

THE DEVELOPMENT GUIDELINES OF USING INFORMATION TECHNOLOGY MANAGEMENT FOR TEACHERS IN NANNING UNIVERSITY, CHINA^{*}

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Abstract

The objectives of this research were: 1) to study the level of teachers using information technology, and 2) To suggest the development guidelines for using information technology management of teachers at Nanning University, China. The sample were 291 in-service teachers at Nanning University. Research instruments included: 1) 5-point rating scale questionnaire, and 2) structured interview. data analysis by using percentage, mean, standard deviation and content analysis.

The results were found that: 1) The level of teachers using information technology in Nanning University, China was at a high level. Considering the results of this research aspects ranged from the highest to lowest level were as follows: the highest level was information technology competency, followed by information technology management, information technology service, information technology integration, and the lowest level was information

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technology training. And 2) The guidelines for the development of teachers' using information technology in Nanning University, China adopt a multi-faceted approach, the researcher has analyzed the content as follows: (1) Teachers should proactively learn to operate multimedia equipment, digital tools, etc., deepen the integration of information technology with the entire teaching process, and strengthen the tracking and analysis of students' learning processes; (2) Teachers need to participate in stratified and classified blended training, promote the transformation of training outcomes, and rely on the "one-stop" platform to enhance their ability to independently solve technical problems; (3) Teachers must strictly abide by the university's information technology policies and norms, establish a strong awareness of information security and data governance, and conduct teaching and research-related operations in compliance with regulations; (4) The university should build platforms such as artificial intelligence teaching platforms and classified resource sharing platforms, provide hardware and digital resource guarantees, and support teachers in improving their technical capabilities; (5) The university needs to establish a hierarchical technical support response mechanism, improve the service team's ability to adapt to teaching scenarios, and provide full-process technical support for teaching activities; (6) The university should construct a closed-loop optimization mechanism for the implementation of the guidelines, and dynamically adjust training, services, and management systems based on regular evaluations and teacher feedback.

Keywords: Technology competency, Technology management, Technology service, Technology integration, Technology training

Introduction

Information technology management has emerged as a core strategic function in global higher education, underpinning enhanced teaching quality,

institutional operational efficiency, and systemic digital transformation in universities worldwide. In China, the national drive for educational informatization further elevates the significance of teachers' information technology management, with the Education Informatization 2.0 Action Plan (Ministry of Education, 2018) and China Education Modernization 2035 (2019) explicitly mandating the planning, organization, and governance of information technology application to realize deep integration of technology and teaching, and systematic construction of teachers' digital competence. These policies frame information technology management not merely as technical usage, but as a holistic practice encompassing training, resource allocation, and institutional support for educational innovation. Nanning University has advanced campus informatization construction, yet its teachers face prevalent challenges in information technology management, including homogenized training systems, insufficient pedagogical integration, and delayed technical services issues widely documented in contemporary higher education research. Existing scholarship predominantly focuses on measuring teachers' digital skills rather than developing integrated, management-oriented guidelines that synergize training, infrastructure, service, and governance (Wang Chenhan, 2024), creating a critical research gap in context-specific university-level information technology management frameworks.

Against this backdrop, this study aims to assess the level of teachers' using information technology and to suggest the development guidelines for using information technology management of teachers in Nanning University, China. The findings will advance theoretical understanding of educational information technology management and provide empirically grounded practical guidance for university administrators and educators, addressing both institutional needs and the broader global agenda of higher education digitalization.

Objectives

1. To study the level of teachers using information technology in Nanning University, China.
2. To study guidelines for the development of teachers' using information technology in Nanning University, China.

Literature Review

Theory of information technology management: This study is grounded in a multi-level theoretical framework that integrates individual technology adoption, pedagogical integration, and institutional governance to conceptualize university teachers' information technology management. At the individual level, the Technology Acceptance Model (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003) explain how perceived usefulness, ease of use, and contextual variables shape teachers' digital adoption behavior; however, recent empirical evidence indicates that technology acceptance alone does not necessarily lead to meaningful instructional transformation, as adoption outcomes are mediated by pedagogical readiness and institutional conditions (Scherer et al., 2021). To address the pedagogical dimension, the Technological Pedagogical Content Knowledge framework (Mishra & Koehler, 2006) conceptualizes effective integration as the dynamic interaction among technological, pedagogical, and content knowledge, while contemporary research further emphasizes that digital competence must be embedded in authentic instructional contexts and supported by structured, practice-oriented professional development to translate technical skills into instructional effectiveness (Falloon, 2020; Philipsen et al., 2022). At the organizational level, digital transformation in higher education is increasingly conceptualized as a systemic change process requiring coordinated governance, leadership commitment, infrastructure investment, and continuous feedback

mechanisms (Fullan, 2001; Bond et al., 2020), and the Jisc Digital Capability Framework (2019) similarly advocates balancing individual digital skills with institutional capacity building, policy alignment, and service support. Collectively, these perspectives construct an integrated analytical lens spanning information technology competency, integration, training, service, and management, thereby forming the theoretical foundation of the five-dimensional framework proposed in this study.

The concept of information technology management in education has evolved globally from technical deployment and resource management to the deep integration of technology, pedagogy, and governance, with Chinese national policies aligning with this global trend while forming context-specific development requirements. Internationally, information technology management is defined as an integrated system of individual capabilities and institutional mechanisms that strategically apply information technology to optimize teaching, research, and administrative efficiency (Zhang Yiyang, 2023), with contemporary research emphasizing its dual attributes of individual technical competence and institutional systematic governance (Wu Min, 2022). In China, a series of national policies have continuously enriched and standardized the connotation of teachers' information technology management: the Education Informatization 2.0 Action Plan (Ministry of Education, 2018) highlighted the deep integration of information technology and teaching management, requiring systematic training and support mechanisms; Wu Min (2022) proposed a holistic framework combining explicit components (technical skills, resource utilization) and implicit components (information security awareness, data-driven thinking).

Prior studies have constructed a comprehensive theoretical system for information technology management and defined its individual institutional dual connotation, identifying universal predicaments in higher education

informatization: homogenized training, superficial information technology-teaching integration and non-scenario-based technical services. University teachers have basic information technology competencies yet show unbalanced dimensional development, with training and integration as key weaknesses. A critical gap exists: few empirically grounded, university level integrated guidelines for local Chinese universities, leaving administrators without systematic guidance and motivating this study to develop targeted information technology management guidelines for teachers in Nanning University, China.

Methodology

Population and Sample group: The population of this research was 1,107 in-service teachers at Nanning University, covering 12 teaching units including the Business School, College of Engineering, College of Liberal Arts, and College of Education. Based on Krejcie and Morgan sampling table (1970), the sample group of this research was 291 in-service teachers at Nanning University. By using simple random sampling. A total of 1,107 teachers were consecutively numbered from 1 to 1,107. Using a table of random numbers, 291 corresponding numbers were randomly selected, and the teachers matching these numbers were chosen as study participants, ensuring that the sampling was random and scientific.

Research Instruments: This study adopted a mixed-methods approach, employing questionnaires and interviews as the main research. The answers you fill in are only for the purpose of overall statistical analysis, and will never be processed individually or published publicly. The information is confidential, not disclosed to anyone, and you do not need to fill in your personal name. Please feel free to answer the questions.

Questionnaire: The questionnaire consists of the following two parts: The first section collected basic demographic information of the respondents,

classified by gender, age, educational background, work experience and currently affiliation. The second section employed a five-point Likert scale to assess the status of teachers' using information technology management in Nanning University, China. Based on the conceptual framework of this study, the scale consisted of five dimensions: 1) information technology competency, 2) information technology integration, 3) information technology training, 4) information technology service, 5) information technology management. To ensure the reliability and validity of the questionnaire, the index of objective congruence (IOC) of the questionnaire was examined by three experts, the IOC of questionnaire was 0.67-1.00, and the overall Cronbach's alpha coefficient of the questionnaire was 0.966.

Interview: The first part is the Introduction of background information. The second part includes a series of open-ended interviews. The interview aimed to collect the respondents' opinions on the development guidelines for using information technology management. A total of 5 experts were selected as interviewees and selected based on strict screening criteria as follows: 1) at least 8 years of work experiences in using information technology in teaching, 2) at least 8 years as administrator, 3) graduated with master's degree or above.

Data Collection

The questionnaires were distributed to 291 sample group. The researcher checked out the completeness of the questionnaire and a total of 291 questionnaires were received, accounting for 100 percent. In addition, structured interviews were conducted to further investigate the development guidelines for using information technology management of teachers. The interviews were conducted either face-to-face or online, depending on the availability of the participants, with each interview lasting approximately 25–35 minutes.

Data Analysis

The personal information of the respondents was analyzed by frequency and percentage. The current situation of using information technology management in five aspects, the data was analyzed by mean and standard deviation. The data interpretation for average value is based on Rensis Likert (1932). The data interpretation is as follows: 4.50-5.00 refers to the highest level, 3.50-4.49 refers to high level, 2.50-3.49 refers to medium level, 1.50-2.49 refers to low level, and 1.00-1.49 refers to the lowest level. The structured interview about the development guidelines for using information technology management of teachers at Nanning University, China was analyzed by content analysis.

Results

1. To study the level of teachers using information technology in Nanning University, China, 291 questionnaires were distributed and 291 valid questionnaires were retrieved, with an effective rate of 100 percent, which met the requirements for data collection.

Table 1 Mean and standard deviation of teachers' using information technology management in five aspects (n = 291)

Teachers' using information technology management	\bar{X}	S.D.	Level	Ranking
1 Information technology competency	4.10	0.67	high	1
2 Information technology integration	4.02	0.65	high	4
3 Information technology training	4.01	0.65	high	5
4 Information technology service	4.05	0.66	high	3
5 Information technology management	4.07	0.67	high	2
Total	4.05	0.66	high	

According to table 1, found that the level of teachers using information technology in Nanning University, China in five aspects was at a high level ($\bar{X}=4.05$, S.D.=0.66). Considering the results from the highest to the lowest mean values, the ranking was as follows: the highest mean was observed in information technology competency ($\bar{X}=4.10$, S.D.=0.67), followed by information technology management ($\bar{X}=4.07$, S.D.=0.67), and information technology service ($\bar{X}=4.05$, S.D.=0.66), followed by information technology integration ($\bar{X}=4.02$, S.D.=0.65), respectively, and information technology training was the lowest mean ($\bar{X}=4.01$, S.D.=0.65).

2. To study guidelines for the development of teachers' using information technology in Nanning University, China. Based on the quantitative results of competency levels across the five dimensions and the qualitative content analysis of structured interviews with five experts, the guidelines for the development of teachers' using information technology in Nanning University, China adopt a multi-faceted approach, the researcher has analyzed the content as follows: 1) Teachers should proactively learn to operate multimedia equipment, digital tools, etc., deepen the integration of information technology with the entire teaching process, and strengthen the tracking and analysis of students' learning processes; 2) Teachers need to participate in stratified and classified blended training, promote the transformation of training outcomes, and rely on the "one-stop" platform to enhance their ability to independently solve technical problems; 3) Teachers must strictly abide by the university's information technology policies and norms, establish a strong awareness of information security and data governance, and conduct teaching and research-related operations in compliance with regulations; 4) The university should build platforms such as artificial intelligence teaching platforms and classified resource sharing platforms, provide hardware and digital resource guarantees, and support teachers in improving their technical capabilities; 5) The university needs to establish a hierarchical technical support response mechanism, improve the service team's ability to adapt to teaching scenarios, and provide full-process technical support for teaching

activities; 6) The university should construct a closed-loop optimization mechanism for the implementation of the guidelines, and dynamically adjust training, services, and management systems based on regular evaluations and teacher feedback.

Discussion

The researcher summarizes the discussion into two parts, details as follows:

1. To study the level of teachers using information technology in Nanning University, China. The results found that the level of teachers using information technology in Nanning University, China was at a high level. Considering the results of this research aspects ranged from the highest to lowest level were as follows: the highest level was information technology competency, followed by information technology management, information technology service, information technology integration, and the lowest level was information technology training. This ranking reflects the university's achievements in educational digital construction and exposes inherent problems in its informatization development. Information technology competency empirically validates Davis' (1989) Technology Acceptance Model (TAM): upgraded digital infrastructure and popularized teaching tools boost teachers perceived ease of use, and long-term application experience strengthens perceived usefulness, whose interaction drives active technology adoption. Yet from Mishra & Koehler's (2006) TPACK framework, teachers only master basic technological knowledge (TK), lacking the ability to dynamically integrate TK with pedagogical (PK) and content knowledge (CK), indicating pure technical competency cannot be effectively translated into teaching efficiency without pedagogical and disciplinary support. Information technology management embodies robust institutional governance and policy support, aligning with Fullan's (2001) assertion that organizational structure and leadership commitment underpin

sustainable digital transformation, and echoing Zhang Yiyi's (2023) conclusion on systematic institutional design facilitating standardized information technology application. Medium-high information technology service, a strategic component of the university's information technology governance system, delivers timely, scenario-adapted support that reduces teachers' application costs and avoids teaching disruptions, consistent with Wu Min's (2022) emphasis on scenario-oriented, full-process technical support. information technology integration and training, the lowest dimensions with a clear causal link a prevalent challenge in China's higher education informatization are hampered by the university's homogenized, tool-centric training system that disregards disciplinary teaching rules and teachers' differentiated needs. This technology-biased training impedes the conversion of technical knowledge into integration capacity, in line with Wang Chenhan (2024) and Wu Min (2022) who advocate practice-oriented, discipline-specific stratified training. Notably, high mean scores do not equate to homogeneous application ability; significant individual differences across age, teaching experience and disciplines necessitate targeted interventions instead of a one-size-fits-all approach to informatization construction.

2. To study guidelines for the development of teachers' using information technology in Nanning University, China. Formed based on the problems identified in quantitative research and consistent with existing scholars' conclusions, the Nanning University's information technology application development guidelines are a systematic and integrated strategy. Reorganized into five thematic areas with solid theoretical foundations, the guidelines form a closed loop covering individual development, institutional support, governance constraints, service guarantee and dynamic optimization. 1) Teacher professional development, based on self-directed professional development theory and adult learning principles, includes teachers' independent learning of digital tools and stratified classified blended training. Independent learning stimulates

teachers' internal learning motivation, while stratified training matches the differentiated needs of teachers, and the blended mode improves training effectiveness, this aligns with Wang Chenhan (2024) who stresses stratified practice-oriented training as the core of improving teachers' digital literacy. 2) Institutional infrastructure construction is a strategic layout for the data era, including building artificial intelligence teaching platforms and classified resource sharing platforms. Artificial intelligence teaching platforms support personalized learning design and data-driven teaching decision-making, while classified resource sharing platforms solve the fragmentation of digital teaching resources, which is consistent with Zhang Meihong's (2025) emphasis on intelligent infrastructure and classified resource sharing in university information technology management. 3) Governance and information security focuses on balancing technological innovation and risk control, requiring teachers to abide by university information technology policies and establish information security and data governance awareness. With the deepening of educational digitalization, data security has become a core issue in university management, and this guideline is highly consistent with the National Standards for Teacher Digital Literacy on digital ethical and safety literacy. 4) Technical support systems optimize the service system with hierarchical response mechanisms and scenario-adapted support ability. The hierarchical mechanism classifies technical needs by difficulty and urgency to improve service efficiency, and scenario-adapted support provides precise solutions for different disciplines and teaching links, supported by Wu Min (2022)'s conclusion of scenario-adapted and full-process technical support. 5) Continuous improvement, based on continuous improvement and quality management models, constructs a closed-loop optimization mechanism for guideline implementation. Through regular evaluation, feedback collection and dynamic adjustment of the management system, the mechanism realizes the iterative development of information

technology management, adapting to the dynamic improvement of teachers' information technology application ability.

Recommendation

For university: Universities should institutionalize a theory-driven information technology governance framework integrating stratified training, intelligent platforms, assessment incentives, security governance, and hierarchical support mechanisms, reinforced by data-informed feedback and cross-departmental coordination to ensure sustainable and internationally aligned digital transformation.

For Education Administrators: Education administrators should apply the study's five-dimensional evaluation framework to design differentiated support strategies, strengthen pedagogical integration beyond mere technology acceptance, and implement closed-loop governance mechanisms. By linking information technology application outcomes to performance incentives and promoting replicable policy models, they can foster sustainable, theory-informed digital transformation.

For Teachers: Teachers should engage in self-directed professional development to strengthen information technology competence and deepen pedagogical integration, transforming technical skills into data-informed teaching effectiveness. Through stratified training, independent problem-solving, policy compliance, and continuous feedback, they can contribute to secure and sustainable digital teaching ecosystems.

References

- Bond, M., Bedenlier, S., Marín, V.I. et al. *Emergency remote teaching in higher education: mapping the first global online semester*. *Int J Educ Technol High Educ*, 18, 50 (2021). <https://doi.org/10.1186/s41239-021-00282-x>
- Central Committee of the Communist Party of China and the State Council (2019). *China Education Modernization. 2035*. Retrieved December 23, 2025 from https://www.gov.cn/zhengce/201902/23/content_5367987.htm
- Davis, F. D. (1989). Technology acceptance model: TAM. Al-Suqri, MN, Al-Aufi, AS. *Information Seeking Behavior and Technology Adoption*, 205(219), 5.
- Falloon, G. From digital literacy to digital competence: the teacher digital competency (TDC) framework. *Education Tech Research Dev*, 68, 2449–2472.(2020). <https://doi.org/10.1007/s11423-020-09767-4>
- Fullan, M. (2001). *The New Meaning of Educational Change*. (3rd ed.). London: Teachers College Press.
- Jisc. (2019). *Building digital capability: The six elements defined*. Retrieved December 23, 2025 from <https://digitalcapability.jisc.ac.uk/what-is-digital-capability/individual-digital-capabilities/our-digital-capabilities-framework/>
- Krejcie, Robert V and Morgan, Daryle W. (1970). Determining Sample Size For Research Activities. *Journal of Education and Psychological Measurement*, 30(3). 607-610
- Ministry of Education of China. (2018). *Education Informatization 2.0 Action Plan*. Retrieved December 23, 2025 from http://www.moe.gov.cn/srcsite/A16/s3342/201804/t20180425_334188.html
- Ministry of Education of China. (2022). *National Standards for Teacher Digital Literacy*. Beijing: Educational Science Press. https://www.gov.cn/zhengce/zhengceku/202302/21/content_5742422.htm#

- Mishra, P., & Koehler, M. J. (2006). *Technological pedagogical content knowledge: A framework for teacher knowledge*. *Teachers college record*, 108(6), 1017-1054.
- Rensis Likert. (1932). *A technique for measuring attitudes*. *Psychology Archives*.P7
- Scherer, R., Howard, S. K., Tondeur, J., & Siddiq, F. (2021). Profiling teachers' readiness for online teaching and learning in higher education: Who's ready?. *Computers in human behavior*, 118, 106675.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478.
- Wang, Chenhan. (2024). Research on the development of informatization teaching ability of young teachers in colleges and universities from the perspective of adult learners. In *Master's thesis*. East China Normal University. <https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202501&filename=1024500796.nh>
- Wu, Min. (2022). Research on the improvement of teachers' informatization teaching ability in colleges and universities in the intelligent era. In *Master's thesis*. Southwest University. <https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202401&filename=1023673031.nh>
- Zhang Meihong. (2025). Information Technology Management Strategies for Colleges and Universities in the Data Era. *China Strategic Emerging Industry*, (05),23-25.
- Zhang, Yiyong. (2023). Research on the current situation of education informatization in Shenzhen universities and development strategies. In *Master's thesis*. Shenzhen University. <https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD202501&filename=1024624844.nh>