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Constructing an AIGC Information Literacy Education Model for Vocational Colleges from the Perspective of Situated Learning Theory

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Abstract
Amid the rapid rise of AIGC (Artificial Intelligence–Generated Content), vocational colleges face structural challenges in cultivating students' information literacy. This study identifies four core deficiencies—outdated content, rigid pedagogy, limited faculty capacity, and superficial assessment—and develops a Context–Community Integrated Model grounded in Situated Learning Theory to address them. The model integrates four strategies: real-task–driven content renewal, community-based immersive learning, collaborative teaching, and process-oriented evaluation. It provides a coherent framework that links theory with practice, bridging the gap between industrial demand and educational supply, and offering guidance for developing adaptive, AI-literate professionals in the intelligent era.

Keywords
AIGC; Information Literacy Education; Vocational Education; Situated Learning Theory

1. Introduction

The rapid rise of artificial intelligence is profoundly reshaping the global economic order. As the main force and skill transmitters of future industries, students in vocational colleges play a vital role in aligning China's talent structure with the demands of the new era. How to harness the empowering potential of AI to cultivate highly skilled and adaptable technical professionals has thus become a core issue in vocational education reform.

Yet, the disruptive and uncertain nature of AIGC—which redefines how information is produced and disseminated while raising technological and ethical challenges—has left many institutions facing “competence anxiety” and “directional confusion” in information literacy education. Traditional approaches, confined to tool demonstrations or outdated retrieval training, fail to address the essential connotations of information literacy in the AIGC era. Consequently, pathways for enhancing students' literacy remain vague and fragmented.

This study therefore explores how to construct a systematic and replicable model of AIGC information

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literacy education that effectively responds to these challenges. The goal is to provide vocational colleges in China with a theoretically grounded and practically oriented framework to nurture "future craftsmen" capable of working intelligently with AI.

2.Theoretical Basis

Situated Learning Theory, proposed by Lave and Wenger in the 1990s, was developed to transcend the traditional "knowledge transmission–reception" model. It views learning not as an abstract act of internalization, but as a dynamic process embedded in social and cultural contexts. Through participation in a community of practice, learners evolve from peripheral novices to core members. The key mechanism—legitimate peripheral participation—emphasizes that learners begin with low-risk tasks and progressively deepen their understanding through imitation, collaboration, and reflection, achieving identity transformation alongside the acquisition of knowledge and skills.

In AIGC-based information literacy education, this theory offers both explanatory depth and practical guidance. AIGC learning, with its focus on adaptation and creativity in dynamic intelligent environments, resonates with the situative and practice-oriented essence of this theory. Moreover, its emphasis on community interaction and identity development underpins the transformation of students from mere technology users to human–AI co-creators. Accordingly, this study conceptualizes three interrelated dimensions—context, participation, and practice—as the theoretical foundation for constructing an AIGC information literacy education model, as illustrated in Figure 1.

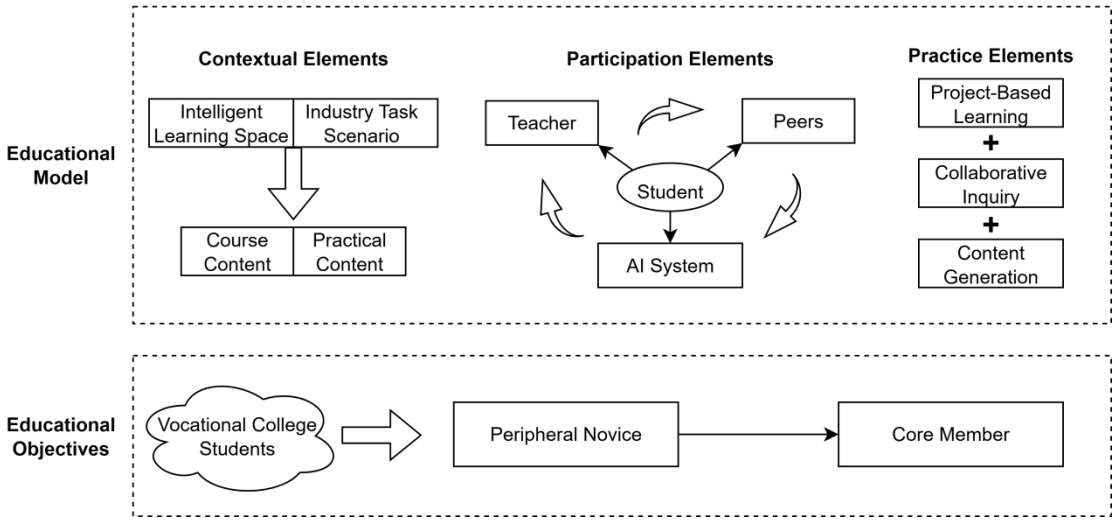


Figure 1. Theoretical Framework of Situated Learning

As illustrated in Figure 1, the framework interprets Situated Learning Theory through three interconnected elements—context, participation, and practice. Context represents the authentic or simulated industrial task environments, including AIGC-enabled intelligent learning spaces where students apply knowledge in immersive scenarios. Participation describes learners' progressive engagement within a community of practice, where interactions with teachers, peers, and intelligent systems foster collaboration, inquiry, and identity transformation from peripheral novices to core members. Practice functions as the carrier of learning, empha-

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sizing project-based tasks and content generation that enhance human–AI co-creation, critical evaluation, and ethical awareness. Together, these elements construct a systemic framework guiding AIGC information literacy education in vocational colleges.

3.Supply–Demand Imbalance in AIGC Information Literacy Education

The rapid development of AIGC technology is reshaping production patterns and labor market demands, while vocational education has struggled to keep pace, creating a widening supply–demand gap. This section examines how emerging competency requirements and structural constraints hinder vocational colleges from advancing AIGC information literacy education effectively.

3.1 Demand Side: Paradigm Shift in AIGC Competency

The rise of new productive forces has shifted work from routine execution to solving unstructured problems. As a major driver of this transformation, AIGC is reshaping occupational structures across industries. In software development, AI assistants such as DeepSeek free programmers from repetitive coding, enabling focus on higher-level design and optimization. In creative industries, tools like Midjourney and Stable Diffusion redefine the creative process, transforming designers into communicators and aesthetic decision-makers. In cross-border e-commerce, large language models such as ChatGPT generate multilingual product descriptions, marketing content, and automated customer responses, greatly enhancing efficiency and responsiveness.

These AIGC-driven transformations signal a paradigm shift in employers' skill expectations. Traditional, tool-based competencies focused on software operation are rapidly losing value, while integrated, adaptive, and higher-order skills are increasingly emphasized. Four key abilities now define the new literacy framework for vocational students in the AIGC era.

First, problem definition and prompt engineering has become a foundational meta-skill: since AI performance depends on input clarity, workers must translate complex needs into precise, structured prompts.

Second, human-AI collaboration and iterative optimization are essential. Workers should treat AIGC as a creative partner, refining AI-generated drafts through continuous interaction to achieve synergistic outcomes.

Third, critical evaluation and judgment are vital. Given potential factual errors and algorithmic bias, workers must cultivate strong critical thinking and verification skills.

Finally, technological ethics and normative application are fundamental. With AIGC's growing influence, adherence to data privacy, intellectual property, and academic integrity has become a core professional obligation.

In short, the competencies of precise problem definition, effective human–AI collaboration, critical evaluation, and ethical application constitute the foundation of AIGC literacy for vocational students. These abilities serve as both indicators of professional competence and guiding principles for designing future-oriented educational models.

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3.2 Supply Side: Structural Challenges in Information Literacy Education

In contrast to the rapidly evolving demands of industry, vocational colleges exhibit structural inertia and systemic inefficiency on the supply side of information literacy education, leaving them ill-prepared for the disruptive impact of AIGC. These challenges are reflected in four key aspects.

First, content lag remains significant. Curricula are updated too slowly to match technological progress, with most courses still centered on traditional retrieval skills such as database use and reference management. Even when AIGC-related content is introduced, it often stays at the level of tool demonstrations (e.g., ChatGPT) rather than cultivating the higher-order competencies required in industrial practice, resulting in a persistent mismatch between classroom content and workplace needs.

Second, methodological rigidity persists. Teaching remains dominated by lectures and basic computer exercises, lacking experiential, inquiry-based, and project-based learning. Such decontextualized instruction fails to replicate the complexity of real work settings or develop students' ability to collaborate effectively with AI in solving unstructured problems.

Third, faculty limitations constrain quality and innovation. AIGC literacy education demands interdisciplinary expertise, yet most teachers are still at an exploratory stage. Few can meaningfully integrate AIGC into teaching or guide students through complex, open-ended problem solving, making the shortage of qualified instructors a central bottleneck.

Finally, superficial assessment weakens outcomes. Conventional evaluations—such as written exams or short reports—test knowledge recall but neglect competencies like problem definition, human–AI collaboration, and critical reasoning. This misalignment between assessment and learning goals restricts feedback and reinforces outdated pedagogical practices.

In sum, vocational colleges face deep structural constraints in AIGC information literacy education. While industry has redefined the core competencies of high-skilled talent, education remains hampered by obsolete content, methods, faculty structures, and assessment systems. This widening gap risks marginalizing vocational education in the AIGC era, making the development of a coherent and adaptive educational model both an urgent necessity and a theoretical imperative.

4.A Situated Learning Model for AIGC Information Literacy Education

To address the four key challenges—outdated content, rigid pedagogy, limited faculty, and superficial assessment—this study proposes a Context–Community Integrated Model grounded in Situated Learning Theory. The model represents not a partial reform but a paradigmatic shift that places learners in authentic practice contexts through four interconnected strategies.

4.1 Real-Task Orientation for Dynamic Content Renewal

This strategy uses authentic tasks as the engine of knowledge construction, replacing static syllabi with dynamic, problem-centered learning aligned with industrial practice. Course content evolves from fixed knowl-

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edge points into problem sets reflecting real-world challenges.A three-tier structure supports progression: micro tasks build AIGC core skills such as prompt design, fact-checking, and multimodal creation; meso tasks embed these skills into professional courses—for example, generating multilingual product descriptions and creative visuals for Shenzhen drone exports; and macro projects tackle real industry or social problems, such as AIGC-enabled elderly care solutions.Through this task-driven mechanism, learning content remains continuously aligned with technological frontiers, offering a sustainable and practice-oriented pathway for curriculum renewal.

4.2 Community of Practice for Immersive Learning

Drawing on the concept of communities of practice, this strategy expands learning from classrooms to collaborative studios and project groups, transforming instruction into co-construction within a learning community.It emphasizes community formation through AIGC workshops and interdisciplinary maker groups; progressive participation, where novices engage via observation and low-stakes contribution before assuming central roles; and cognitive apprenticeship, where experts externalize thinking through modeling and feedback.This immersive approach integrates experiential, inquiry-based, and project-based learning, forming a multifaceted pedagogical system that effectively resolves methodological rigidity and enhances learner engagement.

4.3 Collaborative Teaching and Faculty Transformation

Given the interdisciplinary and fast-evolving nature of AIGC, this strategy reframes teachers as co-learners within a collaborative teaching community. Cross-disciplinary teams combine library specialists (information literacy), course instructors (domain expertise), and IT professionals (technical support).Within this framework, teachers shift roles—from knowledge authorities to context designers who craft authentic tasks; from knowledge transmitters to facilitators who guide inquiry and teamwork; and from sole instructors to lead learners who explore AIGC alongside students.Such collaboration distributes instructional responsibilities, enhances teaching quality, and supports ongoing professional growth, thereby alleviating faculty limitations in implementing AIGC-oriented education.

4.4 Authentic Output and Process-Based Evaluation

To overcome superficial assessment, this strategy builds a process-oriented evaluation system centered on authentic outputs. Evaluation focuses on problem-solving, creativity, and human–AI collaboration rather than rote knowledge.A digital portfolio records the entire learning process—from task drafts and AI interactions (prompts) to revisions and reflections—capturing both products and processes. Multi-source evaluation by teachers, peers, students, and industry mentors employs dynamic criteria emphasizing clarity, collaboration efficiency, critical depth, and innovation.This multidimensional system holistically assesses AIGC-related competencies and aligns evaluation with the cognitive and practical demands of intelligent work environments.

The Context–Community Integrated Model systematically addresses content lag, methodological rigidity, faculty limitations, and superficial assessment through four interlinked strategies. Embedding the principles of Situated Learning Theory across all stages of design and implementation, the model offers a coherent, the-

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ory-based framework to guide the reform of AIGC information literacy education in vocational colleges.

5. Conclusion

This study investigates the systemic challenges facing vocational colleges in advancing AIGC-oriented information literacy education, identifying four core deficiencies: outdated content, rigid pedagogy, limited faculty capacity, and superficial assessment. Grounded in Situated Learning Theory, it proposes a Context–Community Integrated Model that addresses these issues through real-task–driven content renewal, community-based immersive learning, collaborative teaching, and process-oriented evaluation. The framework offers both theoretical insight and practical guidance, bridging the gap between industrial demand and educational supply. By linking Situated Learning Theory with AIGC-enabled pedagogy, it provides a coherent model for cultivating technically skilled, AI-literate professionals suited to the demands of the intelligent era.

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