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Research on the Use of Gen AI in Teaching English Reading Comprehension in Senior High School

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Abstract: English reading comprehension serves as the core assessment carrier to implement the four dimensions of English subject core competencies, and it has occupied the largest proportion of scores in the new Gaokao English test nationwide. Nevertheless, reading instruction in central and western provinces such as Sichuan remains at the initial exploratory stage, confronted with prominent practical dilemmas including superficial text decoding, single-layered thinking training, and oversimplified evaluation feedback. The rapid iteration of generative artificial intelligence (Gen AI) provides innovative solutions to the above teaching bottlenecks. Grounded in Interactive Alignment Theory as well as Krashen's Input Hypothesis and Swain's Output Hypothesis, against the background of Sichuan's comprehensive new Gaokao reform, this study selects a Gaokao cross-cultural expository passage about Western campus volunteer culture as a typical case to systematically elaborate three-stage Gen AI reading teaching links: pre-class cultural context awakening and experiential compensation, in-class human-machine collaborative text analysis and logical inquiry, post-class differentiated consolidation and long-term personalized feedback. The research results demonstrate that Gen AI can act as a "cultural awakener", a "logical thinking scaffold", and a "multi-dimensional evaluation reference" throughout the whole reading teaching process. It effectively fills students' cross-cultural experiential gaps, expands their multi-angle text analysis perspectives, and extends the depth and timeliness of classroom feedback, so as to drive senior high English reading teaching to shift from mechanical vocabulary and grammar drilling to comprehensive core competency cultivation. This research constructs a replicable practical teaching paradigm for intelligent reading instruction in county-level senior high schools of central and western China under the new college entrance examination reform.

Keywords: GenAI, English Reading Comprehension, Senior High English, Human-Machine Collaboration, Core Competencies.

1. Background

The English Curriculum Standards for Senior High Schools (2017 Edition, Revised in 2020) defines linguistic competence, cultural awareness, thinking quality and learning ability as four core competency objectives of senior high English, requiring teachers to advance integrated competency development through comprehensive language practice activities. English reading comprehension is the core module to realize such teaching goals, and its theoretical foundation originates from the input-output interactive learning logic proposed by second language acquisition research. The whole reading process of "text input-cognitive internalization-thinking output" integrates information extraction, logical reasoning and cross-cultural interpretation, which perfectly matches the integrated learning concept advocated by core competency education.

Since Zhejiang Province first added continuation writing into Gaokao English test papers in 2016, comprehensive reading tasks including regular passages, seven-option-five matching and cloze have become compulsory test items across eastern provinces. In 2022, Sichuan Province fully launched the new Gaokao reform, further raising the assessment proportion and difficulty of reading comprehension. For inland central-western provinces like Sichuan, frontline English teachers have not yet formed systematic, standardized reading teaching frameworks and complete multi-dimensional evaluation standards. Meanwhile, daily reading teaching practice is trapped in multiple universal obstacles: students' superficial text reading without deep logical analysis, single classroom thinking activities, uniform and generalized feedback, and insufficient cross-cultural background support. All these problems jointly restrict the effective implementation of core competency-oriented reading classes[25]. In contrast, generative artificial intelligence, which has developed rapidly in recent years, opens up a new path to break through these teaching limitations. Different from traditional single-function intelligent scoring systems that only mark errors and calculate scores, Gen AI possesses powerful functions of material creation, multi-perspective text interpretation and customized learning guidance. It can generate diversified background materials to make up students' cultural experience shortages, provide multi-directional analysis perspectives to solve students' logical reasoning bottlenecks, and offer multi-dimensional diagnostic feedback covering text logic, cultural connotation and language expression, so as to remedy structural defects of current reading teaching such as insufficient thinking guidance and homogenized evaluation. Based on the above realistic teaching pain points of senior high reading classes in central-western regions, this study takes core competency cultivation as the fundamental research perspective, and explores operable human-machine collaborative reading teaching paths empowered by Gen AI, aiming to supply practical references for intelligent reading instruction under the new Gaokao system.

2. Core Concepts

2.1. Generative Artificial Intelligence (Gen AI)

At present, artificial intelligence tools applied to domestic and overseas English reading teaching are mainly divided into two categories: fixed intelligent scoring platforms and generative large language models. Foreign early intelligent reading systems are developed based on natural language processing technology, which can automatically score students' reading exercises and output detailed feedback covering grammar, vocabulary, text structure and reasoning logic. In the initial stage, such tools are only used to reduce teachers' manual correction burden and provide students with instant single-dimensional exercise guidance.

Domestic related research started relatively late but achieved rapid development in recent years, forming a batch of localized mature intelligent teaching platforms. For example, Pigai.org relies on massive corpus resources to quickly generate reading exercise scores and targeted comments, supporting students to revise their reading analysis notes repeatedly according to machine feedback, so as to improve the accuracy of text understanding through iterative modification. The iWrite intelligent foreign language teaching system developed by Professor Liang Maocheng's team is more compatible with domestic senior high teaching reality. It not only evaluates reading exercises from language, content and structural dimensions, but also develops a special reading comprehension module[19]. Supported by a large database of Gaokao reading materials, it guides students to complete deep text interpretation through interactive reading training, providing relatively comprehensive auxiliary support for daily reading teaching.

Gen AI can effectively improve teachers' lesson preparation and correction efficiency, supply students with instant multi-angle feedback and support repeated personalized learning, and accumulate abundant authentic text materials for teaching research. Nevertheless, its inherent limitations cannot be ignored. Existing generative models cannot accurately judge deep text connotation, implicit emotional logic and unique authorial attitudes. Besides, long-term over-reliance on machine analysis results will lead to students' thinking inertia and weaken their independent text interpretation ability.

2.2. English Reading Comprehension in Senior High School

The whole teaching process of senior high English reading comprehension follows the closed loop of "language input-language internalization-thinking output". Learners finish language input by reading complete passages with intact plots and themes, internalize vocabulary, sentence patterns, textual logic and cultural information after sorting out text clues, and finally realize thinking output through finishing comprehension exercises, text analysis and classroom discussion. Reading comprehension integrates information reception and logical expression, imitation and independent judgment, knowledge learning and practical application, which can promote foreign language acquisition with higher efficiency than separated single skill training.

This exam item comprehensively assesses students' lexical and grammatical accuracy, structural logic, content completeness, textual cohesion, as well as their ability to express emotional attitudes, cultural values and cross-cultural communication competence. Wang Chuming first clarified the internal learning logic of reading comprehension, defining it as text analysis based on linguistic input, which organically combines input and output, imitation and independent thinking[15]. Its core value lies in breaking the long-standing separation of reading and thinking in traditional English classes, and cultivating students' text comprehension ability and critical thinking spirit simultaneously.

The learning promotion effect of reading comprehension is reflected in multiple dimensions. As Wang Min and other scholars verified through empirical research, learners will repeatedly reuse linguistic structures and situational logic extracted from original texts during analysis and expression, forming obvious alignment effects between learners' thinking and text setting[20]. Furthermore, compared with reading Chinese passages and analyzing in English, reading original English texts directly can greatly reduce students' grammatical errors and logical deviations in reasoning activities.

3. Theoretical Foundations

3.1. Interactive Alignment Theory

Interactive Alignment Theory originates from the Interactive Alignment Model proposed by Pickering and Garrod, which points out that alignment effects are generated in all interactive communication activities and serve as the core guarantee of smooth information transmission[2]. This model holds that all participants in communication will dynamically adjust their expression and thinking modes in interaction, producing convergence and alignment in mental representations[4]. Such alignment covers not only linguistic layers including vocabulary and syntax, but also situational model dimensions such as character relationships, time and space background, causal logic and implicit communicative intentions[23].

The teaching design of reading comprehension is built exactly on this theoretical basis. Wang Chuming pointed out that foreign language learning efficiency is positively correlated with the integration degree of language comprehension and production [15]; the tighter the combination of reading input and thinking output, the stronger the alignment effect. On this basis, Wang Chuming systematically expounded the internal learning mechanism of reading teaching, defining reading comprehension as a learning activity that requires students to interact with static texts to complete situational alignment[16]. Its biggest advantage is the organic integration of text imitation and independent logical creation. Wang Chuming further put forward the core guiding principle of reading teaching: "Logical reasoning comes from independent creation, linguistic understanding relies on text imitation, and creation and imitation must be closely integrated."[17]. Reading comprehension teaching fully embodies this principle and becomes an optimal path to realize foreign language acquisition through the combination of imitation and independent thinking. Empirical research conducted by Wang Min & Wang Chuming proved that learners will automatically extract and reuse linguistic structures and situational clues from reading passages in the process of analyzing exercises, forming stable alignment effects between students' thinking and original texts.

3.2. Input Hypothesis and Output Hypothesis

Krashen's Input Hypothesis puts forward that effective

language acquisition must rely on comprehensible input, namely learning materials slightly higher than learners' current linguistic level[1]. On the contrary, Swain's Output Hypothesis supplements that simple input cannot fully promote all-round language development [3]; learners must carry out targeted language output to test their internal linguistic assumptions, so as to improve the accuracy, fluency and appropriateness of language use. Reading comprehension perfectly integrates input and output links: reading original texts completes systematic language input and helps students master text themes and writing styles; exercise analysis, classroom discussion and written text comments constitute multi-form language output, enabling students to conduct logical expression on the basis of text imitation. Relevant empirical research[8] proved that systematic reading training can significantly improve the accuracy, complexity and fluency of students' English language use. In the combing of empirical research on input-output theory, Xu Jinfen and other scholars found that the learning promotion effect of reading comprehension has been widely verified, and its alignment effect is affected by multiple factors such as text difficulty, students' familiarity with topics and the frequency of classroom interaction.

3.3. Combination of Two Core Theories and Gen AI Reading Teaching

From the perspective of Interactive Alignment Theory, Gen AI can participate in reading teaching as an independent "alignment dialogue partner". Wang Chuming emphasized that the core learning effect of reading comprehension comes from structural priming, that is, learners automatically imitate linguistic and logical structures in texts during output activities. In the text interpretation stage, Gen AI can supply diversified text analysis perspectives as external reference objects, expanding students' cognition of the situational model hidden in passages. In the logical reasoning stage, multi-dimensional analysis directions generated by AI act as thinking scaffolds. After comparative screening and independent reconstruction, students can realize deeper situational alignment with original texts-rather than passively accepting machine analysis results, they form their own judgment standards through dialogue with AI[10]. From the perspective of Input and Output Hypothesis, Gen AI can assist teachers in selecting and generating reading materials with moderate difficulty to optimize the quality of classroom input. Its instant diagnosis and multi-angle revision suggestion functions expand the boundary of teaching feedback, providing students with continuous personalized guidance to promote iterative learning. Liu Jianda pointed out that intelligent artificial intelligence systems can diversify and personalize classroom evaluation, pushing English education from unified standardized teaching to individualized instruction that suits students' aptitude[11].

4. Current Dilemmas of Senior High English Reading Teaching

4.1. Dilemmas Restricting Teachers' Reading Instruction

4.1.1. Rigid Solidification of Conventional Teaching Models

All reading teaching frameworks need to be dynamically adjusted according to text themes and students' learning levels. However, in current daily reading classes, most teachers mechanically copy the fixed PWP teaching model, namely pre-reading preparation-while-reading text analysis-post-reading exercise consolidation, or simply adopt model essay demonstration teaching mode: teachers lead students to sort out sample analysis templates, organize unified reading training, carry out collective guided explanation, and finally assign independent reading exercises. Reading comprehension teaching focuses on cultivating students' logical thinking and independent judgment ability, yet Chen Kang carried out questionnaire surveys targeting frontline senior high English teachers and found that when teachers design reading lessons referring to Gaokao scoring standards, they will revise evaluation dimensions according to personal teaching experience[5]. Partial subjective revisions produce obvious deviations, directly reducing the quality of instructional design. The core reason lies in that reading teaching requires teachers not only to clarify exercise requirements, but also to guide students to conduct in-depth text analysis: sorting out text structural frameworks, analyzing character personalities and interrelationships, distinguishing main plot clues, all of which are closely connected with subsequent reasoning exercises. Mechanically copying fixed teaching modes will inevitably lead to superficial teaching effects.

In addition, traditional reading teaching mostly relies on unified standard analysis models provided by teaching reference books, requiring students to find gaps between their own analysis and standard answers to realize imitation learning. Imitation is an effective learning method for reading comprehension, but the standard analysis frameworks compiled by proposition experts have logical thinking modes inconsistent with ordinary senior high students. Therefore, in follow-up reading teaching, teachers should take excellent student analysis notes as major reference materials instead of only relying on expert-written standard templates[18]. Rigid and unchanged teaching models will bind students' divergent thinking, and finally lead to unsatisfactory reading teaching outcomes.

4.1.2. Misplaced Teaching Focus Leading to Low Classroom Efficiency

Most teachers narrow down the core teaching goal of reading "textual coherence" into mechanical training of logical connection words in practical teaching. Tong Yajun accumulated abundant experience in online Gaokao marking and summarized prominent defects in students' reading analysis: superficial text understanding leads to serious deviation between reasoning conclusions and original text themes, low situational alignment and chaotic logical cohesion[14]. The root cause is that teachers degrade "discourse coherence", a comprehensive competency covering plot logic, emotional clues and reader expectation, into simple linguistic splicing skills at the sentence level. Sun Xu sorted out three common problems in students' reading answers: inconsistent themes with original texts, disjointed content and mismatched linguistic style, whose fundamental source is students' shallow reading of passage backgrounds[13]. Such teaching reflection reveals teachers' misunderstanding of reading comprehension assessment attributes: although exercises are the output carrier, the core of reading test is to examine students' deep text comprehension, independent logical thinking and textual construction ability to maintain situational alignment with original passages, rather than merely examining linguistic accuracy and the richness of cohesive markers.

Specifically, time-consuming and low-efficiency classroom teaching originates from two layers of imbalance: first, the imbalance between superficial linguistic training and deep thinking construction-massive class time is occupied by vocabulary memorization and sentence translation drills, while core thinking activities including text logic deduction, emotional context sorting and foreshadowing echo analysis are ignored. Second, the dislocation between teaching methods and core objectives: cohesive words, which only serve as tools to realize textual coherence, are promoted to core teaching objectives. As a result, students can pile up various logical markers in their exercise answers, but their reasoning content still lacks substantive coherence with original texts in plot logic and emotional tone.

From this perspective, such teaching behavior essentially replaces core cognitive and emotional competency training with trivial linguistic knowledge explanation, reflecting deviated cognition of reading teaching objectives. To improve teaching efficiency, teachers must shift teaching focus from isolated language form training to holistic grasp of text themes, logical deduction of plot development and delicate perception of emotional expression. Only in this way can linguistic cohesion truly serve meaningful textual coherence, rather than becoming decorative skills to cover fragmented thinking. Correcting such misplaced teaching objectives is the key to transforming reading teaching from exam-oriented mechanical training to core competency cultivation.

4.2. Structural Pain Points of Reading Evaluation and Feedback

4.2.1. Homogenization and Superficialization of Feedback Content

Most feedback students receive only contains scores or simple label comments such as "good analysis". Such feedback can only inform students of final learning results, without excavating the root causes of reasoning errors. Students cannot clearly recognize specific deviations in their reading answers covering core dimensions: whether reasoning logic echoes text foreshadowing, whether emotional judgment is natural and reasonable, and whether textual cohesion is smooth. The diagnostic function of feedback fails to work, and even if students intend to improve their reading ability, they lack clear targeted directions. A research published in Teaching Monthly pointed out that current classroom reading evaluation generally falls into a "three-no dilemma": no student-participated mutual evaluation, no detailed decomposed scoring standards, and no whole-process formative evaluation, which restricts evaluation from playing a role in promoting students' learning.

4.2.2. Supply-Demand Imbalance of Targeted Feedback

Teachers are not unwilling to provide detailed personalized feedback, but trapped by three practical objective constraints: first, time and energy limits-senior high teachers bear heavy teaching tasks and face large class sizes, the labor cost of multi-dimensional detailed correction for every student's reading analysis notes far exceeds teachers' bearing capacity. Second, insufficient professional training-partial teachers, especially those with short teaching experience of new Gaokao reading items, cannot fully master multi-dimensional evaluation dimensions of reading comprehension, and schools lack systematic special training for reading teaching. Third, continuous attenuation of feedback effectiveness-many teachers have tried detailed annotated correction, but encountered students' universal "feedback apathy": students only pay attention to final scores, ignore detailed comment suggestions, and repeatedly make identical reasoning errors in follow-up exercises. This mismatch between teachers' correction input and students' learning output gradually weakens teachers' initiative to invest energy in detailed feedback.

4.2.3. One-way Transmission and Time Lag of Interactive Feedback

Instant interactive feedback is extremely scarce in daily reading classes. Teaching activities are dominated by teachers' unilateral explanation, compressing the space for teacher-student dialogue and student mutual discussion. Faced with students' classroom text analysis outputs, teachers' feedback only stays at absolute judgment words like "correct" or "wrong", lacking further guiding questioning and layered detailed elaboration. This phenomenon prevents students' complete thinking processes from being displayed, observed and corrected, making reading learning stay at passive reception permanently.

The essential root of the above feedback pain points is the structural mismatch between reading comprehension, a complex multi-dimensional competency assessment item, and traditional result-oriented, single, one-way feedback modes[21]. The existing evaluation system cannot keep pace with actual reading teaching demands, leading feedback to lose its function of promoting learning and degenerate into formalized repetitive work that consumes teachers and students.

4.3. Dilemmas Existing in Students' Reading Learning Process

4.3.1. Superficial Cognition in Text Reading Stage

The core of reading comprehension teaching lies in the alignment between text input and students' independent thinking. Ma Xu pointed out that most students only stay at surface literal understanding when interpreting reading passages, failing to extract logical reasoning clues that can guide subsequent exercise analysis from texts, resulting in low consistency between their reasoning conclusions and original text settings[12]. Tong Yajun summed up typical errors during marking Gaokao papers: examinees' misunderstanding of character relationships and core vocabulary in passages leads to serious plot deviation. For example, some students failed to capture the conflict between two protagonists in the original text and wrote unreasonable follow-up plots completely inconsistent with text logic[14].

4.3.2. Logical Deviation in Reasoning Construction Stage

Reading comprehension reasoning answers must maintain internal consistency with original texts in plot development, character personality and emotional tone. Sun Xu classified students' reading errors into three major types: inconsistent theme orientation, disjointed content logic and mismatched linguistic style[13]. Tong Yajun further found that students often fabricate plots violating common sense of life in reasoning activities; for instance, writing friendly greetings between characters who have intense conflicts in the original text, and such reasoning content lacks basic rationality and authenticity[14].

4.3.3. Dual Distortion in Linguistic Expression Stage

Problems in linguistic expression are divided into two levels: accuracy distortion and native expression distortion. Error analysis-based research shows that students' reading answer drafts contain part-of-speech misuse, incomplete

sentence structures and Chinglish expressions, with obvious gaps between students of different proficiency levels. Influenced by Chinese thinking transfer, students construct English sentence structures fully according to Chinese word order, producing expressions recognizable in vocabulary but seriously inconsistent with native English logic.

4.3.4. Lack of Independent Innovation in Theme Reasoning

When students' cognitive resources are mostly consumed by basic text decoding, they have almost no spare energy to carry out innovative independent reasoning. Tong Yajun pointed out two common phenomena: some students misjudge text themes, leading to forced promotion of themes disconnected from original passage connotation; others mechanically add rigid inspirational reflections to plain narrative texts, making thematic promotion unnatural and redundant[14]. Such cognitive deviations result in students' reading answers either falling into rigid fixed templates or fabricating imaginary plots divorced from text context.

5. Specific Case Analysis

Current educational research has fully discussed the practical application paths and innovative teaching modes of generative artificial intelligence in basic English classrooms [7]. Integrating Gen AI into reading comprehension teaching can realize all-round optimization of teaching content, classroom organization forms and evaluation feedback mechanisms.

5.1. Optimization of Reading Teaching Content Orientation

At the level of teaching content design, Gen AI can help teachers avoid misplaced teaching priorities, fix core teaching objectives, and prevent reading teaching from shifting from holistic text analysis to isolated sentence and vocabulary training. As Kong Lei pointed out, foreign language instructional design based on generative large models must clearly distinguish core teaching contents before and after class[9].

With the assistance of Gen AI, teachers can assign basic text sorting tasks including passage structural frameworks, core themes, key vocabulary and grammar patterns as students' pre-class autonomous learning content during lesson preparation. This design can greatly save limited classroom time and reduce teachers' repetitive lesson preparation burden, while cultivating students' autonomous preview habits and promoting independent learning ability. Classroom teaching time can be fully used to train students' reading strategy application, logical thinking development and correct emotional value orientation. By adjusting teaching focus to core competency cultivation, classroom teaching efficiency is effectively improved, and students' learning objectives become clearer. Students can obtain personalized text understanding materials before class to realize targeted learning in class. The integrated pre-class and in-class teaching mode not only meets students' individualized learning demands, but also stimulates the development of critical thinking and autonomous learning ability, and finally helps students form sustainable learning competence applicable to long-term study and real-life scenarios.

5.2. Innovation of Human-Machine Collaborative Classroom Organization Forms

Traditional reading teaching modes such as PWP have limited flexibility and cannot fully explore the core themes and deep connotations hidden in reading passages, while Gen AI supplies teachers with more diversified and flexible instructional design paradigms for reference. To elaborate the specific operation paths of Gen AI empowered reading teaching, this study selects a real reading passage from senior two final exam as the teaching case. The text takes Western campus volunteer culture as the core narrative carrier, depicting the identity confusion of overseas teenagers when participating in campus volunteer activities, whose theme highly matches the "cultural awareness" core competency emphasized in the National Curriculum Standards, with prominent teaching research value.

The core conflict of this passage lies in the balance between teenagers' willingness to integrate into peer groups and their adherence to native cultural traditions. This theme highly fits the cultural awareness training goal proposed in The English Curriculum Standards for Senior High Schools (2017 Edition, Revised in 2020)-students need to establish cultural awareness and master cross-cultural communication skills on the basis of understanding cultural differences[24].

From the perspective of teaching practice, the biggest obstacle of this text lies in that students from inland central-western provinces such as Sichuan lack real-life experience related to overseas campus volunteer systems. If students cannot establish emotional resonance with text themes, their subsequent reasoning analysis will degenerate into mechanical linguistic exercises, failing to reach core evaluation standards including emotional coherence and thematic consistency. Therefore, instructional design must take breaking students' "experiential gap" as the primary precondition.

5.3. Three-stage Gen AI Instructional Design Path for Reading Comprehension

The following sections take this volunteer culture reading passage as an example to elaborate the specific application modes and core value of Gen AI in pre-class, in-class and post-class reading teaching links.

5.3.1. Pre-class: Cultural Context Awakening and Emotional Experience Complement

At the preliminary preparation stage of reading teaching, teachers can utilize Gen AI's information retrieval and material aggregation functions to develop teaching resources centered on the core theme of cross-cultural volunteer identity. Specifically, teachers input targeted prompts: "Retrieve typical cultural identity conflict cases in recent years, focusing on cross-cultural confusion and identity dilemmas of Chinese teenagers studying overseas; cases should be typical, timely and suitable for senior high classroom discussion." AI can rapidly integrate multiple groups of real case materials. For example, the experience of overseas Chinese teenagers who deliberately abandon native cultural customs to cater to Western peers, and finally become marginalized groups rejected by both cultures, highly echoes the protagonist's core dilemma of hiding native cultural characteristics to integrate into peer groups in the reading text.

Based on cultural case materials generated by Gen AI, teachers can design standardized pre-class tasks: divide

students into small groups to sort out information and organize discussion viewpoints around AI-supplied cases, and arrange a mini classroom debate at the beginning of formal class with the topic "Should teenagers actively cater to mainstream foreign cultures or stick to their own native cultural traditions?"[22]. During debate preparation, students need to sort out the background and choices of characters in AI cases, and reflect on their own attitudes toward cross-cultural differences.

The core value of Gen AI in this pre-class stage is "emotional awakening" and "experiential compensation". The teaching effect of reading comprehension first depends on the depth of students' emotional resonance with text themes. Gen AI transforms abstract cross-cultural identity theories into specific, understandable individual life stories through rapid screening of typical cases, enabling students to establish stable emotional connections before contacting formal reading texts. This "emotion-first" instructional design effectively solves the problem of students' shallow text analysis caused by insufficient life experience. Meanwhile, AI's automatic material aggregation function liberates teachers from tedious manual resource collection, allowing teachers to focus energy on classroom activity design and students' thinking guidance.

5.3.2. In-class: Deep Text Interpretation and Human-Machine Collaborative Logical Reasoning

The core of classroom teaching implementation is human-machine collaborative interaction to deepen students' understanding of cross-cultural themes and form reasonable text reasoning conclusions.

Stage One: Human-Machine Dialogue for Multi-dimensional Text Analysis. Students extract key details reflecting cross-cultural conflicts in the passage, such as the protagonist's embarrassment when participating in volunteer activities and the psychological gap between local students and overseas teenagers, and carry out group discussion. After group communication, teachers input identical text analysis questions into Gen AI[6]. Students compare their own group discussion conclusions with multi-angle interpretive viewpoints generated by AI, take machine output as reference to deepen text understanding, and critically judge biased content in AI analysis results. Through such dialogue comparison activities, students gradually form in-depth cognition of the text's cultural core and independent text interpretation ability.

Stage Two: Collaborative Logical Reasoning with Critical Screening of AI Output. On the basis of students' grasp of text cross-cultural conflicts, teachers demonstrate standardized prompt design skills: input specific text details such as the protagonist's hesitation before volunteer activities and local peers' curiosity about foreign cultures, and guide Gen AI to generate three reasoning development directions focusing on peer acceptance, independent cultural awakening and cross-cultural mutual understanding. Students take four evaluation dimensions including text foreshadowing echo, natural emotional change, thematic consistency and life rationality as standards to critically assess AI-generated reasoning paths. In this process, students will eliminate machine reasoning schemes lacking emotional authenticity, and select reasoning logic presenting gradual transformation from cultural inferiority to cultural self-confidence as the core analysis direction.

Stage Three: AI-assisted Classroom Feedback and Internalization of Evaluation Standards. After students finish their independent reasoning drafts, teachers import anonymized student exercise samples into Gen AI to obtain multi-dimensional diagnostic feedback covering thematic consistency, emotional logic and linguistic appropriateness. Students compare AI diagnostic comments with peer mutual evaluation results, distinguish the respective advantages and defects of two evaluation modes. Through this comparative dialogue activity, students internalize special reading evaluation standards matching cross-cultural texts, and recognize that high-quality reading reasoning answers focus on gradual presentation of cultural self-awareness rather than simple accumulation of linguistic knowledge.

In this stage, Gen AI undertakes three core roles: logical thinking scaffold, critical dialogue partner and multi-dimensional evaluation reference. It supplies diversified reasoning directions when students face logical bottlenecks, provides comparative interpretive perspectives for deep text analysis, and supports students to form independent judgment standards through critical screening instead of passively accepting all machine output content.

5.3.3. Post-class: Differentiated Consolidation and Sustained Personalized Feedback

The post-class teaching stage aims to help students internalize classroom learned text analysis methods into stable cognitive habits, and realize continuous learning improvement through accurate targeted feedback. Gen AI plays dual core functions in this link: automatic differentiated task generation and instant multi-dimensional diagnosis, supplying operable personalized teaching paths.

First, intelligent generation of differentiated consolidation tasks. In traditional reading teaching, teachers need to manually design targeted consolidation exercises corresponding to reading texts or assign unified sample analysis memorization tasks after class. Such unified assignments lack pertinence for students at different learning levels and consume massive lesson preparation time. Generative large models possess the capability of automatic high-quality exercise creation, assisting teachers to rapidly design layered tasks according to students ' classroom performance differences, taking the volunteer culture reading passage as an example, teachers input differentiated teaching prompts into AI to obtain consolidation tasks matching three learning levels (see Table 1).

Table 1. Examples of Differentiated Reading Consolidation Tasks Generated by Gen AI

Task Level	Target Student Group	AI-Generated Task Content
Basic	Students with weak text comprehension ability	Sort out core vocabulary reflecting cross-cultural conflict; locate literal information in the passage and finish basic detail comprehension questions
Advanced	Students with insufficient logical reasoning ability	Analyze the changing track of the protagonist's inner emotions; summarize the complete logical structure of the whole text
Challenge	Students with advanced reading proficiency	Write short analysis comments comparing Chinese and Western campus volunteer cultural concepts; explain how your analysis echoes the core theme of the original text

These layered consolidation tasks rapidly generated by Gen AI keep consistent with classroom teaching themes, and accurately match students' zone of proximal development,

transforming post-class consolidation from unified repetitive training to individualized aptitude teaching.

Second, extended support of personalized reading feedback. The lack of targeted post-class feedback is a universal pain point in current reading teaching: students' exercise papers only carry simple scores or vague general comments, without clear improvement directions for long-term learning. Gen AI breaks the time and space limits of classroom feedback: students upload their reading exercise drafts to Gen AI to obtain multi-dimensional learning diagnostic reports; teachers can also select typical student error samples to generate unified classroom comment templates for reference. More importantly, AI can supply personalized revision suggestions according to students' actual linguistic proficiency, making feedback truly undertake the function of promoting continuous learning progress (see Table 2).

Table 2 Examples of Gen AI Diagnosis and Optimization Suggestions for Students' Reading Reasoning Errors

Error Dimension	Excerpt of Students' Reading Answers	AI Diagnostic Feedback & Targeted Improvement Suggestions
Logical Reasoning	Failed to sort out the causal relationship between volunteer activity participation and peer attitude, leading to wrong inference questions!"	Your reasoning ignores the background restriction described in Paragraph 3. Suggestion: Mark causal signal words while reading and sort out complete event chains in advance
Cultural Comprehension	Unable to grasp the core value orientation of Western campus volunteer culture	Insufficient reserve of relevant cross-cultural background knowledge; attached supplementary cultural reading materials for you to expand cross-cultural cognition
Text Structure	Cannot divide paragraph layout and extract the central idea of the whole passage	The passage follows the structural logic of "phenomenon presentation—cultural interpretation—value significance"; AI generates structural mind map for your reference

Students can compare their own reasoning drafts with AI optimized analysis versions to learn methods of deepening emotional description and enriching text detail analysis. Teachers can also collect typical error types summarized by AI to design centralized targeted remedial training, realizing precise individualized teaching.

The core value of Gen AI in the post-class stage is reflected in "personalized learning support" and "sustained multi-dimensional feedback". AI's rapid material generation capability transforms differentiated teaching concepts into operable classroom practice, liberating teachers from repetitive exercise design labor; its instant diagnosis and revision suggestion function extend the time boundary of effective teaching feedback, promoting reading teaching to shift from unified standardized instruction to individualized aptitude education, and cultivating students' autonomous error sorting and self-improvement awareness, which is the concrete embodiment of the "learning to learn" competency advocated by core competency education.

6. Conclusion

To sum up, integrating Gen AI into senior high English reading comprehension teaching does not mean artificial intelligence replaces teachers' dominant position in classrooms, but constructs a brand-new human-machine collaborative reading teaching model with three core functional links: cultural experience awakening, logical thinking scaffold and personalized learning support. The instructional design taking cross-cultural volunteer reading passages as cases verifies that Gen AI can make up students' insufficient cross-cultural life experience before class, supply diversified multi-angle interpretive perspectives to deepen logical reasoning thinking in class, and realize layered consolidation training and long-term targeted personalized feedback after class.

This three-stage human-machine collaborative teaching path effectively solves common universal dilemmas in reading teaching of central-western senior high schools, including superficial text interpretation, rigid solidified classroom teaching modes and homogenized single-layered evaluation feedback. It promotes the transformation of reading teaching from mechanical repetitive linguistic skill drilling to all-round core competency cultivation, and provides a replicable practical teaching paradigm for intelligent English reading instruction under the new Gaokao reform in inland central-western provinces.

This research also has certain limitations. Teachers need to formulate clear classroom usage norms to restrict students' over-dependence on machine text analysis results, avoiding the decline of students' independent reading and thinking ability. Follow-up research can combine long-term classroom empirical data to further optimize the matching mode between Gen AI tools and each link of reading teaching.

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