



A Guide to Develop Information Technology for Education Management in Guangxi Science and Technology Normal University

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Abstract. This research explores the outcomes of information technology application in educational management challenges at Guangxi Science and Technology Normal University. The study evaluates satisfaction levels across six dimensions: basic network construction, operation and services, basic data platform, data resource construction, smart teaching, and smart management. The sample consists of 291 staff members randomly selected from a population of 1,196 employees. Data were collected using a survey, resulting in 291 completed responses. The results indicate high overall satisfaction with the university's informationization construction. Smart teaching receives the highest mean score, followed by infrastructure network construction and data resource construction. Computer proficiency is associated with positive perceptions of the university's informationization construction, particularly in relation to network infrastructure, basic data platform, operation and services, and smart management. Areas for improvement include enhancing the stability and reliability of the network infrastructure, improving technical support services, and expanding the database system for data analysis and decision-making. Establishing mechanisms for information construction, evaluation, assessment, and operation and maintenance response can guide the healthy and sustainable development of university management informationization.

Keywords: Educational management, Higher education, Informationization construction.

1 Introduction

This research focuses on the application of information technology to educational management in higher education institutions, specifically examining the case of Guangxi Science and Technology Normal University. The study aims to address the challenges associated with applying information technology in educational management. The rapid development of higher education has highlighted the

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S. Yacob et al. (eds.), *Proceedings of the 2023 7th International Seminar on Education, Management and Social Sciences (ISEMSS 2023)*, Advances in Social Science, Education and Humanities Research 779,
https://doi.org/10.2991/978-2-38476-126-5_162

importance of teaching management, but various factors have resulted in numerous unresolved issues in this field.

The study holds both theoretical and practical significance. Theoretically, it enriches the research results on the challenges of applying information technology in education management within higher education. Practically, it aims to provide benchmark ideas for implementing innovative higher education management, optimizing teaching resource allocation, improving teaching management processes, promoting higher education management, and addressing challenges arising from the expansion of higher education.

The heavy workload and complexities faced by Guangxi Science and Technology Normal University necessitate urgent exploration of information technology's role in educational management. The research aims to contribute to addressing these challenges and hopes to provide valuable insights and guidance for the effective application of information technology in educational management within higher education institutions.

2 Objectives

1. To study the current status of information technology application for educational management at Guangxi Science and Technology Normal University.
2. To provide development guide for information technology application for educational management at Guangxi Science and Technology Normal University.

3 Research Framework

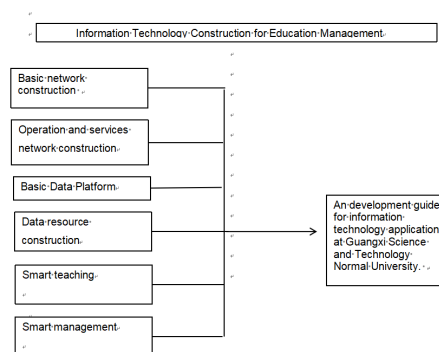


Fig. 1. Research Framework

4 Research Methodology

The questionnaire aims to collect data on the current status of informationization construction and gather opinions for improvement at Guangxi Science and Technology

Normal University. It includes three parts: gathering demographic information, measuring agreement with Likert 5-point scale questions on various aspects of informationization construction, and providing an open-ended section for expressing opinions and suggestions. This comprehensive tool collects quantitative and qualitative data on the university's informationization construction and improvement possibilities.

Effectiveness of the questionnaire

Table 1. Reliability

Cronbach's α	Item	Sample
0.981	22	291

Table1 represents a Cronbach's α coefficient value of 0.981 suggests that the questionnaire has very good reliability.

Table 2. Validity

KMO test and Bartlett's test		
KMO		0.967
	Approximate chi-square.	7749.404
Bartlett's sphericity test	df	231
	P	0.000***

Table 2 represents the results of the KMO test showed a value of 0.967, and the results of Bartlett's sphericity test showed a significant p-value of 0.000***, indicating a high level of significance and suggesting that the variables are correlated and suitable for factor analysis.

5 Result

1. The demographic characteristics of the surveyed population revealed that under gender, 147 respondents are female (50.52%) and 144 are male (49.48%). The age distribution reveals 68 respondents aged between 25-35 (23.37%), 91 aged 36-45 (31.27%), 32 aged under 25 (10.99%), and 100 aged above 45 (34.32%). For work experience, 60 respondents have 1-5 years (20.62%), 123 have 6-10 years (42.27%), and 108 have above 10 years (37.11%). Regarding position level, 100 respondents hold both junior and intermediate professional titles (34.26% each), 41 have no professional title (14.09%), and 50 hold senior professional titles (17.18%). The level of computer proficiency includes 169 respondents with intermediate and above skills (58.08%) and 122 respondents with basic skills (41.92%). The total number of respondents is 291, accounting for 100% of the sample.

Table 3. The mean (M) and standard deviation (S.D.) of the satisfaction level of informationization construction in the university in six dimensions.

Satisfaction level of informationization in the university		M	S.D.	Level	Rank
1.	Infrastructure network construction	3.77	1.14	Very satisfied	2
2.	Operation and services	3.75	1.17	Very satisfied	4
3.	Basic data platform	3.73	1.17	Very satisfied	5
4.	Data resource construction	3.77	1.19	Very satisfied	2
5.	Smart teaching	3.80	1.19	Very satisfied	1
6.	Smart management	3.73	1.18	Very satisfied	5
Total		3.76	1.17	Very satisfied	

The results presented in Table 3 show the satisfaction levels of informationization construction in the university across six dimensions. Using a Likert scale, respondents rated their satisfaction, resulting in an overall high satisfaction level with a mean score of 3.76 (S.D. = 1.17). Smart teaching received the highest mean score of 3.80 (S.D. = 1.19), indicating the highest satisfaction level among the dimensions. Infrastructure network construction and Data resource construction both ranked second with a mean score of 3.77. Operation and services and Basic data platform achieved mean scores of 3.75 and 3.73, respectively, reflecting high satisfaction levels. Smart management received a mean score of 3.73, ranking fifth among the dimensions. These findings collectively indicate a high level of satisfaction with the university's informationization construction.

6 Conclusion and Discussion

6.1 Conclusion

1. The study assessed the satisfaction level of informationization construction in the university across six dimensions. Overall satisfaction was very high, with a mean score of 3.76 and a standard deviation of 1.17. Smart teaching received the highest mean score of 3.80, while Infrastructure network construction and Data resource construction both ranked second with a mean score of 3.77. Operation and services and Basic data platform dimensions achieved mean scores of 3.75 and 3.73 respectively, indicating high satisfaction. Smart management received a mean score of 3.73, ranking fifth. Improvement is needed in the Basic data platform and Smart management dimensions, as specific aspects within those dimensions had lower mean scores.

2. The analysis of open-end questions in the questionnaire identified key areas for improvement in the informationization construction of Guangxi Science and Technology Normal University. These include enhancing network infrastructure stability, improving technical support services, and updating the database system for better data analysis and decision-making. Challenges include limited information resource sharing, information barriers, and data silos between systems. Establishing mechanisms for information construction, interaction, evaluation, supervision, and operation can improve future informationization efforts. Objective evaluation and assessment mechanisms are recommended for guiding sustainable development. A "people-oriented" approach to educational management informationization is advised to benefit all stakeholders. These findings provide valuable insights for addressing informationization needs at the university.

6.2 Discussion

The discussion highlights the significance of the internet as a foundational infrastructure for the information construction of higher education management (Liao, 2022)^[1]. Drawing inspiration from successful instances in developed countries such as Harvard University and Indiana University (Xu et al., 2022)^[2], China has the opportunity to embrace advanced concepts and applications of information technology to enhance its higher education management practices. Notably, Guangxi University of Science and Technology's research showed a notable satisfaction level with informationization construction, with Smart teaching receiving the highest mean score (Tan, 2022)^[3]. Nevertheless, the Basic data platform and Smart management dimensions received lower mean scores, indicating the necessity for improvement in these areas (Xu, Li, & Zhang, 2022)^[4]. The enhancement of the comprehensiveness and up-to-date nature of the database system, along with the university's capacity to address issues employing information technology, emerges as pivotal areas of focus (Li, 2022)^[5].

Furthermore, the findings underscore the relationship between computer proficiency and perceptions of the university's information systems (Liao, 2022)^[1]. Greater levels of computer proficiency correlate with more positive evaluations of aspects like the network infrastructure, data platform, operation and services, smart management, and online teaching development (Li, 2022)^[5]. Therefore, it becomes crucial to offer user-friendly information systems and bolster computer proficiency through comprehensive training and accessible resources for both students and staff.

To further enhance higher education management, there is a compelling need for the university to amalgamate innovative teaching methodologies with information technology (Tan, 2022). This involves nurturing and guiding educators to effectively integrate information technology into their teaching practices (Li, 2022)^[5]. Additionally, refining the university's information-based management system can enhance administrative efficiency by enabling real-time monitoring and evaluation of teaching and research activities and effectively addressing issues using information technology (Xu et al., 2022)^[4].

Significantly, the insights in this discussion are in line with the State Council's 2015 "Outline" on education informatization, which underlines the need for comprehensive

coordination and the establishment of a CIO system for education informatization (Liao, 2022)^[1]. Drawing inspiration from the University of Maryland's IT planning and governance approach, Chinese universities can adopt a model that emphasizes both centralized and decentralized investment mechanisms and incorporates multiple user groups in decision-making processes through a democratic governance structure (Xu et al., 2022)^[4].

In summary, these references provide valuable insights into the intersection of information technology and higher education management. They contribute to the ongoing discourse on promoting effective teaching practices, administrative efficiency, and decision-making processes through the strategic application of information technology .

7 Recommendations

7.1 Implications

1. Enhancing Network Infrastructure Stability and Reliability:

Guangxi Science and Technology Normal University can enhance its network infrastructure by upgrading equipment, implementing redundancy measures, establishing a network monitoring system, implementing network segmentation, and developing a disaster recovery plan. These steps will improve stability and reliability, supporting academic and administrative functions effectively.

2. Breaking Information Islands through Basic Data Sharing Center:

To address information islands in education management informatization, establishing a basic data sharing center is crucial. This center integrates and shares data, ensuring uniformity and standardization. It acts as a central repository for basic data, providing data extraction for various business systems. The data sharing center fundamentally resolves information island issues, a vital component of education management informatization construction.

3. Creating Collaborative Innovation Mechanisms with a "People-Oriented" Approach:

The current functional division structure in Chinese universities often hampers interdepartmental collaboration and work efficiency. Shifting to a "user-centered" management approach is essential. This approach prioritizes the needs and goals of faculty, staff, and students in education management informatization planning. The focus should be on reducing workload, improving teaching quality, simplifying business processes for teachers and students, and enhancing overall educational management. Reforming educational management in universities requires achieving these goals by embracing a collaborative and people-oriented approach.

By implementing these measures, Guangxi Science and Technology Normal University can strengthen its network infrastructure, eliminate information islands through a data sharing center, and foster collaborative innovation with a focus on user needs. These initiatives are vital for the successful development of education management informatization at the university.

7.2 Future Researches

This study acknowledges its limitations in terms of theoretical foundations, research period, and research capabilities. It highlights the challenges posed by technological advancements in higher education and emphasizes the need for efficient informationization construction to improve the quality and efficiency of education management. The study recognizes the complexity and long-term nature of education management informationization, requiring ongoing adjustments and improvements. Additionally, it acknowledges the need to explore technology aspects such as smart campus construction, big data technology, cloud computing technology, and network technology, which were not extensively covered in this research.

References

1. Liao, S. (2022). Promoting Teaching Reform in Higher Education through Information Technology: Research Status, Challenges, and Strategies. *Chinese Journal of Medical Education Technology*, 36(4), 6.
2. Xu, Y., Zheng, R., Li, W., et al. (2022). Research on the Application of Information Technology in Teaching Management with Deep Integration of Information Technology and Education: A Case Study of Secondary Colleges in Universities. *Journal of Beijing Institute of Printing*, 2022(006), 30.
3. Tan, Y. (2022). Application Research of Modern Information Technology in Teaching Management of Local Applied Universities. *Science and Technology Information*, 20(2), 4.
4. Xu, Y., Li, P., Zhang, S. (2022). Application of Information Technology and Integration of Experimental Courses in Basic Medical Education. *Medical Education Management*, 8(4), 5.
5. Li, H. (2022). Application of Computer Information Technology in Teaching Management of Party Schools. *Computer Application Digest*, 38(5), 3.

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