence

The conceptual foundations and policy background of English interdisciplinary teaching and artificial intelligence, together with the integration of the two, are of great significance to the innovation of senior high school English teaching.

1.1. English Interdisciplinary Teaching

English interdisciplinary teaching refers to the arrangement of teaching activities that, based on disciplinary knowledge of English and centered on specific themes, integrates knowledge from relevant disciplines and guides students to actively integrate content from different disciplines in the process of completing tasks in English, thereby developing their language competence, thinking quality, and interdisciplinary literacy. The English Curriculum Standards for Compulsory Education (2022 Edition), in its teaching suggestions for the three school stages, sets out corresponding requirements regarding how English teachers should conduct comprehensive English practical activities based on students' actual English proficiency, thus providing guidance and recommendations for teachers to design and implement interdisciplinary thematic learning (Ministry of Education of the People's Republic of China, 2020). The English Curriculum Standards for Senior High Schools (2017 Edition, Revised in 2025) explicitly emphasizes that English teaching should promote integration among disciplines and cultivate students' comprehensive language application ability; interdisciplinary thematic learning in English should strengthen curriculum integration and attach importance to connections; and it clearly stipulates that interdisciplinary thematic learning activities should be established to strengthen interconnections among disciplines, promote the integrated implementation of curricula, and reinforce practical requirements (Ministry of Education of the People's Republic of China, 2025).

This policy orientation provides clear guidance for interdisciplinary teaching of senior high school English and highlights the importance of interdisciplinary literacy in cultivating students' core competencies. On the one hand, it can provide students with rich contexts, help them establish intrinsic connections among bodies of knowledge, and form a networked and systematic cognitive structure. On the other hand, interdisciplinary learning can cultivate students' higher-order thinking, such as critical thinking and the ability to solve complex problems. When students use English to explore historical laws or geographical phenomena, English is no longer an isolated system of symbols, but a cognitive tool for exploring the world. In addition, English interdisciplinary teaching can enhance students' cultural understanding and intercultural communication competence, and cultivate versatile talents with a global vision (Chai Xuesong & Gao Shuping, 2023).

1.2. Artificial Intelligence

Artificial intelligence (AI) mainly refers to the new generation of intelligent technologies represented by large language models (LLMs), generative AI (AIGC), and multi-agent systems (Zhang Yibo, 2021). In the field of education, artificial intelligence mainly refers to technological systems and application platforms that use technologies such as machine learning, natural language processing, and knowledge graphs to provide intelligent support for teaching (Qi Faju, 2025). It is the core engine driving the transformation of the educational paradigm from a

binary "teacher–student" structure to a ternary collaborative "teacher–machine–student" structure. It not only possesses the capacity to process massive amounts of data, but also has powerful capabilities in natural language understanding, logical reasoning, contextual generation, and multimodal interaction. As a cognitive partner, artificial intelligence can break the temporal and spatial limitations of educational resources and provide personalized and precise learning support.

The influence of artificial intelligence on English interdisciplinary teaching is comprehensive and profound. According to the Education Informatization 2.0 Action Plan and the New Generation Artificial Intelligence Development Plan, artificial intelligence technology is reshaping all aspects of education and teaching. Specifically, the influence of artificial intelligence is reflected in the following aspects: 1) intelligent teaching systems can recommend interdisciplinary teaching pathways and provide alternative plans for interdisciplinary teaching based on the curriculum progress of each discipline and students' learning conditions; 2) natural language processing technology supports applications such as intelligent grading and knowledge-based question answering, and can provide teachers with immediate supplementation when they deal with interdisciplinary knowledge; 3) knowledge graph technology can construct disciplinary knowledge networks and support the association and integration of interdisciplinary knowledge; 4) intelligent data analysis can help teachers accurately grasp students' learning conditions and realize data-driven teaching decision-making (Ma C, 2025; Liao Huiyu, 2025). As researchers have stated, artificial intelligence is not only a technical tool, but also an important force for promoting the transformation of educational concepts and the innovation of English interdisciplinary teaching models (Chen Zhoujiangzi, 2025). AI is profoundly reshaping the ecology of English teaching, making deeply integrated interdisciplinary teaching possible and greatly lowering the threshold for accessing resources for interdisciplinary curriculum design. At the same time, AI is also compelling English teaching to accelerate its transformation from the traditional transmission of "vocabulary–grammar" knowledge toward the cultivation of "intercultural communication competence and innovative practical ability."

2. Research Status of Innovation in Senior High School English Interdisciplinary Teaching in the Era of Artificial Intelligence

The research sample of this study was obtained from the academic resource retrieval platform Chaoxing Data. According to the three variables of content analysis, namely publication status, research perspective, and research conclusions, this study will reveal the major achievements and shortcomings of interdisciplinary teaching in senior high school English.

2.1. Research Design

2.1.1. Research Sample

The data search in this study was conducted based on the academic resource retrieval platform Chaoxing Data. Using "senior high school English interdisciplinary teaching + artificial intelligence" as the keywords, a total of 186 documents were selected, among which 165 were A-category/core journal articles (Figure 1).

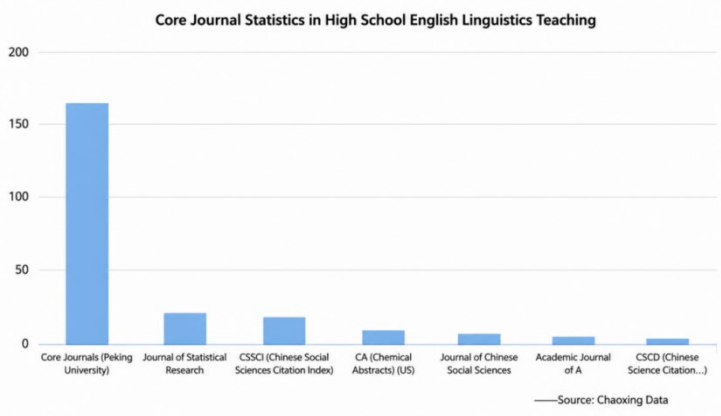


Figure 1. Statistics of Core Journals on Interdisciplinary Teaching in High School English

2.1.2. Research Methods

The 165 A-class/core journal articles were preliminarily classified through advanced retrieval according to the current situation, achievements, and shortcomings of interdisciplinary teaching in high school English. Next, the SQR reading method (Survey—Question—Read) was adopted to read through the literature. With reference to studies of a similar type (Qu Sheming, 2019), content analysis was used to organize and analyze 60 important articles.

2.1.3. Content Analysis Variables

After reading through and analyzing the preliminarily selected literature, the 60 A-class/core journal articles were examined according to three variables: publication status, research perspective, and conclusions. The current state of relevant research was comprehensively investigated by examining publication status; the main achievements and shortcomings of interdisciplinary English teaching were revealed by analyzing research perspectives; and the deficiencies in current research were identified through the analysis of conclusions, thereby providing a basis for future research.

2.2. Research Development Trend

2.1.1. Publication Status

Among all the collected literature, the earliest publication appeared in 2010. From 2010 to 2026, a total of 299 publications took "interdisciplinary teaching in high school English" as their topic, including 5 books, 243 journal articles, 10 theses

and dissertations, and 41 conference papers (Figure 2). The research peak for this topic occurred in the past five years, indicating that after the promulgation of the new curriculum standards and the rapid development of artificial intelligence, it has received extensive attention in academia.

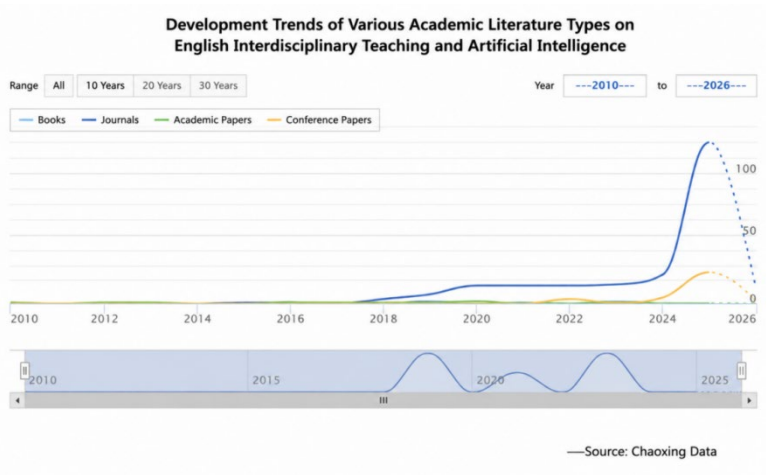


Figure 2. Statistics of Annual Literature Publications

As the total number of retrieved documents was large, this study selected authoritative and representative studies for analysis. Through advanced search, 60 articles were selected from 165 A-class/core journal articles according to three themes: “current status,” “achievements,” and “limitations.”

The first theme is “current status.” As shown in Figure 3 and Figure 4, there are 15 studies on the current status of interdisciplinary teaching in high school English in the context of AI, mainly published between 2012 and 2025.

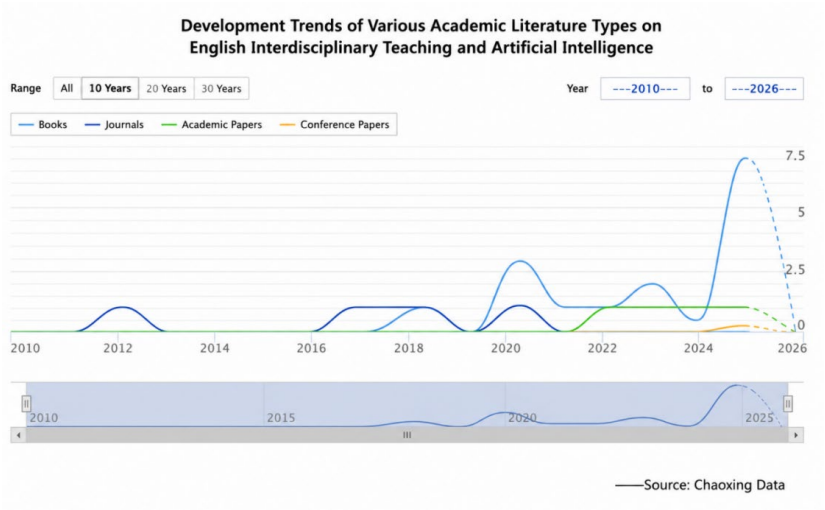


Figure 3. Statistics of Publications by Year on the Current Status of Interdisciplinary Teaching in High School English

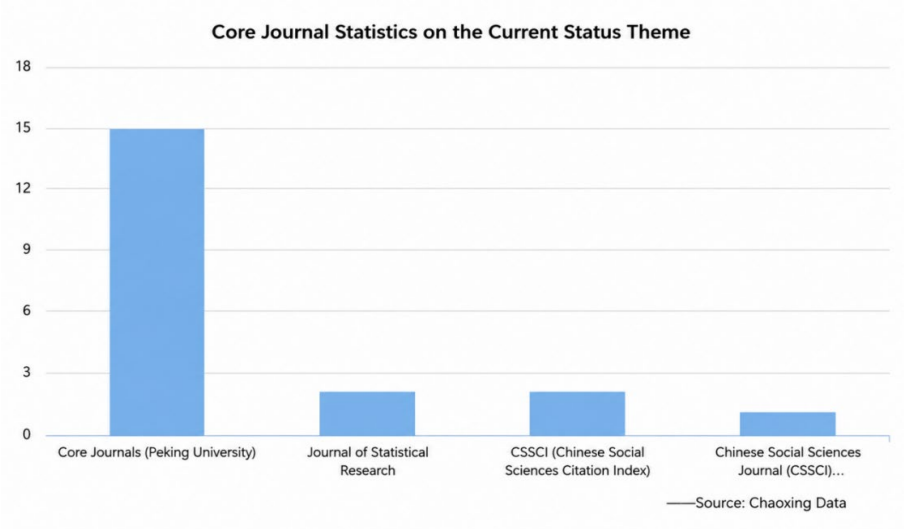


Figure 4. Statistics of Publications by Journal on the Current Status of Interdisciplinary Teaching in High School English

The second theme is "deficiencies and challenges." As shown in Figure 5, there are 31 research articles on the deficiencies/challenges of interdisciplinary teaching in senior high school English in the context of AI, mainly published between 2017 and 2025.

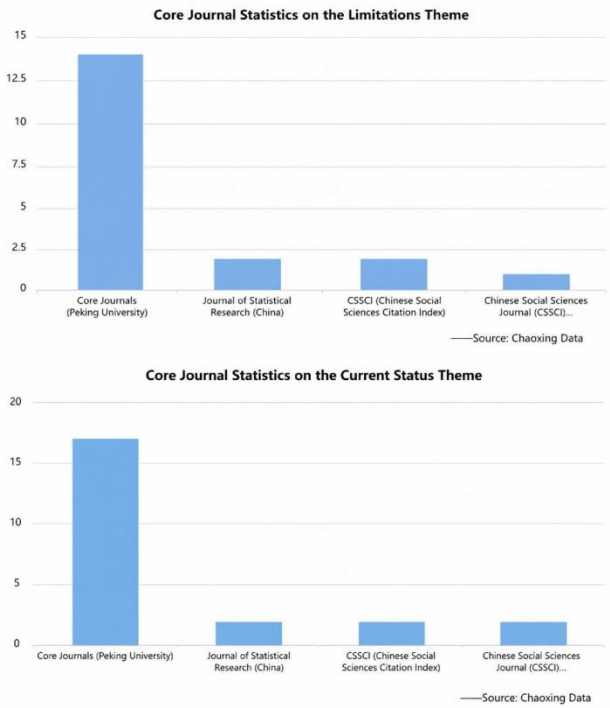


Figure 5. Statistics of Publications on Limitations/Challenges of Interdisciplinary Teaching in High School English

The last theme is "achievements." As shown in Figure 6, there are 14 studies on the achievements of interdisciplinary teaching in high school English in the context of AI,

mainly published between 2010 and 2025.

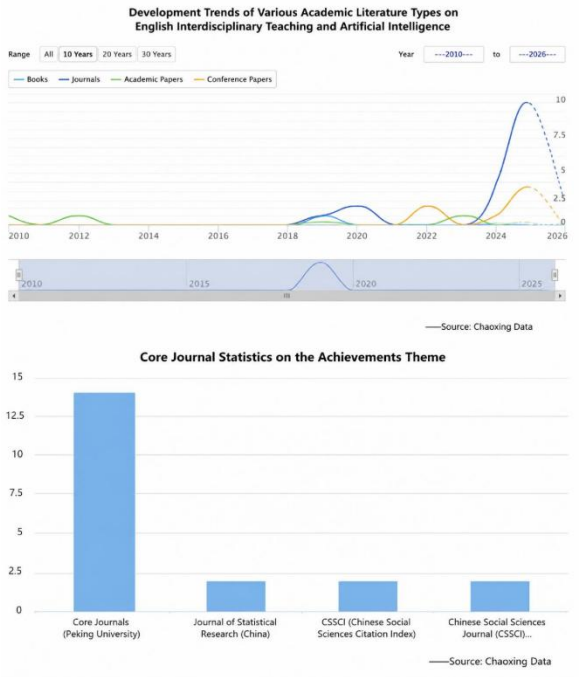


Figure 6. Statistics of Publications on Achievements of Interdisciplinary Teaching in High School English

Based on the publication statistics above, this study finds that with the promulgation of the new curriculum standards and the development of artificial intelligence, studies on the current status and achievements of interdisciplinary teaching in high school English are generally balanced, while studies on its limitations/challenges are more numerous. This indicates that although interdisciplinary teaching in high school English has long been advocated and studied, with the rapid development of artificial intelligence, the problems existing in interdisciplinary teaching in high school English have become increasingly prominent, and the implementation of relevant solutions has not achieved satisfactory results. Therefore, after examining the methods, directions, findings, and existing problems of current related studies, this study proposes specific solutions to the limitations/challenges identified.

2.2.2. Research Perspectives

A review of these studies shows that researchers have attempted to understand and explore English interdisciplinary teaching under the guidance of the new curriculum standards from multiple perspectives, demonstrating a rich diversity of research perspectives. Among them, relatively more studies focus on six aspects: instructional design, project-based learning, teaching models, disciplinary integration, teaching strategies, and core competencies. Moreover, most scholars tend to conduct research by combining several of these aspects. For example, some

scholars integrate project-based learning with core competencies as their research perspective on interdisciplinary teaching in high school English.

2.2.3. Research Conclusions

Through rigorous data collection and analysis, the studies reviewed above conducted multidimensional investigations into interdisciplinary teaching in high school English in the context of AI. By refining the research perspectives of these studies and drawing on their conclusions, this study summarizes and discusses the limitations/challenges from the following two levels.

2.2.3.1. Teacher Level

Teachers are the key agents of teaching innovation. In promoting interdisciplinary teaching in high school English in the era of artificial intelligence, teachers face multiple challenges.

There is the problem of insufficient interdisciplinary literacy, or TPACK. Interdisciplinary English teaching requires teachers to possess multidisciplinary knowledge backgrounds, identify connections among different disciplines, and design integrated learning activities. However, most high school English teachers have professional backgrounds limited to language and literature. They lack an in-depth understanding of the knowledge systems of other disciplines such as physics, history, and geography, making it difficult for them to identify deep points of convergence among disciplines in instructional design. To some extent, it restricts the in-depth implementation of interdisciplinary teaching. Research shows that the improvement of teachers' digital literacy is a gradual process that requires systematic training and accumulated practical experience (Ma Li, 2025).

Secondly, the updating of teaching beliefs lags behind. Although many English teachers have a solid foundation in language teaching, their understanding and application of artificial intelligence technologies remain limited, making it difficult for them to effectively integrate AI tools into interdisciplinary instructional design. In the face of rapidly iterating AI tools, some teachers experience technology anxiety or path dependence: they either resist using AI out of concern about being replaced, or rely excessively on AI, thereby losing their agency and criticality in instructional design. As a result, they are unable to give AI effective prompts to generate interdisciplinary materials suited to students' learning conditions. They tend to adopt a wait-and-see attitude toward AI-assisted teaching, worrying that technology may weaken teacher-student interaction and reduce the humanistic warmth of teaching. At the same time, some teachers have an insufficient understanding of the value of interdisciplinary teaching and still confine their teaching objectives to the transmission of language knowledge, neglecting the cultivation of students' comprehensive competencies. This lag at the conceptual level directly affects innovation in teaching practice.

Thirdly, teachers are constrained by limited time and energy for teaching research. Interdisciplinary teaching itself entails a high cost of lesson preparation, and under the pressure of routine teaching, teachers find it difficult to secure sufficient blocks of time to explore the deep integration of AI tools and interdisciplinary curricula. In real teaching contexts, teachers face heavy pressure from routine teaching tasks. Daily work such as lesson preparation, classroom instruction, assignment correction, and student tutoring already consumes a large amount of their time and energy. Under such a demanding work rhythm, it is difficult for teachers to have adequate and continuous blocks of time to fully explore ways of deeply integrating AI tools with interdisciplinary curricula, or to conduct in-depth research and practical experimentation. This undoubtedly creates certain obstacles to the innovative development of interdisciplinary teaching.

2.2.3.2. Teaching Level

- Limitations of AI Teaching Software: 1) there is a conflict between machine hallucinations and knowledge accuracy. When generative AI integrates interdisciplinary knowledge, such as explaining complex geographical phenomena or historical details in English, it may sometimes produce seemingly plausible but actually erroneous hallucinations. Some AI teaching software has limited functions and lacks functional modules that support the connection and integration of multidisciplinary knowledge, making it difficult to meet the complex demands of interdisciplinary teaching. Without rigorous fine-tuning in the educational domain, such software can easily mislead students; 2) there may also be biases in cultural contexts and values. Many mainstream AI models are trained on Western corpora. When used in interdisciplinary teaching involving Chinese and foreign history or culture, they may present biased cultural perspectives and fail to fully align with the needs of cultivating Chinese high school students' national identity, patriotism, and values (Yan Zhaofang, 2024). 3) there is a lack of deeply integrated platforms. Data interoperability among different AI software systems is poor, making it difficult to form a complete teaching data chain and affecting the evaluation and optimization of teaching effectiveness. Moreover, most AI software currently available on the market consists of general-purpose tools, with few one-stop teaching platforms specifically customized for Chinese high school English + interdisciplinary teaching. As a result, the application of such software in actual classrooms often remains superficial (Mo Min, 2009).

Limitations of AI Teaching Hardware: 1) the digital divide and the uneven availability of equipment are prominent issues. First, there is an imbalance in equipment allocation. Hardware such as high-performance AI voice terminals and VR/AR immersive headsets is relatively costly, and there are significant disparities in hardware provision between urban and rural schools and among different regions. This leads to serious imbalance in the learning experience of interdisciplinary teaching, with some schools lacking the basic conditions for implementing intelligent teaching (Li Hong, 2025). Second, the utilization rate of existing equipment remains low. Although some schools are equipped with hardware facilities such as multimedia classrooms and smart classroom systems, due to a lack of systematic training and technical support, these devices often become mere "decorations" and fail to be truly integrated into daily teaching (Li

Zhongliang & Cheng Long, 2020); 2) there is also a conflict between hardware coordination and classroom management. AI-supported teaching places high demands on the network environment and requires stable, high-speed network support (Tang Jingwei, 2023); 3) however, in actual teaching, technical problems such as network latency and equipment failure occur from time to time. These problems not only interrupt the coherence of students' thinking during interdisciplinary inquiry, but also easily distract high school students, resulting in a misplaced emphasis on technical experience over language acquisition and affecting the smooth implementation of teaching activities. In addition, the maintenance and upgrading of hardware facilities require continuous financial investment, which poses challenges to schools' funding capacity.

3. Methods for Addressing the Transformation of High School English Teaching Approaches from the Perspective of Artificial Intelligence

In response to the multiple challenges faced by high school English teachers in interdisciplinary teaching, this study designs a teacher training program featuring three modules and one mechanism. The three modules refer to the Interdisciplinary Literacy Enhancement Module, the AI Technology Application Competence Training Module, and the Time Management and Teaching Research Optimization Module. While the one mechanism refers to the Continuous Improvement Mechanism. The program aims to comprehensively enhance teachers' interdisciplinary literacy, update their teaching beliefs, and optimize their time management.

3.1. Systematic Design of the Teacher Training Program

3.1.1. The Interdisciplinary Literacy Enhancement Module is the core of the training program.

This module adopts a three-stage model of theoretical learning + practical operation + reflective improvement. In the theoretical learning stage, subject experts are invited to systematically explain the general procedures and methods of interdisciplinary teaching, with a focus on enhancing teachers' ability to identify key elements in related disciplines such as history, science, and art. In the practical operation stage, workshops are conducted to enable teachers to design and rehearse teaching implementation in authentic interdisciplinary teaching contexts. In the reflective improvement stage, teacher learning communities are established to carry out regular case discussions and experience sharing.

The specific training content includes the following: 1) the general procedures and methods of interdisciplinary teaching, covering its connotations, value, and implementation pathways; 2) the identification of disciplinary knowledge elements, with a focus on supplementing key disciplinary elements in history, geography, science, art, and other fields closely related to English teaching; 3) the enhancement of intercultural literacy, improving teachers' intercultural understanding and instructional design ability through case analysis and practical activities (Jia Ruo, 2025); 4) strategies for integrating core competencies, including learning how to

organically integrate language competence, cultural awareness, thinking quality, and learning ability into interdisciplinary teaching (Zhang Haitao, 2025).

3.1.2. AI Technology Application Competence Training Module

To address teachers' insufficient understanding of AI technologies, a tiered and progressive training system is designed. According to teachers' technological foundations and levels of acceptance, the training is divided into three levels: the basic level focuses on training in the basic operation and functional understanding of AI tools; the advanced level focuses on the specific application of AI in instructional design, classroom interaction, evaluation and feedback, and other teaching processes; and the innovation level focuses on strategies for the deep integration of AI technologies with interdisciplinary teaching.

The training adopts a main classroom + branch classroom model. The main classrooms are set up in universities across provinces, municipalities, autonomous regions, and municipalities directly under the central government. Each session may invite key high school teachers and experts in AI-integrated interdisciplinary teaching to participate on site. Meanwhile, relying on the National Smart Education Public Service Platform, branch classrooms are established in schools for synchronous live streaming, thereby achieving full technological coverage.

The training content includes: 1) basic theories and development trends of AI, helping teachers establish a proper understanding of AI technologies; 2) operational skills for commonly used AI teaching tools, such as intelligent lesson-preparation systems, classroom interaction tools, and assignment grading systems (Yan Haijuan, 2025); 3) application strategies of AI in interdisciplinary teaching, with a focus on training teachers to use AI technologies to integrate knowledge from different disciplines; 4) cultivation of AI ethics and safety awareness, ensuring the standardization and safety of technology application.

3.1.3. Time Management and Teaching Research Optimization Module

To address the problems of teachers' heavy workload and fragmented time, a systematic solution is designed. First, through research and analysis of teachers' current time allocation, the main sources of time waste are identified, and personalized time management plans are developed. Second, the design of teaching research activities is optimized by adopting a four-fixed model including fixed time, fixed place, fixed topic, and fixed technology. For example, the first and second periods on Wednesday morning each week can be incorporated into the general timetable as fixed teaching research time; each lesson preparation group can have an independent research room; a semester teaching research calendar can be released in the first week of the semester; and every teaching research activity must use a rubric or post-test tool.

In addition, a micro-teaching research mechanism is established to make use of

teachers' fragmented time for brief, focused, and efficient discussion activities. Through tools such as WeChat groups and online platforms, a normalized communication mechanism is established, enabling teachers to share teaching experience and discuss teaching problems at any time. Meanwhile, a teaching research resource database is developed to provide teachers with abundant interdisciplinary teaching resources and reduce their lesson preparation time.

The evaluation of training effectiveness and the continuous improvement mechanism are key to ensuring training quality. After teachers have implemented the above modules in practice, a diversified evaluation system should be established, including: 1) formative evaluation, which involves classroom observation, assignment analysis, group discussion, and other methods to understand teachers' learning progress in a timely manner (Yue Wei, 2025); 2) summative evaluation, which assesses teachers' competence improvement through instructional designs, teaching cases, student works, and other outcomes; 3) reflective evaluation, which uses follow-up surveys after the training to understand teachers' application of what they have learned in actual teaching and their needs for improvement.

Subsequently, based on the evaluation results, a continuous improvement mechanism should be established. A training effectiveness review meeting should be held once each semester to analyze problems in the training process and formulate improvement measures. At the same time, teacher development portfolios should be established to record teachers' developmental trajectories in interdisciplinary literacy, AI technology application, and the updating of teaching beliefs, thereby providing a basis for personalized training.

3.2. AI Tool Development Directions and Technical Pathways

In response to the technical defects and cultural biases currently present in AI teaching software, this study proposes systematic directions for AI tool development and corresponding technical pathways.

3.2.1. The technical pathway for improving system accuracy

In response to the problem of machine hallucination, relevant professionals need to adopt multiple technical means to improve the accuracy of AI systems. First, teachers of various high school subjects need to establish high-quality corpora in their respective professional fields, thereby generating specialized corpora for interdisciplinary teaching. This can ensure the accuracy and authority of data when conducting training for interdisciplinary English teaching. Second, AI technical personnel need to adopt retrieval-augmented generation (RAG) technology to connect local knowledge bases, such as subject-specific corpora and teaching cases, to large language models, so as to achieve the integration of "general capabilities + disciplinary knowledge."

The specific technical solutions include: 1) constructing an interdisciplinary corpus

by integrating the core concepts, knowledge, and relationships of disciplines such as English, history, geography, science, and art, thereby providing structured disciplinary support for AI systems; 2) establishing a fact-checking mechanism to verify AI-generated content in real time, especially key information involving historical figures, events, scientific principles, and other related content; 3) introducing expert systems and rule engines to establish specialized reasoning mechanisms for professional knowledge in specific disciplines; 4) adopting multi-model fusion technology to combine different types of AI models, such as knowledge graphs, expert systems, and deep learning models, thereby improving the system's comprehensive judgment ability (Meng Qingyu, 2023).

3.2.2. Cultural Adaptability Improvement Plan

To address the biases that occur when AI systems process different cultural contexts, it is necessary to establish a multicultural, balanced training corpus to ensure that content from different cultural backgrounds is presented in a balanced manner. Second, culturally sensitive algorithms should be developed to identify and handle cultural differences, thereby avoiding cultural stereotypes.

The specific measures include: 1) Constructing a multilingual and multicultural corpus, with particular emphasis on strengthening the collection and annotation of content related to Chinese culture and Eastern culture; 2) Developing a cultural context understanding model that can accurately understand cultural connotations according to context, such as the deeper cultural meanings of traditional festivals such as the Mid-Autumn Festival and the Spring Festival; 3) Establishing a cultural value alignment mechanism to ensure that the value orientation of AI systems conforms to the core socialist values and the fine traditional Chinese culture; 4) Designing a cultural difference recognition algorithm that can identify the behavioral characteristics of students from different cultural backgrounds, so as to avoid misjudgment and inappropriate intervention.

3.2.3. Design of an Integrated Platform Technical Architecture

In response to the problems of functional silos and data interoperability barriers in current AI teaching tools, a unified technical architecture needs to be designed. A "five-layer, two-line" AI platform architecture for educational equity should be adopted, in which the "five layers" refer to technical stratification, and the "two lines" refer to fairness and privacy protection running throughout the entire process.

The core components of the technical architecture include: 1) Data Layer: Establishing unified data standards and interfaces to integrate various types of teaching data, including student learning data, teacher teaching data, curriculum resource data, and so on; 2) Cognitive Model Layer: Integrating multiple AI models, including language understanding models, knowledge reasoning models, personalized recommendation models, and so on; 3) Application Service Layer:

Providing various types of teaching application services, such as intelligent lesson preparation, classroom interaction, homework correction, learning analytics, and so on; 4) Interaction Layer: Providing a unified user interface and interaction methods, supporting multi-terminal access; 5) Security Layer: Ensuring data security and privacy protection.

3.2.4. Specialized Functions for Interdisciplinary English Teaching

To meet the specific needs of interdisciplinary English teaching, the following specialized modules should be developed: 1) Interdisciplinary Knowledge Integration Engine: It can automatically identify and integrate knowledge points from different disciplines and generate interdisciplinary teaching content; 2) Cultural Comparative Analysis Tool: It supports comparative analysis of Chinese and Western cultures and helps students understand cultural differences; 3) Multimodal Interaction System: It supports integrated teaching through multiple media forms, including text, images, audio, and video; 4) Personalized Learning Path Planner: It designs personalized interdisciplinary learning plans according to students' disciplinary foundations and learning preferences.

3.2.5. Hardware Coordination and Classroom Management Optimization Plan

In response to the problems of uneven hardware configuration and low utilization rates, this study advocates a systematic solution. First, hierarchical and categorized hardware configuration standards should be established, and differentiated configuration plans should be formulated according to the actual conditions of different regions and schools. Second, a "centralized + distributed" deployment model should be adopted, in which core applications use high-performance server clusters, while edge applications adopt distributed deployment, thereby reducing costs and improving efficiency.

The specific measures include: 1) establishing a regional computing power sharing mechanism to realize the sharing of computing resources among schools within a region through cloud computing technology, thereby avoiding repeated investment; 2) developing lightweight AI applications for schools with relatively low hardware configurations, with low resource consumption and high operating efficiency; 3) establishing an equipment operation and maintenance service system to provide remote monitoring, fault diagnosis, and maintenance services for equipment, thereby improving equipment reliability and service life; 4) designing an intelligent equipment scheduling system to automatically allocate equipment resources according to teaching needs, thereby improving equipment utilization.

4. Conclusion

The era of artificial intelligence has provided unprecedented opportunities for the innovative development of interdisciplinary teaching in high school English. This

study systematically analyzes the basic concepts of interdisciplinary English teaching and artificial intelligence. Through an analysis of relevant literature, it further explores the challenges faced by interdisciplinary teaching in high school English in the era of artificial intelligence at the teacher level and at the level of teaching software and hardware, and proposes methods for solving the problem of teaching method transformation in high school English within this context.

The advent of the artificial intelligence era has not weakened the value of foreign language teachers; instead, it has placed higher demands on teachers' interdisciplinary vision and capacity for teaching method innovation. Interdisciplinary teaching in high school English should not be a rigid patchwork of knowledge from multiple disciplines, but rather a reconstruction of meaning with English as the connecting medium. In the face of technological challenges, we should adhere to the principle of human-centeredness and technology empowerment. Teachers need to continuously improve their digital literacy, flexibly use AI for context creation and scaffolding, and guide students to achieve comprehensive enhancement in language competence, cultural character, and thinking quality within authentic and complex interdisciplinary learning environments.

It is worth noting that artificial intelligence is a tool to assist teaching rather than a means of replacing teachers. In promoting innovation in interdisciplinary English teaching, teachers should always maintain the humanistic care of education and attend to students' holistic development and individualized growth. Future research may further explore the implementation of AI-supported interdisciplinary teaching, so as to provide more solid theoretical and practical support for the continued advancement of high school English teaching reform.

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