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THE CONSTRUCTION OF SELF-REGULATION PROMOTION STRATEGY AND EFFECT EVALUATION SYSTEM FOR SECONDARY SCHOOL ENGLISH ONLINE TEACHING: BASED ON INTELLIGENT LANGUAGE MODELING

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Abstract: This paper focuses on the application of intelligent language modeling in secondary school English online teaching, aiming to enhance students' learning autonomy, language proficiency and learning effect by constructing self-regulation facilitation strategies and effect evaluation system. Combining the technical advantages of intelligent language models, the study designs application scenarios such as personalized learning path generation, intelligent interaction and real-time feedback, automated assessment and diagnosis, and proposes self-regulation facilitation strategies such as meta-cognitive ability development, motivation maintenance mechanism, and behavior monitoring and intervention. Meanwhile, the study constructs an effect evaluation system containing process evaluation matrix, dynamic evaluation model and evaluation result application to comprehensively assess students' learning effectiveness. Through the empirical analysis of application cases, the effectiveness and feasibility of the intelligent language model in secondary school English online teaching are verified. This paper provides a new theoretical framework and practical path for secondary school English online teaching, which is of great significance for promoting the development of education information and intelligence.
Keywords: Intelligent language modeling; Online teaching; Self-regulation; Quality evaluation

1 INTRODUCTION

With the rapid development of information technology, online education has become an important trend in the global education field. As an important part of it, secondary school English online teaching not only breaks the time and space limitations, but also provides students with richer and more diverse learning resources and learning methods. However, secondary school English online teaching also faces many challenges, such as students' lack of independent learning ability, difficulty in maintaining learning motivation, and difficulty in monitoring learning behavior. These problems constrain the effectiveness and quality of secondary school English online teaching and need to be solved urgently. Intelligent language modeling, as an important branch in the field of artificial intelligence, has powerful natural language processing ability and learning ability, which provides a new solution for secondary school English online teaching[1]. In recent years, the application of intelligent language modeling in the field of education has gradually received widespread attention. By learning a large amount of text data, language models are able to generate coherent and reasonable texts to provide students with personalized learning experiences. In terms of intelligent teaching and personalized tutoring, the language model shows great potential[2-3]. It can generate personalized learning resources and tutoring suggestions based on students' learning needs and interests to help them solve learning problems. At the same time, the language model can also generate teaching resources and tutoring suggestions in real time to provide students with immediate learning support. In secondary school English online teaching, the application of intelligent language modeling is promising[4]. On the one hand, secondary school English, as a language subject, focuses on cultivating students' listening, speaking, reading and writing skills. Intelligent language modeling can help students improve their English speaking skills by simulating real language environments and providing them with rich speaking practice opportunities. On the other hand, secondary school English online teaching needs to pay attention to students' personalized needs. Intelligent language models can generate personalized learning paths and practice questions according to students' learning progress and ability level to meet students' differentiated learning needs[5]. However, although intelligent language modeling has great potential for application in secondary school English online teaching, its practical application still faces many challenges. For example, how to ensure that the content generated by the language model meets the teaching requirements? How to evaluate the impact of language modeling on students' learning outcomes? How to build an effective evaluation system to comprehensively assess students' learning effectiveness? All these issues need to be further researched and explored.

In order to deeply explore the application of intelligent language modeling in secondary school English online teaching, this paper aims to construct a self-regulation facilitation strategy and effect evaluation system. Through the design of application scenarios such as personalized learning path generation, intelligent interaction and real-time feedback, automated assessment and diagnosis, as well as the proposal of self-regulation facilitation strategies such as meta-cognitive ability development, motivation maintenance mechanism, and behavioral monitoring and intervention, this paper expects to provide a new theoretical framework and practical path for secondary school English online

teaching. Meanwhile, by constructing an effect evaluation system that includes a process evaluation matrix, a dynamic evaluation model, and the application of evaluation results, this paper will comprehensively assess the effect of the application of intelligent language modeling in secondary school English online teaching, and provide a useful reference for future educational practice.

2 STATUS OF RESEARCH

2.1 Application of Intelligent Language Modeling in Education

Intelligent language models are increasingly used in education, and their powerful natural language processing and learning capabilities provide strong support for educational innovation. By learning a large amount of text data, language models are able to generate coherent and reasonable texts to provide students with personalized learning experiences. In terms of intelligent teaching and personalized tutoring, language models show great potential. On the one hand, intelligent language models can be used to generate personalized learning resources. For example, the Knewton platform in the United States analyzes student behavior data through machine learning algorithms to generate personalized learning paths for English learners[6]. The platform dynamically adjusts the difficulty of learning content according to the students' learning progress and ability level, from simple scenarios such as "asking for directions at the airport" to complex scenarios such as "academic debates". The Canadian Grammarly tool not only corrects grammatical errors, but also provides vocabulary upgrading suggestions to help students improve their English writing skills[7]. On the other hand, intelligent language models can be used to provide intelligent interaction and real-time feedback. Based on the GPT-4 architecture, the intelligent language modeling virtual teaching assistant introduced in UK universities can understand the complex questions asked by students and provide detailed answers to students by generating comparison tables and attaching links to BBC documentary clips[8]. The Australian Educational Game Platform (AEGP) uses intelligent language modeling to design the "English Adventure Island" task, in which students are required to complete grammar puzzles, pronunciation challenges, and other levels, and the points can be exchanged for virtual medals, thus enhancing learning engagement[9]. In addition, intelligent language modeling can be used for automated assessment and diagnosis. The Singapore Intelligent Language Model Assessment System uses a hybrid BERT-CNN model to semantically analyze writing, not only detecting grammatical errors, but also assessing logical coherence and cultural sensitivity[10]. The American Turnitin tool, on the other hand, combines anti-plagiarism detection and writing guidance functions to provide students with originality scores and sentence optimization suggestions by comparing a massive academic corpus[11].

2.2 Current Situation and Challenges of Teaching English Online in Secondary Schools

Online teaching of English in secondary schools was widely used during the epidemic, but it also revealed many problems. On the one hand, there is the problem of insufficient ability to operate the online teaching platform and teaching ability on the part of teachers. Many teachers, especially veteran teachers, are unfamiliar with the use of online teaching platforms, resulting in lower classroom efficiency. On the other hand, students have problems such as poor self-discipline and difficulty in maintaining learning motivation. Online teaching relies on student autonomy, but secondary school students have weak self-control and are easily distracted or avoid learning. In addition, secondary school English online teaching faces the challenge of limited interaction and fun. The online mode is difficult to provide an authentic language environment, reducing classroom interaction and student engagement. Meanwhile, technological and environmental barriers also affect teaching effectiveness, such as network stability, device compatibility and insufficient home supervision. The Finnish K12 school system uses the Knewton Alta platform, which generates a weekly program that includes "vocabulary building," "grammar focus," "listening training," and a weekly plan that includes "vocabulary building," "grammar focus," "listening training," and so on. After students input their learning objectives, the system includes a weekly plan with "vocabulary building", "grammar intensive" and "listening training", and automatically assigns study periods through a calendar algorithm. The learning analytic system developed by the International University of Applied Sciences in Germany analyzes the reflection logs submitted by students through NLP technology, extracts themes such as "learning disabilities" and "strategy adjustment", and generates structured feedback templates[12]. Claude, a virtual lab assistant in Singapore, uses eye-tracking data to identify learning distractions[13]. A Canadian special education school used Khanmigo role-playing AI to simulate a "supermarket shopping" scenario for students with autism. The students were asked about the price of goods in English, and the AI adjusted the complexity of the conversation according to the fluency of the conversation[14].

2.3 The Potential of Intelligent Language Modeling in Online English Teaching in Secondary Schools

Intelligent language modeling has great potential for application in secondary school English online teaching. On the one hand, intelligent language models can meet students' differentiated needs by dynamically adapting learning resources. For example, the Singapore Intelligent Language Model Evaluation System generates personalized learning paths and practice questions based on students' learning progress and ability levels. On the other hand, the intelligent language model can improve students' speaking skills through intelligent interaction and real-time feedback. The intelligent language modeling virtual teaching assistants introduced in UK universities can understand the complex

questions asked by students and provide detailed answers [15]. In addition, intelligent language models can optimize teaching strategies through automated assessment and diagnosis. The Finnish teacher's dashboard displays a heat map of the class's knowledge mastery in real time, marking weak points such as "present perfect tense", and the system automatically pushes micro-lesson videos and targeted exercises[16]. At the same time, the intelligent language model can also be combined with cross-modal learning support to simulate real language scenarios. The AI learning partner developed in Japan is based on the ZPD theory and adjusts the challenge level according to students' unit test performance[17]. For example, after students complete the basic reading for three consecutive times, the system automatically pushes the Economist Junior article with vocabulary explanations and background knowledge cards.

2.4 Synthesis of Research

Current research has fully verified the technical feasibility of intelligent language models in secondary school English online teaching, and has carried out practical exploration around the directions of personalized learning, intelligent interaction, and automated assessment. However, existing studies still have the following deficiencies. First, there is insufficient attention to ethics and data security. Most studies focus on the realization of technical functions, but lack systematic exploration of ethical issues such as privacy protection of learning data and algorithmic bias. Second, the path of teacher role transformation is missing. Existing programs overemphasize the application of technological tools, and do not fully explain how teachers can transform from "knowledge transmitters" to "collaborative educators of intelligent language models". Second, the depth of mixed reality integration is insufficient. Although "intelligent language modeling + MR" technology shows the potential of immersive learning, most studies still remain in the proof-of-concept stage and lack of large-scale application cases. Finally, the diversity of learners is not enough. There is a lack of customized solutions for special education needs groups (e.g., autistic students, ADHD students).

3 COGNITIVE CHARACTERISTICS AND MODERATING NEEDS OF ONLINE ENGLISH TEACHING IN SECONDARY SCHOOLS

3.1 Cognitive Uniqueness of English Learning in Secondary Schools

English, as a pinyin writing system, is fundamentally different from Chinese in terms of cognitive processing pathways. fMRI studies have shown that the activation intensity of the left temporal lobe of the brain when Chinese students process English is only 63% of that of native speakers, and that conflicting "phoneme-grapheme" mappings lead to delayed response times. Meanwhile, the proportion of culturally specific items in secondary English textbooks is as high as 37%. Table 1 systematically presents the significant deficiencies of the three core competency dimensions of English in traditional online teaching and their corresponding intelligent language modeling solutions.

Table 1 Core Issues in Secondary English Subjects

Capability dimension	Deficiencies in traditional teaching	Intelligent Language Modeling Solutions
Oral communication [18]	Feedback delay > 24 hours	Real-time pronunciation correction (phoneme-level analysis)
Reading comprehension [19]	Text is abstract and difficult to understand	Syntax tree visualization + contextual animation
Cultural awareness [20]	Lack of scenario realism	Dynamic generation of cultural scenarios

As shown in Table 1, in the oral communication dimension, traditional teaching suffers from the timeliness problem of feedback lag of more than 24 hours, while the intelligent language model realizes millisecond pronunciation error correction through real-time phoneme-level analysis techniques (e.g., resonance peak trajectory tracking and minimal pair comparison). In the dimension of reading comprehension, to address students' cognitive overload due to the abstract nature of the text, the intelligent language model drives dynamic syntactic parsing tools to visualize complex sentence structures as interactive syntax tree animations, and generates contextual presentations (e.g., 3D reconstruction of the social scene of Pride and Prejudice) in line with the theme of the text. In the dimension of cultural awareness, traditional teaching is limited by the lack of authenticity of virtual scenes, while the intelligent language model utilizes multimodal generation technology (e.g., combining Stable Diffusion with the CEFR cultural parameter library) to generate on-demand scenario examples with cultural details (e.g., accurately reproducing the rules of china placement in the English afternoon tea etiquette). This solution system accurately addresses the needs of speech coding, cognitive processing and cultural understanding specific to the English language subject, and builds a closed loop of intelligent regulation from language form to cultural connotation.

3.2 Core Pain Points in Teaching English Online in Secondary Schools

A study of 20 secondary schools (n=3,000) revealed that online English language teaching consisted of two main problems. The first was abnormal physiological signals, mainly in the form of HRV (heart rate variability) mean values >97ms (resting baseline 59ms) during speaking practice. The second is the occurrence of student behavioral avoidance characteristics, with nearly half of the students actively turning off the camera to avoid speaking. The details

are shown in Figure 1.

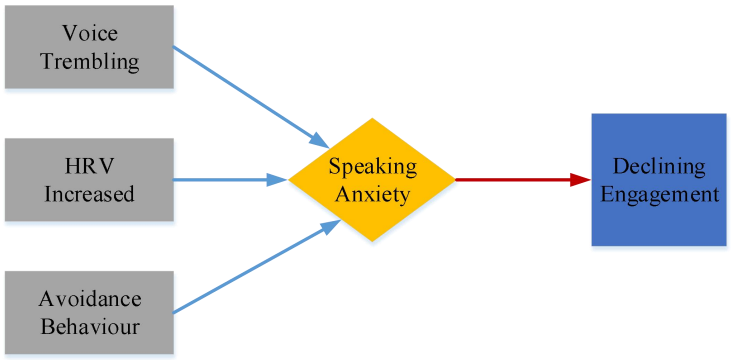

Figure 1 Model of the Characteristics Associated with Anxiety in Secondary School English Speaking

As can be seen from the figure, the core pain points faced by online English teaching are centered on four areas. First, learners' physiological tension due to speaking anxiety often triggers avoidance of on-camera behavior, leading to a cycle of error accumulation and decreased engagement. Second, in writing, influenced by Chinese thinking, there are significant errors in sentence structure transfer and insufficient use of passive voice. Third, the lack of realism in the cultural scene leads to comprehension bias, and the mechanical repetition of virtual interaction lacks depth. Fourthly, the static and single content of teaching can easily lead to cognitive fatigue and attenuation of learning effect. Thus, to solve these pain points, the application of innovative technology is needed.

3.3 Demand Analysis of Intelligent Conditioning for Online Teaching of English in Secondary Schools

According to the technical realization of the comprehensible input hypothesis, the language input needs to satisfy the "i+1" principle, and there are two major defects in traditional secondary school English online teaching, namely, static grading, i.e., the online course materials are preset with fixed difficulties, and also the lagging feedback of learning effects, most teachers cannot realize on-site evaluation, and the manual correction cycle of online teaching assignments takes more than 24 hours. manual correction cycle is more than 24 hours. In addition, according to the sociolect-cultural theory of scene adaptation, secondary school English online teaching will also have bottlenecks in the application of online environments, including insufficient frequency of teacher-student interactions in the online classroom as well as insufficient authenticity of the context, with a high rate of mechanical repetition of the virtual dialogues, which diminishes the authenticity and reliability of the teaching.

Based on the above, the demand for intelligent adjustment of secondary school English online teaching stems from the balance between students' differentiated learning characteristics and dynamic teaching goals, and the precise adaptation of teaching content, pace and evaluation needs to be realized through technical means. The intelligent language model analyzes students' cognitive level, learning style and emotional state through multimodal data collection to build a personalized learning portrait, and then dynamically adjusts the difficulty gradient of teaching resources, such as generating special variations of exercises for grammatical weaknesses and designing low-risk role-playing scenarios for speaking anxieties, and at the same time, relying on natural language processing technology to realize real-time speech error correction and semantic comprehension and feedback, and combining with the big data of learning behavior to predict knowledge breakpoints and pre-set the learning objectives. At the same time, it relies on natural language processing technology to realize real-time speech error correction and semantic understanding feedback, combines with big data on learning behavior to predict knowledge breakpoints and preset compensatory resources, and ultimately forms a closed-loop adjustment mechanism of "assessment-diagnosis-intervention-reassessment" to ensure that teaching strategies are dynamically matched with learners' needs.

4 APPLICATION SCENARIOS AND TECHNOLOGICAL ENABLING OF INTELLIGENT LANGUAGE MODELING IN ONLINE TEACHING OF ENGLISH IN SECONDARY SCHOOLS

Under the background of rapid development of artificial intelligence technology, intelligent language modeling is profoundly changing the mode and ecology of secondary school English online teaching. Compared with traditional classrooms, intelligent language models provide comprehensive support for English teaching from knowledge transfer to competence advancement through the technical advantages of multimodal interaction, personalized adaptation and real-time feedback. In this paper, we focus on the innovative application of intelligent language model in secondary school English online teaching, and discuss how it breaks through the bottleneck of traditional teaching and builds a highly efficient, interactive and personalized learning environment by combining the specific paths of technological empowerment.

4.1 Application Scenario Innovation for Intelligent Language Modeling

The innovation of the application scenario of intelligent language modeling in secondary school English online teaching

is reflected in multiple dimensions: simulating the real language environment through virtual scene generation and role-playing functions, such as situational dialogue training and cultural scene penetration, to enhance the authenticity of language practice. Designing personalized learning paths based on students' ability data, including dynamic difficulty adjustment and error-targeted training, to realize accurate teaching. Use in-depth semantic analysis to assist writing teaching, provide structured feedback and creative writing stimulation, and cultivate critical thinking. Combined with a multidisciplinary knowledge base, it supports interdisciplinary project-based learning, such as theme-based inquiry and cross-cultural debate, to enhance comprehensive literacy. At the same time, the intelligent language model also optimizes the teaching process through data-driven teaching decision-making, human-machine collaborative classroom interaction, multimodal resource integration and generation, and the innovation of the evaluation system and other technology-enabled paths, realizing the dynamic matching of teaching strategies and learners' needs, and bringing about a revolutionary change in secondary school English online teaching. The details are shown in Figure 2

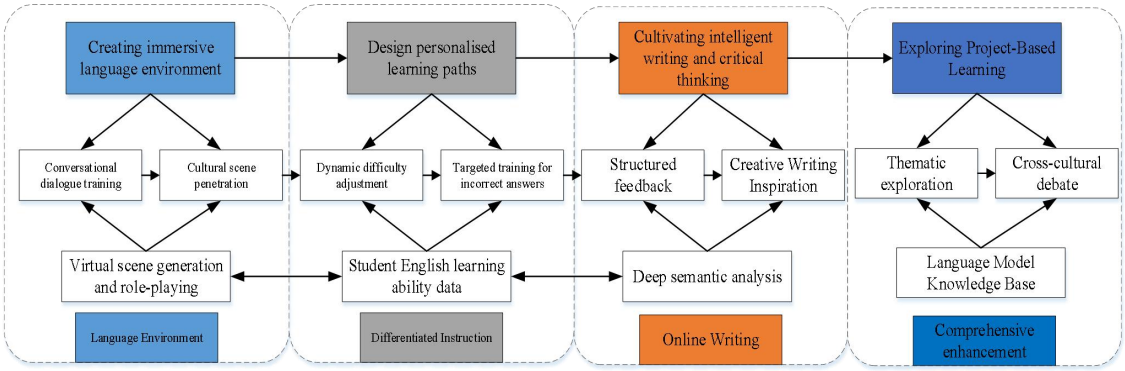

Figure 2 Innovative Architecture for Application Scenarios of Intelligent Language Models

First, build an immersive language environment. The intelligent language model simulates the real secondary school English teaching language environment through virtual scene generation and role-playing functions. Included:
Situational Dialogue Training: Students can engage in dialogues with the virtual tutor of the intelligent language model on topics such as "ordering food in a restaurant" and "asking questions at the airport", and the intelligent language model provides instant feedback based on the students' pronunciation and grammatical errors, and guides the logical expression through multiple rounds of dialogues.
Cultural Scene Infiltration: Combining intelligent language modeling mapping technology to generate cultural scenes (e.g., London streets, American campuses), students are required to describe the content of the pictures in English, and the intelligent language modeling automatically generates the cultural background annotations to enhance cross-cultural understanding.
Second, we design personalized learning paths. Based on students' English learning ability data, the intelligent language model realizes "tiered teaching" and "accurate remediation". Including:
Dynamic Difficulty Adjustment: Intelligent language modeling analyzes students' listening and reading levels, and automatically matches practice materials with appropriate speed and vocabulary. For example, weak students practice the dialogues of "Peppa Pig" and advanced students analyze TED talks.
Error-targeted training: For grammatical weaknesses (e.g., virtual voice), the intelligent language model generates special exercises and reinforces memory through the closed loop of "error reproduction-variation training-consolidation test".
Third, cultivating intelligent writing and critical thinking. Intelligent language modeling aids online writing instruction in secondary English through deep semantic analysis. Included:
Structured feedback: The intelligent language model not only corrects grammatical errors, but also parses the logic of the article and makes suggestions such as "adding transition sentences" and "optimizing argument support".
Creative writing stimulation: Input keywords (e.g. "future city"), the intelligent language model generates a multi-dimensional writing framework, students choose perspectives (technology, environmental protection, society) to start creating, and the intelligent language model provides high-level vocabulary replacement solutions in real time.
Finally, Exploring Project-Based Learning. Combining language modeling with a multidisciplinary knowledge base, Intelligent Language Modeling for Integrated Literacy: Including:
Thematic Inquiry: For example, in the theme of "Global Climate Change", the Intelligent Language Model (ILM) provides English popular science articles, news reports, and audio interviews with experts, and students work in groups to complete a research report, and the ILM evaluates the integration of the information and language accuracy.
Cross-cultural debate: The intelligent language model generates a topic (e.g., "Should we restrict the use of plastics?"), students review the information and debate it in English, and the intelligent language model records the gaps in the argument and generates rebuttal prompts.

4.2 Core Pathways for Technology-Enabled Teaching and Learning

The core path of technology-enabled teaching lies in the optimization of teaching strategies through data-driven

teaching decisions, such as the construction of learning profiles and dynamic adjustment of teaching priorities. Enhance efficiency through human-computer interaction in the classroom, such as intelligent teaching assistants and dual-teacher classroom model. Integrating multimodal resources, such as accessing global corpora and generating customized materials. As well as revolutionizing the evaluation system, such as formative evaluation and multi-dimensional feedback mechanism, so as to comprehensively promote the development of teaching in the direction of intelligence and precision.

Intelligent conditioning technology is systematically reshaping the path of English acquisition, and the core barriers to online English learning in secondary schools form a critical mapping with the intelligent technological solutions, as shown in Figure 2. For the physiological avoidance loop formed by speaking anxiety, a multimodal emotion capture and dynamic pronunciation correction system is used to eliminate the source of anxiety instantly. For the sentence solidification caused by negative native language transfer, the intelligent grammar reconstruction engine and cross-language comparison training are embedded to strengthen English thinking. For the distortion of cultural scenes and mechanical interaction, we build adaptive cultural scene libraries and intelligent language modeling conversational agents to stimulate deep contextual interaction. For the cognitive decay triggered by semantic saturation, develop neural feedback-driven dynamic content flow to continuously activate the language processing brain area (Table 2).

Table 2 Mapping of Barriers to Online Learning and Intelligent Moderation Schemes for English in Secondary Schools

Learning disability	Testing Indicators	Conditioning strategy	Technical realization
phonological confusion	Minimum contrarian error rate > 40%	Demonstration of tongue position dynamics	Lip tracking + 3D pronunciation animation
dyslexia	Lookback > 3 times/sentence	Syntax tree disassembly in real time	Dependency Analysis + Animation Generation
writing migration	Passive voice usage <12%	English-Chinese Structural Comparison Casebook	Parallel corpus search

In terms of data-driven pedagogical decision-making, the intelligent language model optimizes the online teaching strategy of secondary school English through learning behavior analysis, including the construction of learning portraits, and the intelligent language model records data such as students' pronunciation accuracy, reading speed, and writing vocabulary complexity to generate personalized learning reports. In addition, dynamic teaching adjustment is realized, and teachers adjust their teaching focus based on the feedback from the intelligent language model. For example, if the class generally loses points in "comprehension of long and difficult sentences", the intelligent language model will automatically recommend graded practice materials.

In terms of human-computer collaboration in online classroom interaction, the intelligent language model complements the role of the teacher to improve the efficiency of the online teaching classroom, including the realization of intelligent teaching assistants, the intelligent language model is responsible for real-time voice assessment, error analysis and other repetitive tasks, while the teacher focuses on thinking guidance and emotional interaction. At the same time, to explore the dual-teacher classroom model, teachers design interactive links (such as "intelligent language model questions - students rush to answer"), the intelligent language model statistics and answer data and generate a set of wrong questions, to assist in targeted review after class.

In terms of multimodal resource integration and generation, the Intelligent Language Model will break the barriers of secondary school English online teaching resources and realize the intelligent aggregation of teaching materials. Firstly, it can realize access to the global corpus, and the intelligent language model integrates BBC news, academic lectures, film and TV dialogues, etc. Teachers can get the appropriate materials by inputting keywords. Secondly, the online materials can be customized, according to the teaching objectives, the intelligent language model generates simulated dialogues with different accents, supporting exercises and cultural annotations.

5 AN INTELLIGENT ENHANCEMENT FRAMEWORK FOR AUTONOMOUS REGULATORY FACILITATION STRATEGIES FOR TEACHING ENGLISH ONLINE IN SECONDARY SCHOOLS

The intelligent enhancement framework of the self-regulation promotion strategy aims to build a closed-loop system that can dynamically perceive the state of an individual or a system, intelligently analyze the regulation demand, and proactively provide a personalized intervention plan by integrating advanced AI technologies and adaptive mechanisms, so as to realize the capability leap from reactive response to proactive optimization, as shown in Fig. 3.

As shown in Figure 3, the architecture is based on the closed-loop control theory of "perception-decision-execution-optimization", and builds a four-level cascade language learning system. Specifically, it includes:

5.1 Sensory Layer

By integrating heterogeneous data such as voice waveform, eye track, text input, etc., the "perception layer" is the core function of the "multimodal data" module. According to the system architecture diagram, the core function of the "perception layer" is carried out by the "multimodal data" module, which serves as the information input port of the whole intelligent system and is responsible for the real-time collection of heterogeneous data from multiple sources,

such as speech, text, and behaviors, to provide the original observation signals for the decision-making and analysis of the subsequent strategy engine, and constitutes the initial sensing tentacles of the closed-loop regulation system.

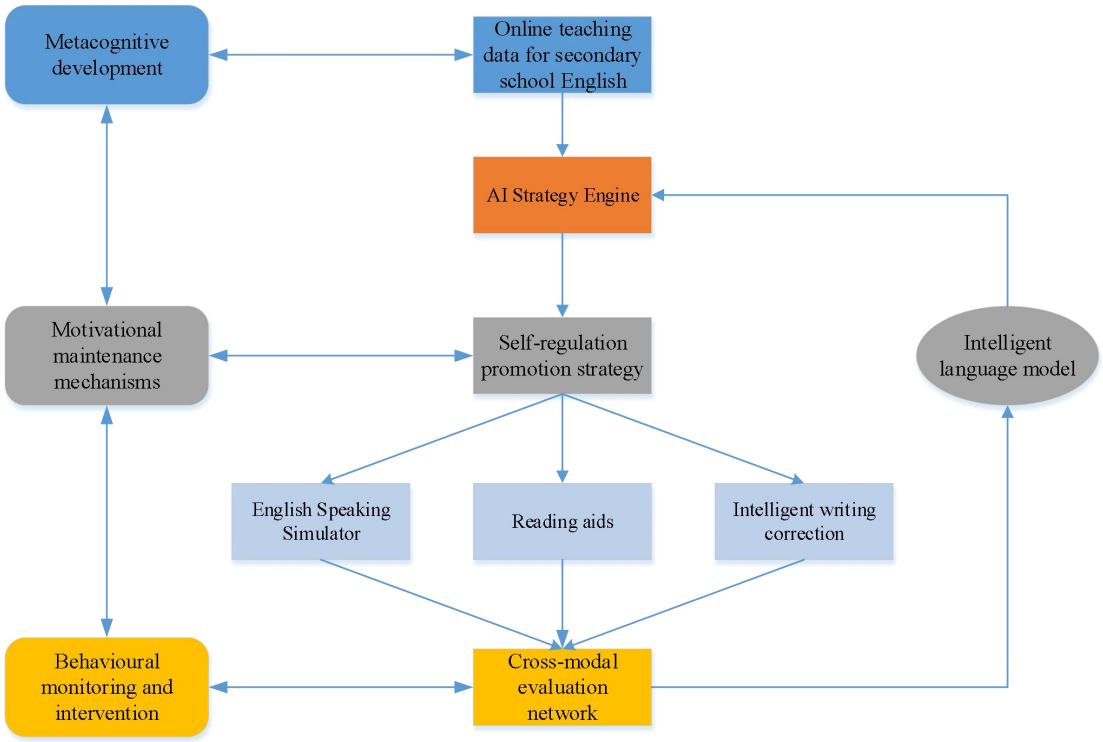

Figure 3 Intelligent Enhancement Framework for Promoting Self-Regulation in Online English Teaching in Secondary Schools

5.2 Decision-Making Level

Real-time diagnosis and strategy generation based on Transformer. Based on the architecture diagram, the function of "Decision Layer" is independently undertaken by "EngGPT Strategy Engine", which acts as the core hub of the closed-loop system, generating executable regulatory strategy commands and driving the downstream tools to work together through real-time parsing of the multimodal input data and matching of the teaching rules, and the dynamic strategy optimization mechanism realizes the autonomy of evolution through the reinforcement of the learning feedback of the evaluation network.

5.3 Executive Level

Subject-oriented tool-set to solve the core problem of listening, reading and writing. According to the architecture shown in the picture, the functions of the "Execution Layer" are fully carried in the "Regulatory Strategy Execution" module, which serves as the conversion hub from the strategy engine to the teaching tools, mapping the abstract instructions generated by EngGPT into specific operational instructions for the three major domains of Speaking, Reading, and Writing, and directly driving the simulators and intelligent tools to implement the pedagogical interventions, which constitutes the operation hub of the closed-loop system that transforms the decisions into the entity's teaching behaviors. It constitutes the operation hub of the closed-loop system that transforms decisions into physical teaching behaviors.

6 CONSTRUCTION OF EVALUATION SYSTEM FOR ONLINE TEACHING EFFECT OF SECONDARY ENGLISH BASED ON INTELLIGENT LANGUAGE MODELING

Intelligent language modeling pushes evaluation from "result-oriented" to "process-enabling". For formative assessment, the Intelligent Language Model records students' participation in the classroom, the number of homework revisions and other process data, generating a dynamic growth curve. A multi-dimensional feedback mechanism is built, combining teacher evaluation, intelligent language model scoring and peer assessment to form a comprehensive evaluation report of "skills + literacy".

6.1 Evaluation System

Process evaluation matrix is a dynamic assessment tool, it is through the construction of multi-dimensional index

system, continuous tracking of key behavioral nodes in the process of learning or task implementation, the trajectory of competence development and the quality of stage results, the formation of horizontal coverage of cognition, skills, attitudes and other elements, vertical through the initial state, the progress of the stage and the achievement of the goal of the three-dimensional evaluation network, so as to provide real-time feedback and guidance for the individual or the team. The details are shown in Table 3.

Table 3 Process Evaluation Matrix

Dimension (math.)	Norm	Technical realization	Typical case
Cognitive Participation	Length of stay at knowledge point, error retry rate	Learning behavior log analysis + heat map visualization	Knewton Platform, USA
Skills Development	Oral fluency, essay complexity	Speech Recognition + LSTM Text Generation Evaluation	Grammarly, Canada
Emotional Attitude	Emotional polarity of classroom interactions	ESAM-LI Sentiment Semantic Analysis Model	Japanese AI Emotion Recognition Tool
Collaborative Capacity	Contribution to group discussions, number of role-plays	Social Network Analysis + Role Assignment Algorithm	Australian Educational Gaming Platform

Dimension 1: Cognitive engagement refers to the active engagement of individuals in cognitive activities, covering multi-level mental processes such as meta-cognitive monitoring, in-depth information processing, critical thinking, and knowledge construction, which is reflected in the continuous exploration of the meaning of the task, the independent discovery of logical associations, and the strategic deployment of cognitive resources, and the essence of which is the cognitive leap from surface perception to meaning generation through the activation of higher-order thinking activities. The essence is to realize the cognitive leap from surface perception to meaning generation by activating higher-order thinking activities, which is often manifested in adaptive learning systems as the dynamic planning of learning paths, the active regulation of cognitive load, and the creative reorganization of knowledge networks.

Dimension 2: Skill development is a dynamic process in which an individual or a system realizes a leap in competence through continuous practice and reflection, and its essence is the in-depth construction of the transformation of knowledge and experience into behavioral efficacy, which not only involves the linear progression from rudimentary to proficient, but also emphasizes the integration of multi-dimensional interactions of cognition, action and emotion in complex situations, and the refined reorganization of the skill modules and the creative migration through the meta-cognitive control, and the eventual formation of expertise in coping with new challenges. The final result is the formation of adaptive expertise to cope with new challenges.

Dimension 3: Affective attitude is the complex of the individual's implicit emotional experience and value orientation in cognitive activities, which is not only the internal driving source of learning motivation but also the implicit regulator of behavioral choices. Through the empowering effect of positive emotions, the belief support of self-efficacy, and the guiding role of values, the bridge of affective connection is constructed between cognitive processing and behavioral execution, so as to make the knowledge construction from the rational-logical layer to the affective domain. The knowledge construction is extended from the rational logic layer to the emotional domain, and the dynamic regulation of learning engagement and the continuous reinforcement of goal orientation are realized through the emotional feedback loop.

Dimension 4: Collaboration ability is the composite ability of multiple subjects to achieve common goals through dynamic role adaptation and cognitive synergy in interactive situations, the essence of which is the transformation process of social capital and knowledge potential, which not only includes the integration of information and task coordination in explicit communication, but also emphasizes the construction of trust and cultural adaptation in implicit tacit understanding, which is reflected in the emergence of collective wisdom in the adaptive system based on intelligent role matching based on situational awareness, dynamic authority configuration based on trust assessment, and collective wisdom based on consensus achievement. Through the complementary collision of heterogeneous perspectives, the networked connection of distributed cognition, and the creative reconciliation of conflict situations, the adaptive system is embodied in the intelligent role matching based on situational awareness, the dynamic configuration of authority based on trust assessment, and the emergence of collective wisdom based on the achievement of consensus.

6.2 Practice Cases and Effectiveness Analysis

The chapter of Practice Cases and Effectiveness Analysis demonstrates the practical application value of the intelligent enhancement framework in complex tasks through the in-depth analysis of typical scenarios in multiple fields, presenting the optimization of personalized learning paths in the field of education, precise diagnosis and treatment assistance in medical scenarios and other differentiated implementation paths, as well as revealing the common law formed in cross-industry practices - through Dynamic adaptation mechanism effectively breaks the rigid constraints of the traditional system, and promotes the qualitative leap of human-computer collaboration while improving the decision-making efficiency, which is not only reflected in the improvement of quantitative indexes, but also in the leap of the user's subjective experience and the construction of the system's sustainable evolution capability, as shown in Table 4.

Table 4 Table of Cases and Effectiveness

Case Name	Implementation modalities	Efficacy
AI-Enabled English Listening and Teaching	A school utilizes an AI speaking assessment system, where students complete 10 minutes of reading practice every day, and the AI scores them in three dimensions: pronunciation, fluency, and intonation, and generates a "Speech Waveform Comparison Chart".	Students' average speaking scores increased and high-frequency error corrections increased.
Smart Writing Workshop	Teachers assign argumentative essay tasks through the AI writing platform, and after students submit their first drafts, the AI provides suggestions for structural optimization, and the teacher selects model essays for classroom dissection.	Students' scores for logical coherence in their essays improved, and their use of advanced vocabulary increased.
Cross-cultural project-based learning	Students work in groups to generate a research report on the Belt and Road theme using AI, integrating data from English-language news, policy documents and expert interviews.	Students' information screening and cross-cultural communication skills are significantly enhanced.

Case 1: AI-Enabled Secondary English Listening and Speaking Teaching builds a multi-dimensional language practice ecology through intelligent speech recognition, adaptive learning path planning and contextualized interaction technologies. The system captures the vocal characteristics of students' pronunciation in real time, analyzes speaking elements such as intonation, legato, stress, etc. in combination with natural language processing technology, generates personalized diagnostic reports and puts forward suggestions for improvement. The virtual dialog engine simulates real communication scenarios, allowing students to engage in role-playing, topic debates and other immersive exercises with AI digital people, and the system dynamically adjusts the difficulty of the dialog based on semantic coherence, logical hierarchy and cultural appropriateness. The intelligent recommendation engine matches listening materials with appropriate difficulty based on learning profiles, such as news broadcasts, film clips or academic lectures, and with adjustable speech rate and key vocabulary visualization and annotation functions, it helps learners gradually adapt to different speech rates and accents. In addition, the AI-driven automated assessment system breaks through the limitations of traditional assessment by comprehensively evaluating students' fluency, accuracy and complexity through multimodal data analysis, and generating visual growth profiles that include speech waveform comparison, high-frequency error clustering, and progress trends, so that the listening and speaking training shifts from mechanical imitation to the construction of precise abilities based on data feedback.

Case 2: The Intelligent Writing Workshop builds a human-computer collaborative writing empowerment system by integrating natural language processing technology and creative writing pedagogy. The semantic analysis engine based on deep learning can analyze the logical chain of text, identify rhetorical weaknesses, and generate style optimization suggestions in real time, while the AI writing tutor supports multiple rounds of interactive outline generation, allowing participants to focus on the topic, develop arguments, and match materials through conversations with virtual editors. Intelligent material library automatically recommends cross-disciplinary cases, golden sentence templates and anti-common sense perspectives according to the writing goal to help break the stereotyped thinking. The multimodal feedback system generates a diagnostic report by synthesizing the dimensions of grammatical accuracy, point of view innovation, reader empathy, etc., and with the style migration function, the text can be converted into different languages such as academic, business, literature, and so on in a single click. The workshop also sets up AI-assisted collaborative writing sessions to cultivate the role cognition and consensus building ability in group creation through the conflict warning and consensus refining functions of the real-time co-editing platform, so that the writing training can evolve from unidimensional skill enhancement to the composite cultivation of cognitive flexibility and digital literacy.

Case 3: Intercultural project-based learning creates real or virtual global issue situations and guides learners to complete knowledge construction and competence advancement through multicultural teamwork. The project design focuses on cross-cultural topics such as sustainable development and cultural heritage preservation, and requires members to integrate local experiences and cross-cultural perspectives to develop solutions. In the process, they need to conduct cross-country field research with the help of virtual reality technology, break through language barriers by using AI translation tools, and realize decentralized collaboration through the blockchain platform, while the teacher, as a cultural broker, guides the students to reflect on cultural biases and decode non-verbal communication symbols, Teachers act as cultural brokers to guide students to reflect on cultural biases, decode non-verbal communication symbols, negotiate cultural value conflicts, and ultimately produce solutions reflecting both cultural sensitivity and innovative value. Through a multi-dimensional assessment system, we comprehensively examine the cultural intelligence, effectiveness of digital collaboration, and the feasibility of the solutions, so as to make the learning process become a symbiotic practice of cultural cognitive restructuring and global competency development.

7 CONCLUSION

This paper discusses in depth the application of intelligent language modeling in secondary school English online teaching, aiming to improve students' independent learning ability, language skills and overall learning effect by constructing self-regulation facilitation strategy and effect evaluation system. The article first analyzes the current situation and challenges of secondary school English online teaching, and points out the great potential of intelligent language models in providing personalized learning experiences. Subsequently, it elaborates on the application

scenarios and technological empowerment of intelligent language models in building immersive language environments, designing personalized learning paths, cultivating intelligent writing and critical thinking, and exploring project-based learning. In order to further optimize the teaching effect, this article proposes an intelligent enhancement framework for autonomously regulating facilitation strategies in secondary school English online teaching, which realizes the leap from passive response to active optimization of the teaching ability through the synergy of the perception layer, the decision-making layer and the execution layer. In addition, the article constructs an evaluation system of secondary school English online teaching effect based on the intelligent language model, including a process evaluation matrix and a multidimensional feedback mechanism, in order to comprehensively assess students' learning progress and teaching effect. The innovations of this article are mainly reflected in the generation of personalized learning paths, the realization of intelligent interaction and real-time feedback, the application of automated assessment and diagnosis, and the innovation of the intelligent enhancement framework and effect evaluation system for self-regulated facilitation strategies. These innovations not only promote the intelligent development of secondary school English online teaching, but also provide a useful reference for the digital transformation of the education field. Looking ahead, this paper proposes the directions of ethical and data security, teacher role transformation, mixed reality integration, learner diversity consideration, and continuous technology optimization and innovation, which provide guidance for the further application and development of the intelligent language model in secondary school English online teaching.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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