AI-powered Reform and Practice in Information Technology Instruction at Vocational High Schools

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Abstract. Addressing prominent issues in vocational high school "Information Technology" classrooms—such as rigid teaching models, a lack of differentiated instruction, and an evaluation system that fails to adequately foster student development—this paper integrates two core tools, WPS AI and XueTong AI Teaching Assistant, to construct an "AI-Empowered Four-Dimensional Classroom" teaching model. This model encompasses four key dimensions: AI-assisted lesson planning, AI-enhanced instruction, AI-driven differentiated practical training, and AI-based closed-loop assessment. Through a semester of teaching practice, students' practical scores on WPS have improved, and their ability to apply AI tools has increased, achieving a shift in capabilities from "mechanical operation" to "intelligent application."

Keywords: Artificial Intelligence; Information Technology; WPS Classroom; Educational Reform.

1 Introduction

1.1 A Subsection Sample

The "Opinions on Deepening the Implementation of the 'AI+' Initiative," issued by the State Council, emphasizes the promotion of more effective intelligent learning methods, thereby providing clear policy guidance for the intelligent reform of vocational education curricula.[1].In the new era, office roles are no longer limited to traditional manual software operations; they now require employees to possess the ability to apply AI tools, conduct intelligent information retrieval, and adopt efficient work methodologies. Therefore, AI-enhanced "Information Technology" courses should teach students to scientifically utilize AI for learning, intelligent information retrieval, and self-assessment. This is an essential step toward implementing the educational requirements of the new curriculum standards, improving the quality of classroom instruction, and cultivating highly skilled professionals[2][3].

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2 Analysis of Challenges in Information Technology Education

2.1 Shortcomings in AI-enabled Teaching and Rigid Teaching Models

Currently, in vocational high school "Information Technology" WPS classes, the traditional teaching model of "teacher screen demonstration + student replication" is still widely used. Students passively follow the teacher's step-by-step instructions throughout the practical training exercises, acquiring only the ability to "replicate operations" without understanding the logic and principles behind them.[4]. At the same time, the integration of AI into teaching has not been sufficiently deep, and students lack the mindset and skills required for AI-based information retrieval. Their learning remains heavily reliant on the classroom and teachers, and they have a severe lack of awareness and ability regarding self-directed learning, making them ill-equipped to adapt to intelligent learning and work environments.

2.2 Lack of Tiered AI-based Instruction and Personalized Learning

Vocational high school students exhibit significant variations in their foundational computer skills, logical thinking, and receptiveness to learning; however, traditional classrooms continue to rely on a one-size-fits-all teaching model characterized by "uniform instruction, uniform pacing, uniform assignments, and uniform assessments," completely disregarding individual differences in students' learning situations. The failure to utilize AI platforms to implement a tiered educational system prevents the realization of teaching tailored to individual needs, thereby contradicting the core requirement of personalized education outlined in the new curriculum standards.[5].

2.3 Inadequate AI Data Analysis and an Evaluation System That Lacks a Focus on Student Development

Traditional evaluation systems focus solely on the final outcomes of students' practical projects, neglecting key dimensions such as the hands-on process, learning attitude, digital literacy, and the application of AI. Traditional classrooms lack the support of AI-powered evaluation systems, making it impossible to assess practical outcomes or analyze learning challenges. As a result, students lack the ability to self-reflect, self-correct, and self-improve, and teaching data fails to effectively inform classroom instruction.[6], making it difficult to establish a closed-loop learning cycle of "learning—correction—review—improvement," and the educational orientation is severely lacking[7].

3 Building a Framework for AI-Empowered Reform of "Information Technology" Education

This teaching practicum is primarily aimed at vocational high school students; the class consists of 60 students, and the practicum spans two semesters.

3.1 Developing the "AI-Empowered Four-Dimensional Classroom" Teaching Model

The "AI-Empowered Four-Dimensional Classroom" initiative focuses on four key dimensions: "AI-assisted lesson planning," "AI-enhanced instruction," "AI-driven tiered practical training," and "AI-based closed-loop assessment." It utilizes two primary tools—WPS AI and Xuexi Tong AI Teaching Assistant—to establish a closed-loop learning cycle comprising "learning—practical application—analysis—feedback—and further learning[8]."

AI-powered lesson preparation lays the groundwork for intelligent learning. Teachers use WPS AI to identify key points and difficult concepts, leverage AI to generate supplementary preview materials and mind maps, and utilize the Learning Pass AI Teaching Assistant to analyze students' historical academic performance data. By guiding students to use AI tools for independent previewing, this approach helps cultivate an independent learning mindset characterized by "searching first when encountering a problem and exploring first when facing a challenge."

The course incorporates AI-enhanced instruction to teach intelligent search methods. It includes hands-on training sessions on AI-powered search, teaching students how to enter precise commands and verify the accuracy of AI-generated content. For example, when encountering issues such as improper formatting, function errors, or chart generation errors, students learn how to enter precise commands to address these problems, how to filter for high-quality AI solutions, and how to verify the accuracy of AI-generated content through logical reasoning and manual review.

In this AI-based tiered classroom training program, tasks are assigned based on data analysis conducted using AI tools. Students at the foundational level solidify their core WPS operational skills, while those at the advanced level expand their mastery of AI-powered search and error-correction methods. Students at the advanced level engage in advanced smart office training, flexibly applying AI-driven creative features to complete comprehensive office tasks.

Post-class AI-driven closed-loop assessment enables data-driven instruction. Teachers use student performance reports to conduct AI-powered assessments and teach students to independently identify gaps in their practical skills, analyze the causes of errors, evaluate their learning outcomes, and develop plans for improvement. This helps students clearly understand their strengths and weaknesses, thereby establishing a complete learning cycle of "learning—practice—analysis—feedback—relearning."

3.2 Establish a Three-tier Practical Training System Comprising "fundamental skills, intelligent optimization, and on-the-job training"

Within the aforementioned educational framework, this paper establishes a three-tiered practical training system that employs progressive training. It adheres to the core principle of "independent hands-on practice as the foundation, with AI serving as an enabling tool," thereby avoiding the issue of students becoming overly reliant on AI, which can lead to a decline in their manual skills.

"Basic Practical Skills" focuses primarily on manual operational skills, requiring students to complete tasks independently without the aid of AI tools. Examples include basic formatting in Word, such as font settings, paragraph formatting, and page layout; manually entering and debugging basic Excel functions; and creating basic layout designs in PowerPoint. This section accounts for 40% of the total practical training and is designed to build a solid foundation in WPS practical skills for students.

"Intelligent Optimization" guides students to use AI tools for searching, error correction, and optimization, building upon their independent hands-on practice. For example, after completing a practical exercise, students input a correct command description into WPS AI to check for formatting compliance and correct errors, identify logical errors in formulas and receive optimization suggestions, and refine data and images. They then use the optimization results to engage in critical thinking—considering whether the work aligns with the theme, if it can be further improved, and whether the content is accurate—ultimately producing a final practical project. This phase accounts for 35% of the total training volume. It not only prevents students from becoming overly reliant on AI and reinforces their understanding of technology ethics but also prevents the erosion of basic WPS skills, thereby cultivating students' ability to apply AI as a supportive tool.

The practical training modules are based on real-world corporate office scenarios and utilize AI to complete comprehensive office tasks. For example, students use AI to generate the framework for a research report and independently flesh out the content; leverage AI to perform multi-dimensional analysis of corporate sales data; and utilize AI to optimize product presentation slides. This component accounts for 25% of the total training and transforms AI learning skills into practical job competencies, ensuring a seamless transition from classroom learning to on-the-job application.[9].

3.3 Establishing a Dynamic Evaluation System for AI-Driven Classroom Instruction Throughout the Entire Process

Table 1. Weighting Scheme for the Teaching Evaluation System

Review Type	Evaluation Criteria	perce-ntage	Review Content
Formative Assessment (70%)	Class Attendance and Mastery of Key Concepts	10%	Attendance and Classroom Interaction Records
	Quality achieved through independent hands-on practice	30%	AI review, teacher verification
	AI Tool Application Skills	20%	Accuracy, Optimization, and Content Analysis
	Digital Literacy and Scientific Ethics	10%	Content Compliance, Scientific Ethics

Final Evaluation (30%)	Standard Practical Training Projects	10%	Quality of task completion (with the help of AI)
	End-of-Term Practical Assessment	20%	Timed Practical Exercise (No AI allowed)

To cultivate students' ability to evaluate and improve themselves independently, this paper proposes an AI-enabled dynamic assessment system that covers the entire learning process, simultaneously focusing on both Formative Assessmen and Final Evaluations (as shown in Table 1), thereby achieving intelligent and precise evaluation. At the same time, AI is used to analyze student learning data, and the results of this analysis are then applied to guide subsequent course delivery, thereby transforming data into educational insights.

4 Conclusions

Addressing core challenges in traditional classroom models—such as rigidity, lack of differentiation, and one-dimensional assessment—this paper proposes an "AI-Empowered Four-Dimensional Classroom" teaching reform model, a three-tiered practical training system, and an intelligent assessment mechanism. In terms of educational outcomes, a comparison of teaching practices over two semesters shows that the average practical test score for the 60 students in the class rose from 67.7 to 85.3—a larger increase than in previous years. The final exam pass rate rose from 72.1% to 95.3%, and the rate of students demonstrating proficiency in practical AI tools rose from 32.6% to 86.7%.

This course's pedagogical reform adheres to the principle of "prioritizing hands-on practice with AI-assisted empowerment," fostering students'ability to learn intelligently and use AI tools in a scientific and effective manner. By shifting students from "passive imitation" to "active, intelligent inquiry," the course not only enhances their practical skills in using WPS and improves classroom learning efficiency but also cultivates the digital core competencies and self-directed learning abilities necessary for the intelligent era.

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