Construction and Empirical Research on a Generative AI-Driven Integrated Teaching-Learning-Assessment Model for Higher Vocational English

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Abstract: Against the backdrop of digital transformation in education and the deepening reform of Higher Vocational English teaching, traditional pedagogy often suffers from the decoupling of teaching, learning, assessment, delayed feedback and a lack of personalized instruction. Generative Artificial Intelligence (GenAI), with its technical advantages in content generation, intelligent assessment, data analysis and adaptive delivery, offers a viable pathway for constructing an integrated teaching system. Focusing on Higher Vocational English courses, this study employs literature analysis, questionnaires, teaching experiments and statistical data analysis to systematically examine the current state of teaching and assessment. It constructs a GenAI-driven integrated model and proposes actionable implementation strategies.

Keywords: Generative AI; Higher Vocational English; Integration of Teaching-Learning-Assessment; Dynamic Assessment; Personalized Learning

1. Introduction

With the comprehensive advancement of the national strategy for digital education, technologies such as Artificial Intelligence and Big Data are deeply integrating into all aspects of education. This drives systematic changes in teaching methods, learning modalities, and evaluation systems. National policies explicitly propose empowering teaching reforms with intelligent technology, innovating evaluation mechanisms, and promoting students' comprehensive and individualized development. Higher Vocational English bears the important task of cultivating students' language application skills, cultural awareness, thinking quality, and autonomous learning abilities.

For a long time, Higher Vocational English has been constrained by factors such as large class sizes, significant disparities in student foundations, tight schedules and relatively traditional evaluation methods. Consequently, teachers struggle to grasp learning conditions precisely, and students find it difficult to obtain targeted guidance, making it hard for teaching, learning and assessment to form a synergistic force. the rapid development of Generative AI offers new possibilities for solving these problems.

This research focuses on Generative AI empowering the integration of teaching, learning, and assessment in Higher Vocational English. It aims to address prominent issues in traditional teaching, improve the theoretical framework of the integration of intelligent technology and foreign language teaching, and provide a feasible, replicable practical solution for the digital reform of public English in higher vocational colleges. the study possesses both theoretical and practical significance. Theoretically, it combines Generative AI with the concept of integrated teaching-learning-assessment. Practically, the results can directly serve classroom teaching.

2. Core Concepts and Theoretical Basis

2.1 Definition of Core Concepts

Generative AI refers to intelligent technology based on deep learning models capable of generating text, dialogue, audio, and learning materials according to pedagogical laws and learning needs. It features natural interaction, timely feedback, accurate diagnosis, and adaptive adjustment, functioning in teaching to assist lesson preparation, create scenarios, push exercises, and diagnose evaluations.

Integration of Teaching-Learning-Assessment emphasizes taking curriculum standards and core competencies as the orientation, closely linking teaching objectives, learning activities, and assessment tasks. It ensures assessment permeates the entire teaching process, realizing the goal of promoting teaching, learning, and

improvement through assessment.

Higher Vocational English Integration is based on the characteristics of vocational students and talent cultivation requirements, covering listening, speaking, reading, writing, and translation skills, all links from pre-class to post-class, and multiple subjects including teachers, students, and intelligent tools. It highlights language application, practical ability, and personalized support.

Dynamic Closed-Loop Assessment refers to a cyclic improvement mechanism formed through data collection, analysis, feedback, and adjustment. It emphasizes process-orientation, sustainability, and traceability, serving as the key to ensuring the effective operation of the integrated model.

2.2 Theoretical Basis

This study takes Second Language Acquisition (SLA) Theory as the intrinsic basis for language learning, emphasizing the important role of comprehensible input, interactive output, and timely feedback in improving language proficiency.

Constructivist Learning Theory emphasizes that learning is a process of actively constructing meaning in authentic contexts; intelligent technology can create scenarios involving life, workplace, and cross-cultural communication, supporting cooperative learning and expression.

Teaching-Learning-Assessment Alignment Theory requires a high degree of matching between teaching objectives, learning activities, and assessment content, providing the core logic for the model construction in this study.

Adaptive Learning Theory advocates adjusting content difficulty and learning paths according to student levels, making individualized instruction in large-scale classrooms possible.

3. Current Status and Problems of Higher Vocational English Teaching and Assessment

To accurately grasp the reality, this study conducted questionnaire and interview surveys targeting English teachers and students in higher vocational colleges, covering teaching methods, learning status, assessment habits, feedback effectiveness, technology usage, and expectations. Results show that while current Higher Vocational English teaching is generally stable and orderly, there are prominent issues in the collaborative operation of teaching, learning, and assessment.

At the teaching level, most classrooms still rely on teacher lectures, textbook progression, and uniform tasks. Personalized design is insufficient, the proportion of listening and speaking training is low, and digital tools mostly stay at superficial applications like slide playback and simple assignment distribution. the integration of intelligent technology and teaching processes is not deep enough.

At the learning level, student classroom participation is unbalanced, the willingness to speak actively is weak, and sustained autonomous learning after class is poor. Students have little interest in mechanical repetitive exercises and hope for more interactive learning experiences closer to their own levels.

At the assessment level, final exams remain the primary basis. Formative assessment accounts for a low proportion, and assessment content focuses heavily on knowledge memory, paying insufficient attention to language application, thinking quality, and learning habits. Feedback is mostly presented as scores or grades, lacking specific, actionable suggestions for improvement.

At the technology application level, while teachers and students generally recognize the value of intelligent tools, they lack a systematic application model. Tool usage is scattered and casual, failing to form a stable and effective teaching support mechanism.

Comprehensively, the core problems can be summarized as: disconnection between teaching, learning, and assessment with low goal alignment; lagging, singular, and general assessment that fails to play a diagnostic and improvement role; prominent contradictions between teaching and personalized needs; fragmented application of intelligent technology lacking whole-process integrated support; and insufficient data-driven instructional decision-making with low utilization rates of assessment results. These issues constitute the realistic starting point of this research.

4. Construction and Implementation Strategies of the Integrated Model

Based on current problems and theoretical support, this study constructs a Generative AI-driven integrated model for Higher Vocational English. Following five principles—competency orientation, goal alignment, dynamic closed-loop, suitability for vocational education, and safety/standardization—the model adopts a structural framework of "Horizontal Three

Elements" and "Vertical Two Penetrations. " the Horizontal Three Elements include the Teaching Process, Assessment Chain, and Technology Platform; the Vertical Two Penetrations are the Instructional Design Line and the Instructional Implementation Line. These interact and support each other to form a stable and efficient operating system.

The model contains three core modules:

Teaching Support Module: Used to assist lesson preparation, generate scenarios, provide dialogue practice, push interactive tasks, and deliver personalized resources.

Assessment & Diagnosis Module: Used for real-time assessment, pronunciation correction, writing correction, process recording, and learning portfolio management.

Data Analysis Module: Used to aggregate learning behaviors, generate learning profiles, produce class reports, and diagnose weak points, providing a basis for teachers to adjust teaching and students to improve learning.

The operational mechanism can be summarized as Dynamic Monitoring → Immediate Feedback → Adaptive Adjustment, realizing a closed-loop operation of recording, assessing, guiding, and optimizing throughout the entire learning process.

To ensure effective implementation, the study proposes integrated strategies from four aspects: goals, activities, implementation, and assessment.

Goal Alignment: Decompose unit objectives into specific, observable lesson objectives, synchronously setting assessment objectives presented in layers to ensure teaching has direction, learning has standards, and assessment has a basis.

Activity Design: Progress according to three levels: learning and understanding, application and practice, and transfer and innovation, using intelligent tools to enhance situational and interactive nature.

Classroom Implementation: Implement a coherent mode of pre-class diagnosis, in-class interaction, and post-class consolidation to improve teaching pertinence.

Assessment Implementation: Construct a diversified assessment system, presenting results through visual reports, ability analysis, and improvement lists, ensuring assessment truly serves learning improvement.

5. Empirical Verification and Research Conclusions

To test the model's effectiveness, this study selected two natural classes as the Experimental Class and Control Class for a one-semester teaching experiment. the Experimental Class adopted the Generative AI-driven integrated model, while the Control Class used the traditional model, controlling for irrelevant variables such as textbooks, progress, and class hours. Using English scores, classroom participation, learning interest, and language application ability as observation indicators, data was collected through pre-tests, post-tests, questionnaires, and classroom observations.

Results showed that the Experimental Class's average English scores were significantly higher than the Control Class. Indicators such as classroom speech, interactive participation, and autonomous practice improved noticeably. Students showed more prominent positive changes in learning interest, confidence, and strategies. Teachers' efficiency in lesson preparation, grading, and grasping learning conditions improved significantly, making teaching more targeted. Further analysis indicated that the intensity and depth of the model's application had a positive impact on learning outcomes, demonstrating significant practical effects.

This study draws three main conclusions:

Current Higher Vocational English teaching suffers from prominent issues such as disconnected links, delayed feedback, lack of personalization, and shallow technology integration.

The constructed Generative AI-driven integrated model achieves deep integration of teaching processes, assessment systems, and technological applications, proving to be scientific and feasible.

Empirical testing confirms that the model effectively improves learning outcomes, stimulates learning motivation, and optimizes teaching efficiency, possessing high promotion value.

Future research could further expand the scope, track long-term effects, deepen the application of multimodal intelligent technologies, and promote the model's expansion from public English to English for Specific Purposes (ESP), continuously empowering the high-quality development of Higher Vocational English education.

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