Development of Digital Knowledge and Skills for Teachers of Ideological and Political Courses

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Abstract

Enhancing the digital literacy of ideological and political education instructors in higher vocational colleges has become a pressing issue amid educational digital transformation. This study employed a single-group pre-post quasi-experimental design with 20 instructors at Quanzhou College of Technology. A specialized training program covering digital technology literacy, smart teaching competencies, and digital ethics was implemented. Results showed post-test scores significantly increased by 15.45 points, with a Teaching Efficiency Index of 0.56, exceeding the high-effectiveness threshold. Satisfaction scores ranged from 4.33 to 4.52 on a 5-point scale, indicating strong teacher recognition. Course content design and instructional practicality emerged as key factors influencing satisfaction. Recommendations are proposed at both individual and institutional levels, and future research directions are identified.

Keywords: higher vocational colleges; ideological and political education instructors; teacher digital literacy

1. Background and Significance of the Problem

As digitalization reshapes global education, China is accelerating educational digital transformation to empower high-quality development. The Opinions on Accelerating the Digital Transformation of Education (Ministry of Education et al., 2025) calls for comprehensively enhancing teachers' and students' digital literacy, while the Opinions on Promoting the High-Quality Development of Modern Vocational Education (General Office of the CPC Central Committee & General Office of the State Council, 2021) requires vocational education to keep pace with industrial digital transformation. The depth of vocational education's digital transformation directly affects talent cultivation quality; its core lies in adapting to technological change and industrial upgrading (Tao and Li, 2023).

Ideological and political education courses are key to fostering virtue and nurturing talent. Instructors' digital literacy not only impacts classroom effectiveness but also determines their ability to safeguard ideological ground in cyberspace and enhance courses' intellectual depth. The deep

integration of technological empowerment and value-driven guidance is central to this transformation (Gai and Haoriva, 2024), requiring alignment between digital technology and the intrinsic characteristics of ideological and political education (Hou, 2025).

The national standard Digital Literacy for Teachers (Ministry of Education of the People's Republic of China, 2022) sets systematic requirements for digital teaching competencies. For higher vocational ideological and political education instructors, this carries dual significance: mastering digital skills for teaching effectiveness while identifying ideological risks online, integrating digital "red" resources, and innovating value guidance methods.

Significant theoretical contributions exist regarding teacher digital literacy's connotations, standards, and evaluation frameworks (Wu et al., 2023), with some studies drawing on EU frameworks for tiered design and contextual adaptation (Yan and Liu, 2022). However, for instructors embodying both "vocational" and "ideological-political" dimensions, empirical research based on precise needs analysis and training effectiveness remains scarce. As Kang and Yu (2024) emphasize, such training must be anchored to the value-guidance function, not merely technical operations.

2. Research Objectives

This study empirically compares changes in instructors' digital literacy before and after training and assesses program satisfaction.

Research Hypotheses

H1: Training will significantly improve teachers' digital literacy.

H2: Teachers will have high satisfaction with the training.

Scope of the Research

This study examines digital literacy development among 20 full-time ideological and political education instructors at Quanzhou College of Technology. The framework covers three dimensions: digital technology knowledge, digital teaching competencies, and digital ethics and responsibility. The independent variable was a specialized digital literacy training program; dependent variables were changes in digital literacy and training satisfaction. The study was conducted from September to December 2025.

Research Methodology

This study adopted a single-group pre-post quasi-experimental design with 20 ideological and political education instructors at Quanzhou College of Technology. The independent variable was an 8-hour digital literacy training program; the dependent variables were changes in digital literacy and training satisfaction.

Research Instruments

Two instruments were employed. The Digital Literacy Test for Ideological and Political Education Teachers (100 points, 23 multiple-choice and open-ended questions) covers digital

technology knowledge, digital teaching competencies, and digital ethics and responsibility, used for pre- and post-training comparison. The Training Satisfaction Survey contains 18 five-point Likert items across four dimensions—course content design, instructional practicality, alignment with ideological and political education characteristics, and training organization and services—plus two open-ended questions.

The training program, structured around the Ministry of Education's Teacher Digital Literacy standards and co-designed by experts in digital technology, ideological and political education, and vocational education, comprises three modules: "Digital Literacy and Policy Understanding," "Enhancing Smart Teaching Skills and Classroom Restructuring," and "Digital Ethics and Online Ideological and Political Guidance." The training employs participatory learning, case-based instruction, and task-driven approaches, emphasizing "learning by doing."

In the trial stage, six teachers completed the instruments, and feedback was used for optimization. Cronbach's alpha values ranged from 0.71 to 0.86, and Item-Objective Congruence coefficients exceeded 0.70, indicating good reliability and content validity.

3. Data Collection

Data were collected in two phases. The pre-test was administered to all 20 participants one week before the training commencement to establish baseline digital literacy levels. The 8-hour specialized training program was then delivered over two consecutive days. The post-test and satisfaction survey were administered immediately upon training completion to capture immediate learning outcomes and participant perceptions. All instruments were distributed in paper format and completed on-site to ensure a 100% response rate.

Data Analysis

Quantitative data were analyzed using descriptive statistics, including means, standard deviations, and score changes. The Teaching Efficiency Index (E.I.) was calculated using the formula E.I.to evaluate training effectiveness, with values exceeding 0.50 indicating high effectiveness. Satisfaction data were analyzed dimensionally, with means calculated for each of the four dimensions and individual items. Qualitative responses from open-ended questions were categorized thematically to supplement quantitative findings.

4. Research Summary

First, learning outcomes were highly significant. The post-test average score was 87.85, representing a substantial increase of 15.45 points from the pre-test score of 72.40. The Teaching Efficiency Index (E.I.) was 0.56, exceeding the standard for high effectiveness, demonstrating that the training was highly effective in imparting knowledge and skills. The post-test standard deviation narrowed from 4.63 in the pre-test to 3.54, indicating reduced individual differences among teachers.

Table 1: Comparison of Pre- and Post-Test Scores

Test Type	Total Score	Mean	Standard Deviation	Increase
Pre-test	1448	72.40	4.63	-
Post-test	1757	87.85	3.54	+15.45

E.I.= (1757 - 1448) / (20 × 100 - 1448) = 309 / 552 ≈ 0.56.

Second, satisfaction was high across all dimensions (means 4.33–4.52), led by "Alignment with Ideological and Political Education Characteristics" (4.52). Strengths included training pace (4.70) and trainer quality (4.65); weaknesses were material completeness (3.90) and "red" resource development (3.95).

Table 2: Statistical Summary of Scores for Each Dimension of Training Satisfaction

Dimension	Mean	SD	Highest Sub-score	Lowest Sub-score
1. Course Content Design	4.50	0.387	Appropriateness of Duration and Pacing(4.70)	Effectiveness of Hands-on Technical Guidance(4.15)
2. Practicality of Instruction	4.33	0.433	Direct Applicability of Skills(4.60)	Inspiration for Developing “Red Resources”(3.95)
3. Alignment with Ideological and Political Education Characteristics	4.52	0.365	Capability in Ideological Education(4.65)	Reflection of the Distinctive Nature of Ideological and Political Education(4.45)
4. Training Organization and Services	4.37	0.352	Instructors’ Professional Competence and Q&A Support(4.65)	Completeness of Training Materials(3.90)

Third, qualitative feedback revealed that faculty members have increasingly sophisticated needs, expressing expectations for "deep integration of AI and ideological and political education," "design of virtual simulation resources," and "big data analysis of student learning progress." The training brought about profound changes in teaching models, tool application, conceptual upgrades, and teaching effectiveness.

5. Discussion

Both hypotheses were supported. A training program designed around "content-based, practice-oriented, and ideological and political education-integrated" principles significantly enhanced instructors' digital literacy with high satisfaction. The highest score in "alignment with ideological and political education characteristics" confirms that such training must be anchored to value guidance (Kang and Yu, 2024). The "learning by doing" task-driven approach aligns with Liu's (2024) "7+2+1" model emphasizing practice and peer collaboration, and resonates with the embodied cognition perspective advocating knowledge internalization through authentic contexts and bodily experiences (Zhu et al., 2021).

6. Recommendations

6.1 Faculty level: Actively apply acquired skills, strengthen peer connections, and build a long-term support network.

6.2 Institutional level: Provide tiered, targeted training; compile application manuals and offer expert lectures on "red resources" development; establish online discussion groups for ongoing Q&A support and resource updates to foster a development ecosystem.

7. Research Limitations and Future Directions

This study had a small sample size, lacked a control group, and measured only immediate effects without follow-up data on teaching behavior changes or long-term student outcomes. Future research should conduct cross-institutional, large-sample controlled studies with longitudinal tracking to examine medium- to long-term effects on teaching behaviors and student learning outcomes.

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