WEP Warwick Evans Publishing

Journal of Educational Development and Social Sciences

ISSN: 3080-9967 (Print), ISSN: 3080-9975 (Online) | Volume 1, Number 1, Year 2026
DOI: https://doi.org/10.62051/jedss.v1n1.05
Journal homepage: https://jedss.org

Analysis of the Status Quo of AI Literacy Among Business Students and Optimization Strategies for Teaching

Hua Zhang *

School of Business Administration (Guangdong Business College, School of Innovation and Entrepreneurship), Guangdong University of Finance & Economics, Guangzhou, China
*Corresponding Author: huahua555782@163.com

ABSTRACT

This study analyzes the status and structural characteristics of college students' AI literacy to inform educational optimization. Based on a four-dimensional framework ("Technological Cognition - Tool Application - Innovative Practice - Ethical Responsibility"), a survey (N=112) revealed an inverted pattern: "high application breadth, low cognitive depth." While students frequently use AI tools like DeepSeek and Doubao for academic tasks, they lack deep understanding of principles like machine learning. Data indicates that while critical AI literacy significantly drives innovation, current education fails to shift students from "tool dependence" to "cognitive restructuring."

KEYWORDS

Business Students; Critical AI Literacy; Empirical Research; Teaching Optimization Strategies.

1. INTRODUCTION

With the explosive development of Generative AI (GenAI) technology, AI Literacy has become one of the core competencies essential for college students in the digital era. AI literacy is not merely a collection of operational skills, but a comprehensive system encompassing critical thinking, ethical awareness, and innovative capabilities [1].

However, what is the actual status quo of AI literacy among current college students? Does it remain at the superficial level of tool usage, or has it penetrated the core of cognitive reshaping? Based on empirical survey data from 112 business students, this study attempts to answer this question. By introducing the theoretical perspectives of "Critical AI Literacy" and "Knowledge Restructuring," this paper aims to deeply analyze the behavioral characteristics, cognitive levels, and potential risk hazards in students' AI usage, thereby proposing teaching optimization strategies that align with the development needs of higher education.

2. THEORETICAL FRAMEWORK AND ANALYTICAL DIMENSIONS

2.1. Deconstructing AI Literacy Among College Students

This study synthesizes core perspectives from Zhang & Luo (2026) [2] and Zhou et al. (2026) [3] to construct the analytical framework for the survey. We deconstruct college students' AI literacy into the following four core dimensions, which serve as lenses for analyzing the survey data:

1. Cognitive Understanding: Refers to the level of understanding regarding AI technical principles, distinctions (e.g., General vs. Specialized AI), data security, and the working principles of sensors.
2. Tool Application: Refers to the frequency, proficiency, and problem-solving ability in using AI tools across multiple scenarios (such as classroom learning, assignments, and research).
3. Ethical Responsibility: Refers to the ability to identify AI ethical risks, algorithmic bias, and legal issues, as well as the degree of concern regarding technology loss of control.
4. Innovative Practice: Refers to the ability to utilize AI for knowledge restructuring, evaluating media presentation, solving professional problems, and generating new content.

2.2. Critical AI Literacy

Critical AI Literacy is not a simple superposition of critical thinking and AI literacy, but a composite competency formed through their deep integration. It represents an individual's profound understanding and mastery over AI tools and their application contexts. Distinct from traditional AI literacy, which emphasizes operational skills and basic ethical norms, Critical AI Literacy underscores a sustained, dynamic posture of scrutiny within specific usage contexts. This literacy demands that users not only possess proficiency in operating AI tools but also cultivate an interrogative spirit regarding the essence of technology, a consciousness for verifying the reliability of outputs, and the capacity for deep reflection on the social, cultural, and ethical implications of its widespread application. It is a high-order capability that shifts from "passive acceptance" to "active interrogation," and from "tool dependence" to "cognitive synergy."

Based on the APSE model proposed by Chaoran Wang et al., Critical AI Literacy can be deconstructed into four interrelated core dimensions:

1. Critical AI Awareness: Refers to the lucid cognition of the internal logic of algorithms, potential biases in training data, and the inherent functional limitations of technology.
2. Critical AI Positioning: Emphasizes maintaining subjectivity balance during human-computer interaction, reflecting on the role boundaries and value stances of humans in AI-assisted decision-making and creation.
3. Critical Human-AI Interaction Strategies: Involves adopting reflective methods to communicate effectively with AI tools, utilizing AI for deep self-directed learning and problem inquiry.
4. Critical Evaluation of AI Affordances and Outputs: Entails the ability to assess the value orientations of AI systems, the limitations of output content, and potential risks.

This study posits that to avoid the traps of "technological dependence" and "intellectual inertia" amidst the AI wave, college students must possess these critical capabilities. Only then can they transform AI into a "wisdom engine" that fosters personal innovative behavior through reflective knowledge restructuring, rather than merely an "automatic pen" for efficiency.

3. RESEARCH DESIGN

This study targets students from various business majors. Through a questionnaire survey, a total of 112 valid samples were collected. In terms of demographic characteristics, the sample shows a higher proportion of females: 41 males (36.61%) and 71 females (63.39%). The grade distribution is mainly concentrated in the middle and upper levels of undergraduate studies, specifically sophomores (35.71%), juniors (47.32%), and seniors (16.96%), a group that already possesses a corresponding reserve of professional foundational knowledge.

Regarding professional background, the sample is dominated by economics and management majors. Marketing accounts for the highest proportion (43.75%), followed by International Economics and Trade (33.93%) and E-commerce (8.04%). This compositional characteristic provides typical sample support for exploring the current status of AI literacy among college students with a business background.

4. THEORETICAL FRAMEWORK AND ANALYTICAL DIMENSIONS

Based on the theoretical framework mentioned above, we conducted an in-depth excavation of the survey data.

4.1. "Breadth" vs. "Depth" in AI Tool Application

The survey reveals an extremely high penetration rate of AI tools among college students. In response to the question "In which scenarios have you used AI tools?", classroom learning (84.82%), self-study after class (85.71%), and homework (85.71%) emerged as the three primary contexts. This indicates that AI has become an infrastructure for daily learning among college students.

However, regarding tool selection, students exhibit a distinct preference for "localization" and "ease of use." When asked to identify their "three most familiar AI tools," DeepSeek (85.71%) and Doubao (80.36%) ranked top two, while ChatGPT (28.57%) and OpenAI (3.57%) showed significantly lower proportions. This suggests that college students are more inclined to use localized tools that are friendly to the Chinese context, have low access barriers, and offer fast response times, rather than simply following international open-source models. This preference reflects a pursuit of "efficiency maximization" in tool application, yet it also highlights limitations in accessing cutting-edge technologies (such as GPT-4/5).

4.2. "Structural Gap" in Technical Understanding

Despite the widespread application of AI technology among students, their level of technical cognition exhibits a distinct structural imbalance. The survey reveals that while students possess a relatively high level of basic cognition—for instance, a high proportion expressed "agree" or above regarding "knowing the meaning of "Artificial Intelligence Network"—they are markedly deficient in understanding deep technical principles.

Scores were significantly lower in items such as "explaining how reinforcement learning works" and "distinguishing between supervised and unsupervised learning". Specifically, only about 54.46% of students indicated they could explain reinforcement learning, and merely 46.43% could clearly distinguish between the two learning modes.

This phenomenon corroborates the view of Liu et al. (2025): college students generally possess "procedural knowledge" of technology but lack the "conceptual knowledge" of the underlying algorithmic logic [4]. This state of "knowing the what but not the why" easily leads to blind dependence on or excessive deification of AI during usage, thereby hindering the development of critical thinking and innovative capabilities.

4.3. "Awakening" and "Anxiety" of Ethical Awareness

In the dimension of ethical responsibility, the survey data reveals a contradictory tension. On one hand, students demonstrate a high perception of ethical risks. In the statement regarding "understanding of AI ethics," items such as "data security" and "AI vulnerabilities" received relatively high scores.

On the other hand, at the level of "ethical attitude," data concerning "believing that AI loss of control will cause harm" and "believing that AI easily breaks ethical standards" shows that over 60% of students held an attitude of "relatively agree" or "strongly agree." This indicates that while enjoying the convenience of AI, college students generally experience a sense of "technological anxiety" and worry about uncontrollable risks. This aligns with the requirements of "Critical AI Literacy" mentioned in theoretical research—that is, maintaining a stance of scrutiny and skepticism towards technology.

4.4. "Potential" and "Bottlenecks" in Innovative Practice

In the survey, 51 participants (45.54%) indicated that they had participated in courses or projects related to data analysis. Regarding usage scenarios, the high percentages for academic paper writing (66.96%) and scientific research projects (18.75%) indicate that AI has already intervened in higher-order thinking activities. However, due to a lack of profound understanding of technical principles (such as the evaluation ability regarding media presentation in TU9), students still face bottlenecks in utilizing AI for genuine "innovative reconstruction." The majority of students remain at the primary stage of using AI for "cost reduction and efficiency enhancement," rather than reaching the advanced stage of using AI to "reconstruct knowledge systems."

5. TEACHING OPTIMIZATION STRATEGIES

Based on the theory of Critical AI Literacy and empirical analysis, this study proposes the following teaching optimization strategies.

5.1. Curriculum System Reconstruction: Shifting from "Skill-Oriented" to "Thinking-Oriented"

Current surveys indicate that while students are adept at using tools like DeepSeek and Doubao to complete tasks, their understanding of the underlying logic remains weak. Universities should draw upon the implications of Critical AI Literacy (APSE Model) to construct a curriculum system integrating "General Education + Professional Knowledge + Critical Thinking."

For instance, introductory courses should focus on Prompt Engineering and efficient interaction with mainstream tools (e.g., DeepSeek) to meet students' immediate efficiency needs. Advanced courses, however, should introduce AI principles, algorithmic bias, and ethical discussions, guiding students to transform from "users" into "critics." This approach addresses the "technological anxiety" and "superficial cognition" identified in the survey.

5.2. Teaching Model Innovation: Pedagogy Based on "Reflective Knowledge Reconstruction"

According to Zhang & Luo (2026), Critical AI Literacy influences innovative behavior through "Reflective Knowledge Reconstruction"[2]. In teaching practice, educators should avoid allowing students to simply copy AI answers; instead, they should design complex tasks requiring "Human-AI Collaboration."

For example, in academic writing courses, students could be required not only to use AI for drafting but also to critically evaluate the accuracy of the generated content (fact-checking) and refine it using their professional expertise. This "Generate-Evaluate-Reconstruct" process can effectively bridge the "Knowledge-Action Gap" found in the survey.

5.3. Strengthening Ethics Education: Establishing "Responsible AI Usage Guidelines"

In response to the "ethical anxiety" and "data security awareness" observed among students, universities should establish clear guidelines for AI usage. Specialized AI ethics workshops can be organized to discuss the boundaries of academic integrity (e.g., distinguishing between AI ghostwriting and assistance). Through case studies, students can understand the importance of data privacy protection, thereby transforming "anxiety" into "responsible agency."

5.4. Resources and Support: Building an Intelligent Knowledge-Sharing Platform

Given that the survey sample consists primarily of non-computer science majors (such as Marketing and International Trade), universities should provide interdisciplinary support. Libraries or academic affairs offices could build an "AI + Discipline" case repository, demonstrating how to effectively utilize tools like DeepSeek for literature reviews or data analysis in humanities and business. This will lower technical barriers and promote knowledge sharing and innovation among students from diverse disciplinary backgrounds.

6. CONCLUSION

Based on a cutting-edge theoretical framework and empirical survey data, this study reveals the current state of college students' AI literacy as "high application, low cognition." Although tools like DeepSeek have deeply integrated into students' academic lives, without the guidance of critical thinking and deep understanding, AI risks becoming merely an "efficiency tool" rather than an "innovation engine."

The goal of future education should not be to cultivate "skilled AI operators," but to foster innovative talents equipped with "Critical AI Literacy." Universities need to guide students in utilizing AI for deep knowledge reconstruction through curriculum restructuring, pedagogical innovation, and the establishment of ethical norms, thereby preserving human agency and creativity in the era of intelligence.

CONFLICTS OF INTEREST

The study has no conflict of interest.

ACKNOWLEDGEMENTS

The authors gratefully acknowledge the financial support from Guangdong Province 2024 Annual Provincial Quality Engineering Project for Higher Education Teaching Reform Project: "Experimental Teaching Reform of 'Retailing' Based on OBE Concept".

REFERENCES

[1] Tang Qianwen, Yin Zihan, Zhang Hao. Cultivation Goals and Implementation Strategies of College Students' Digital Literacy in the Context of Generative AI[J]. Library Work and Study, 2025(4): 95-102.

[2] Zhang Luo. Research on the Impact of Critical AI Literacy on College Students' Innovative Behavior from the Perspective of Knowledge Management[J]. China Higher Education Research, 2026(2): 28-35.

[3] Zhou Xin, Yang Ming, Li Lexing, Wang Yaobin. Research on the Evaluation Framework, Current Status, and Educational Optimization Strategies of College Students' AI Literacy[J]. Library Science Research, 2026(2): 23-31.

[4] Liu Ming, Guo Shuo, Su Yifei, Li Yi, Kui Xiaoliang. Development and Application of an Assessment Tool for College Students' Generative AI Literacy[J]. Modern Distance Education Research, 2025, 37(6): 24-33.