

ACADEMIC ADMINISTRATION APPROACHES FOR PROMOTING INFORMATION LITERACY OF TEACHERS IN MIANYANG CITY COLLEGE, CHINA

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Abstract

The objectives of this research were: 1) to investigate the current situation of information literacy among teachers and administrators at Mianyang City College. 2) to propose academic administration approaches for promoting Mianyang City College teachers' information literacy. The samples of this research were 265 teachers and 132 administrators from Mianyang City College. The sample size was obtained using the Krejcie and Morgan formula. The stratified random sampling was used to sample the entire population. A mixed methods approach (quantitative and qualitative research) was used to analyze the data. The research instruments were questionnaires and set of questions for the focus group meeting. The questions were reviewed and checked by three experts and the methodology of valuation used was the Index Of Item-Objective Congruence (IOC). Quantitative methods (percentages, means, standard deviations) were employed for data analysis.

The results of this research show that: the current situation of information literacy among teachers and administrators at Mianyang City College was at a moderate level. Specifically, the Information Technology Dimension has the highest score, while the Information Knowledge Dimension and the Information Ability Dimension have the lowest scores. According to self-evaluations, most teachers and administrators occasionally or never critically evaluate information from various sources, and the majority of them have a relatively low proficiency in using Excel software. These strategies integrate the Technology Acceptance Model (TAM) and the Cognitive Absorption Theory to address systemic barriers. The proposed academic administration approaches encompass three core dimensions: 1) Tiered technical training (early-career teachers, mid-career teachers, veteran teachers), 2) Ethics governance and cognitive reinforcement (mandatory courses, AI detection systems), 3) Resource synergy (digital resource centers, cross-departmental collaboration).

Keywords: Academic Administration, Information Literacy, Technology Acceptance Model, Cognitive Absorption Theory, Educational Informatization

Introduction

With the rapid development of information technology and the advancement of educational informatization, information literacy has emerged as a crucial competency for teachers in modern education.(Yang et al., 2019). As outlined in China's Education Modernization 2035 and the Education Informatization 2.0 Action Plan, information literacy is defined as "the comprehensive ability of teachers to leverage information technology to optimize teaching, innovate pedagogical models, and solve complex educational problems." This shift is essential for cultivating high-quality professionals capable of thriving in the digital age.

However, existing research highlights several key challenges faced by teachers in applied undergraduate institutions. First, there is a superficial application of technology, where teachers can operate basic multimedia equipment but lack a deep understanding of emerging technologies such as AI and big data (Song et al., 2020). Second, ethical norms are often neglected, with teachers showing weak awareness of intellectual property rights and improper citation practices (Li and Zhang, 2024). Third, institutional support is fragmented, with uneven resource allocation and a lack of cross-departmental collaboration mechanisms, which limit the effective integration of technology into teaching (Niyazova, 2024).

According to the Technology Acceptance Model, user adoption hinges on "perceived usefulness and perceived ease of use" (Davis, 1986). The Cognitive Absorption Theory contends that "deep engagement fosters intrinsic motivation and skill mastery" (Adeel et al., 2023) and emphasizes that educators must be guided "from technology users to scholarly educators" (Parks, 2022). The present study establishes an integrated theoretical foundation.

Focusing on Mianyang City College as a typical case, faculty members exhibited superficial technology application, weak professional ethics, resource scarcity, and uneven competencies, while the administrators had demonstrated low AI literacy, vague evaluation criteria, and limited cross-unit support. In response to these issues, this study proposes a "Three-Dimensional Framework of Tiered Training–Dynamic Assessment–Resource Synergy." By designing tiered pathways for early-career, mid-career, and veteran teachers, this framework directly responds to the policy requirements of China's Education Modernization 2035 to "strengthen teachers' digital competencies." It aims to construct academic administration approaches for promoting Mianyang City College teachers' information literacy.

Objectives of this Research

1. To investigate the current situation of information literacy among teachers and administrators at Mianyang City College.

2. To propose academic administration approaches for promoting Mianyang City College teachers' information literacy.

Research Methodology

1. Research design

A mixed methods design (quantitative and qualitative research) was used to analyze the data, as it combines both quantitative and qualitative approaches throughout the research process.

2. Population and sample group

2.1 Population

The population was divided into two groups: 1) 847 teachers at Mianyang City College and 2) 201 administrators at Mianyang City College.

2.2 Sample Group

The sample groups included: 1) 265 teachers, and 2) 132 administrators, calculated according to the Krejcie and Morgan formula. (Krejcie and Morgan, 1970). Stratified random sampling was used to examine the entire population.

3. Research Instruments

The instruments used in this research were as follows:

3.1 Questionnaires

The questionnaire consisted of three parts: 1) The first part collected personal information; 2) The second part assessed respondents' perceptions of their current information literacy; 3) The third part focused on respondents' self-evaluation of information literacy. The questions were reviewed by three experts and validated using the IOC. Cronbach's Alpha coefficient was used to analyze the reliability of the quality assessment of the questionnaires, the score of Cronbach's Alpha coefficient in each questionnaire more than 0.89.

3.2. A focus group discussion was conducted with teachers and administrators to develop academic administration approaches.

4. Data Collection

4.1 The researcher submitted a formal request to the school director in advance, seeking permission to collect data from the sample group. The research objectives were clearly communicated to the respondents.

4.2 The questionnaire was distributed online through Questionnaire Star.

4.3 The focus group discussion was used to collect the data from four experts and four administrators.

5. Data Analysis

5.1 Quantitative data were analyzed using descriptive statistics, including frequencies, percentages, means, and standard deviations.

5.2 The qualitative data from the focus group discussion were analyzed thematically. Descriptive statistics, such as frequencies, were used to support the interpretation.

Research Results

1. The results presented in the tables illustrate the current state of information literacy among teachers and administrators at Mianyang City College. These results are shown in Table 1 and Table 1.

Table 1: The Current State of Teachers' Information Literacy

Dimension	n=265		Verbal Interpretation
	Mean	S.D.	
1.Information Knowledge	3.14	1.23	Middle
2.Information Technology	3.16	1.20	Middle
3.Information Ability	3.14	1.16	Middle
4.Information Ethics	3.15	1.20	Middle
Total	3.15	1.20	Middle

According to Table 1, the information literacy survey for teachers at Mianyang City College was at a moderate level, indicating a need for improvement. The “Information Technology” dimension registered the highest score ($\bar{x} = 3.16$, $SD=1.20$), demonstrating that teachers felt relatively confident in multimedia presentation, network retrieval, and basic software operation; nevertheless, this value still hovered at the upper bound of the “Middle” range, implying that their confidence was not matched by deeper application. The “Information Knowledge” dimension ($\bar{x} = 3.14$, $SD=1.23$) and the “Information Ability” dimension ($\bar{x} = 3.14$, $SD=1.16$) were the lowest, indicating that the teacher cohort’s grasp of theoretical aspects—such as concepts of information literacy, retrieval principles, and evaluation frameworks—was most evidently insufficient, with sizable internal variation. Notably, the overall teacher profile presented a “low-level equilibrium”; any targeted gain in a single dimension was likely to pull the entire profile upward.

Table 2: The Current State of Administrators' Information Literacy

Dimension	n=132		Verbal Interpretation
	Mean	S.D.	
1.Information Knowledge	3.08	1.21	Middle
2.Information Technology	3.07	1.24	Middle
3.Information Ability	3.06	1.16	Middle
4.Information Ethics	3.08	1.27	Middle
Total	3.07	1.22	Middle

According to Table 2, the information literacy survey for administrators at Mianyang City College was at a moderate level, indicating a need for improvement. The four-dimensional scores of administrators were slightly lower than those of teachers overall, yet their distribution was more pronounced: the “Information Ability” dimension ($\bar{x} = 3.06$, $SD=1.16$) was the lowest, indicating that some administrators still struggled with tasks such as system operation and maintenance and data dashboards, and that internal ability differentiation was evident; the “Information Ethics” dimension ($\bar{x} = 3.08$, $SD=1.27$) was the highest, showing that on issues of academic norms, data compliance, and intellectual property, administrators’ self-ratings were generally low and opinions were dispersed. Taken together, these results demonstrated that administrators’ confidence in using data for decision support and resource integration in management scenarios was significantly insufficient.

2. The self-evaluation results of information literacy among teachers and administrators at Mianyang City College are presented in Table 3.

Table 3 Self-evaluation of teachers’ Information literacy

No.	Question Topic	Teachers’ answer		Administrators’ answer	
		Most Frequent Response	Frequency (percentage)	Most Frequent Response	Frequency (percentage)
1	Critical evaluation of media info	Never	107 (40.38%)	Occasionally	61 (46.21%)
2	Conflict of training vs academic time	Occasionally	106 (40%)	Rarely	58 (43.94%)
3	Computer certificate	No	143 (53.96%)	No	77 (58.33%)
4	Understanding of info literacy	Partially Understand	100 (37.74%)	Partially Understand	53 (40.15%)

5	Understanding of IT terms	Partially Understand	121 (45.66%)	Do Not Understand	60 (45.45%)
6	Ability to define needed info	Occasionally	103 (38.87%)	Cannot determine	61 (46.21%)
7	Familiarity with info sources	Not familiar	108 (40.75%)	Basically familiar	65 (49.24%)
8	Excel proficiency	Basically proficient	112 (42.26%)	Cannot use	56 (42.42%)
9	Quality of collected info	Occasionally	107 (40.38%)	Occasionally	59 (44.7%)
10	Follow info ethics when sharing	Occasionally	125 (47.17%)	Never	64 (48.49%)
11	Resist harmful online info	Occasionally / Never	114 (43.02%)	Occasionally	60 (45.45%)
12	Cite sources correctly	Occasionally	131 (49.43%)	Occasionally	61 (46.21%)
13	Integrate info into teaching	Never	112 (42.26%)	Occasionally	59 (44.7%)
14	Multimedia use in courses	Both theoretical & technical	117 (44.15%)	Not used in either	60 (45.45%)
15	Awareness of info in research	Understand small portion	117 (44.15%)	Do not understand	59 (44.7%)
16	Factors affecting info access	Insufficient funding	138 (52.08%)	Limited access & platform lack	72 (54.55%)

According to Table 3, the most concentrated negative response is found in “Computer certificate”: 53.96 % of teachers and 58.33 % of administrators selected “No”. Both proportions exceed one half, and the administrator figure is higher than that of teachers, exposing the absence of institutionalised, authoritative training. In the behaviour-frequency items, 42.26 % of teachers ticked “Never” for “Integrate info into teaching”, the most severe single-pole option across all items, indicating that classroom transfer is the weakest link. Immediately following is “Critical evaluation of media info”: 40.38 % of teachers chose “Never”, while 46.21 % of administrators selected “Occasionally”, illustrating that both parties lack routine practice in distinguishing information authenticity. At the tool-skill level, “Excel proficiency” shows a contrast: 42.26 % of teachers regard themselves as “Basically proficient”, yet 42.42 % of administrators admit they “Cannot use”, creating a clear digital divide. Finally, in “Follow info ethics when sharing”, the “Occasionally” proportion among teachers reaches 47.17 %, and administrators register 48.49 % selecting “Never”, highlighting a generally weak

awareness of academic norms and forming a prominent shortfall in the overall improvement of information literacy.

3. Academic Administration Approaches for Promoting Mianyang City College Teachers' Information Literacy.

a) Tiered Technical Training Programs: Implement mandatory basic skills training for new teachers, specialized innovation training for mid-career teachers, and leadership roles in technology-driven projects for senior teachers.

b) Ethics Governance and Cognitive Reinforcement: Integrate ethics education into professional development and use AI-based plagiarism detection to ensure compliance in teaching. Create an ethics manual, apply a review system for major violations, and offer innovation funding for global benchmarking and advanced educational technology adoption.

c) Resource and Institutional Support: Develop a digital resource center with categorized resources, invest in upgrading smart classroom equipment, and establish a dynamic evaluation mechanism to identify and address skill gaps.

4. Validation of the Proposed Approaches

This study conducted a focus group meeting with eight professionals, including experts and frontline managers, to validate the proposed academic administration approaches. Guided by the theoretical framework presented in this paper, the group evaluated the practicality of the "tiered training–dynamic evaluation–resource collaboration" model in addressing the information literacy challenges at Mianyang City College. The participants agreed that the framework demonstrated strong theoretical alignment and offered a systematic intervention to tackle the three-dimensional dilemmas faced by both teachers and administrators. Below are the focus-group questions and selected responses:

A: Targeted and Feasibility of Tiered Training System

Question: Do you believe that the mandatory course "Excel Data Processing and Smart Classroom Operation" and the "Mentorship Program" for early-career teachers can effectively enhance their basic skills. Does this training approach align with Bandura's self-efficacy theory, specifically the role of "vicarious experience" in capability building?

"This training method can effectively enhance the basic skills of early-career teachers. Through "mentoring," early-career teachers can learn and imitate the operations of experienced teachers in practice, which aligns with Bandura's self-efficacy theory and helps to enhance the self-efficacy of novice teachers." Expert 1

"From a management perspective, this training method indeed helps novice teachers quickly adapt to the teaching environment, enhance their basic skills, and lay a solid foundation for their subsequent teaching work." Expert 2

B: Scientific Nature of Dynamic Assessment Mechanism

Question: Do you think the four-dimensional assessment scale (information knowledge, technology, ability, ethics) covers the core dimensions of teachers' information literacy? Is it necessary to add a "cross-disciplinary technical integration capability" indicator?

"The four-dimensional assessment scale already covers the core dimensions of teachers' information literacy, but adding a "cross-disciplinary technical integration capability" indicator is very necessary. Teachers currently perform poorly in this capability, and it needs to be improved through assessment." Expert 1

"From a technical support perspective, adding this indicator can better assess teachers' technical application capabilities in actual teaching, which helps to improve teaching quality." Expert 2

C: Optimization of Assessment System and Resource Synergy

Question: Do you think the "Code of Conduct Information Ethics" needs to include practical details for the "ethics veto power"? What do you think the threshold for ethics violations should be in departmental annual assessments to disqualify from excellence awards?

"Yes, the "Code of Conduct Information Ethics" needs to include practical details for the "ethics veto power." Departments with an ethics violation rate exceeding 30% in annual assessments should be disqualified from excellence awards, which can effectively restrain teachers' behavior." Expert 1

"I agree with including practical details for the "ethics veto power." This can not only clarify the consequences of ethics violations but also enhance teachers' awareness of information ethics and ensure compliance with information ethics." Expert 2

Research Discussion

1. Current Situation of Information Literacy Among Teachers and Administrators at Mianyang City College.

The study revealed that the overall level of information literacy among teachers and administrators at Mianyang City College was moderate, with mean scores of 3.15 and 3.07 respectively. Although the Information Technology dimension scored the highest, performance in the Information Ability and Information Knowledge dimensions was weaker. These findings align with previous studies by Yang and Hu (2019) and Song and Yu (2020) which reported that university teachers in China still apply information technology at a superficial level and lack systematic understanding and effective pedagogical integration.

More than 40% of the teachers in the present sample never critically evaluated media information, and a substantial proportion lacked basic proficiency in using Excel. This result corroborates observations by Yuan (2024) that the development of information literacy

among Chinese university teachers is uneven, with significant shortcomings in instructional application skills and ethical awareness.

Consequently, targeted interventions are required to enhance teachers' information-processing skills, critical thinking, and ethical competence. This perspective is supported by Wang and Li (2022), who argue that teachers' information literacy should transcend basic technical skills to encompass cognitive, evaluative, and ethical dimensions.

2. Academic Administration Approaches for Promoting Mianyang City College teachers' information literacy.

In response to the identified gaps, this study proposes a Three-Dimensional Academic Administration Framework consisting of: 1) Tiered Technical Training, 2) Ethics Governance and Cognitive Reinforcement, and 3) Resource and Institutional Support. The framework is theoretically grounded in the Technology Acceptance Model (Davis, 1986) and Cognitive Absorption Theory (Adeel et al., 2023), highlighting the pivotal roles of perceived usefulness, perceived ease of use, and deep immersion in technology adoption and mastery.

The Tiered Technical Training component is designed according on career stages—early-career, mid-career, and veteran teachers—aligning with foundational training, instructional innovation, and technology leadership responsibilities, respectively. This approach resonates with Zhou (2019) recommendation for “career-stage-based competency pathways” to ensure training appropriateness and effectiveness.

For Ethics Governance, the study advocates integrating ethics education into mandatory professional-development courses and deploying AI-based detection systems. This strategy aligns closely with the cautionary stance of Li and Zhang (2024) regarding “ethical neglect in the information age,” especially given the present finding of severe deficiencies in citation norms and intellectual-property awareness.

The Resource and Institutional Support includes establishing a digital resource center, cross-departmental collaboration protocols, and scheduled upgrades of instructional equipment. Drawing on Niyazova (2024), such organizational support is a critical enabler of effective teaching and research. Moreover, the framework aligns with the Three-Dimensional Academic Administration Model proposed by Eaquals (2021), which encompasses teaching evaluation, teaching implementation, and teaching support.

Research Body of Knowledge

This study explores academic administration strategies aimed at enhancing information literacy among faculty members at Mianyang City College. Grounded in theoretical frameworks such as the Technology Acceptance Model and the Cognitive Absorption Theory, this research addresses the observed moderate levels of information literacy among both

teachers and administrators. The proposed interventions are designed to be both teacher- and administrator-oriented.

The academic administration framework is structured around three integrated pillars: 1) A tiered technical training system tailored to early-, mid-, and veteran-career faculty. 2) A robust ethics governance mechanism encompassing mandatory ethics courses, AI-driven plagiarism detection, a succinct ethics manual, enforcement powers including veto rights for violations, and innovation funding to support global benchmarking initiatives. 3) Comprehensive institutional support, featuring a categorized digital resource center, annual upgrades to smart classroom infrastructure, and a dynamic, four-dimensional assessment system that systematically identifies and addresses competency gaps.

Consequently, this research proposes a holistic and systematic framework designed to enhance information literacy among teachers and administrators at Mianyang City College, as illustrated in Figure 1.

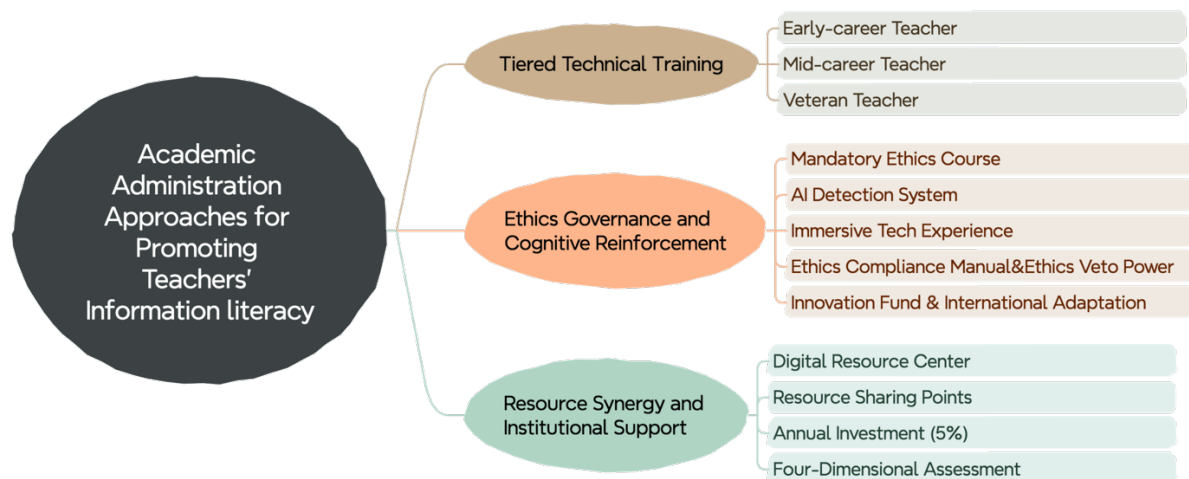


Figure 1 Research Body of Knowledge

Research Suggestion

1. Suggestions in practice

To effectively apply the academic administration approaches proposed in this study, institutions may begin by conducting a needs assessment of their faculty's information literacy across different career stages. Based on the results, a tiered training program can be implemented, focusing on basic technical skills for early-career faculty, innovation and integration skills for mid-career faculty, and leadership competencies for senior faculty. Concurrently, institutions should establish ethics governance mechanisms by integrating mandatory courses on academic norms and data ethics, and by deploying AI-supported integrity detection systems. This ensures that digital literacy development is accompanied by ethical awareness.

Moreover, institutions are encouraged to build a coordinated resource-sharing platform, such as a centralized digital resource center and cross-departmental collaboration mechanisms. Clear assessment mechanisms and incentive structures-such as teaching portfolios, point-based rewards for resource sharing, or recognition for digital innovation-can further support the long-term sustainability of these approaches. These steps ensure that the framework is not only adopted but also effectively internalized in institutional practice.

2. Suggestions for research

2.1 In-depth Research Directions

International Comparative Studies: Compare information literacy enhancement strategies between domestic and international universities to explore localized solutions suitable for China's educational context.

Longitudinal Studies: Conduct long-term tracking of the implementation outcomes to evaluate goal achievement at different stages and adjust strategies accordingly.

Interdisciplinary Research: Integrate perspectives from education, psychology, and information technology to deeply study the impact of information literacy on teaching quality and student learning outcomes.

2.2 Future research may explore the following four avenues: 1) adopt a longitudinal design to track dynamic changes in teachers' information literacy before and after the Tiered Technical Competency Enhancement Program. 2) extend the sample horizontally to diverse regional applied undergraduate institutions to validate the generalizability of the "Tiered Training-Dynamic Assessment-Resource Synergy" framework. 3) incorporate a student-outcome lens to examine the causal impact of enhanced information literacy on learning effectiveness through academic analytics. 4) remain responsive to technological iterations, continuously assessing how emerging AI tools further optimize the training model and thus contribute enduring evidence to educational digital transformation.

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