

Investigating Key Determinants Influencing the Improvement of Students' Potential and Employability via Smart Campus Platform at Guangdong Vocational College, China

Chen Kun, Rajamangala University of Technology Thanyaburi, Thailand
Kitipoom Vipahasna, Rajamangala University of Technology Thanyaburi, Thailand

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Abstract

Building the essential competencies in the professional field that help increasing the employment rates are the major challenge for overall vocational colleges in China. As they are extremely difficult and limiting the in-depth analysis of this correlation of success factors. This study aims to delve into the current academic performance of students at Guangdong Vocational College and their employment status in their respective fields of study. We discovered how the Integrated Smart Campus Platform significantly affects academic achievements and the employability rate of graduates. We identified a series of key determinants that have a profound influence on student's academic success and employability rate based on a comprehensive statistical analysis. The sample comprised 100 students, 20 teachers, and 10 school administrators from Guangdong Vocational College, China. Through Principal Component Analysis (PCA) and Multiple Regression Analysis (MRA), we discerned that: 1) The Integrated Smart Campus Platform plays a pivotal role in elevating academic performance and the employability rate of graduates, accounting for 68% of the variance; 2) Approximately 83% of students, teachers, and administrators actively engaged with the platform, expressing a 76% satisfaction rate; 3) Technical support and professional training emerged as the key factors in enhancing the efficiency and satisfaction rate of platform usage, with respective influence values of 0.45 and 0.38. This research offers valuable insights into the realm of higher vocational education, showcasing the potential of technology in bolstering student potential and employability rate.

Keywords: Academic Achievement, Employability Rate, Smart Campus Platform, Educational Determinants, Vocational Education and Training

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Introduction

With the accelerated pace of globalization and the rapid evolution of technology, the modern labor market is undergoing unprecedented changes. Emerging industries such as artificial intelligence, big data, and renewable energy technology are progressively replacing traditional sectors, bringing forth new career opportunities and challenges. In this context, businesses and organizations are increasingly seeking employees who possess interdisciplinary skills, innovative thinking, and self-learning abilities. Hence, providing students with forward-looking education closely linked to market demands has become paramount.

In recent years, China's government has attached great importance to the development of higher vocational education, pouring significant resources into this sector. Especially with the impetus of the "Dual High" strategy and the "New Engineering" initiative, vocational higher education has seen swift growth. Nevertheless, the employment rate and job quality of higher vocational students still pose certain challenges. According to the Chinese Education Statistical Yearbook, although the overall employment rate of vocational graduates has consistently remained above 90% in recent years, the quality of their employment (such as salary levels, job match, and career development opportunities) still requires improvement.

Guangdong Vocational College, a renowned vocational institute in Guangdong Province, China, has long been committed to nurturing highly skilled application-oriented talents. To better align with the labor market's requirements, Guangdong Vocational College has introduced the concept of a "Smart Campus" in recent years. By establishing an integrated platform encompassing teaching, management, and services, the institution aims to offer a more personalized and intelligent educational experience for its students.

The "Smart Campus" initiative is more than just a technological endeavor; it represents an exploration and practice of educational reforms. Through real-time data analysis, predictive models, and artificial intelligence, a Smart Campus can offer students more precise and tailored learning resources, helping them better tap into and develop their potential. Moreover, this initiative also provides school administrators with more scientific and objective decision-making insights, facilitating more effective educational and pedagogical reforms.

However, striking the right balance between technology and education, ensuring the "Smart Campus" truly benefits students' growth and development, remains a pivotal challenge. Based on this, the current research aims to thoroughly investigate Guangdong Vocational College's "Smart Campus" initiative, analyzing its tangible impact on boosting student potential and employment rates, while exploring potential challenges and opportunities.

Current State of Information Technology in Chinese Higher Vocational Education

In recent years, under the guidance of the Ministry of Education's drive to promote the informatization of vocational education, Chinese higher vocational colleges have taken concrete steps to unify their thoughts and actions. Seizing current opportunities, these institutions have propelled advancements in educational informatization, aiming to maximize the role and value of information technology in teaching and learning. In this backdrop, new educational management systems and models have emerged to achieve high-quality and inclusive education. To support these endeavors, the Chinese government has continually increased financial investments in education. During the "Twelfth Five-Year Plan", total

expenditure reached 12.2 trillion yuan, equivalent to the total educational investment of the first 30 years since the country's reform and opening up. Since 2015, China's fiscal allocation to educational informatization has been consistently increasing, with an annual budget allocation exceeding 4% of GDP. With substantial financial backing, the level of educational informatization in China has been on a steady rise.

In certain regions and institutions, the informatization of educational management has achieved interconnectivity and shared usage under national information systems, fulfilling schools' application needs and yielding significant results.

As early as 2012, the "Ten-Year Development Plan for Education Informatization (2011-2020)" was released, marking a milestone for China's educational informatization. By 2012, with the rise of internet applications in China, the informatization of vocational education was also rapidly advancing. Using 2012 as a reference point, the next three years, leading up to 2015, saw vocational education informatization entering an era of continuous exploration around emerging technologies. Two significant shifts occurred during this period. Firstly, the completion of multiple 100G backbone networks enhanced campus network speeds, drastically improving internet access experiences for teachers and students. Secondly, the rise of network clouds from 2012 brought a fresh direction to campus informatization, providing a new perspective for the evolution of educational informatization. Many institutions have now established data centers based on cloud architecture. In some of the more technologically advanced institutions, online learning has been made possible via network clouds.

Starting from 2016, the construction of one-stop services became a trend in vocational colleges. The emergence of these services symbolized a trend where informatization efforts should increasingly focus on improving the experiences of teachers and students. The primary goal is to "let data travel more, and teachers and students travel less, preferably not at all." Arguably, from the widespread adoption and evolution of one-stop services, higher education informatization in China began its initial foray into integrated development, allowing teachers and students to genuinely experience the various conveniences brought by informatization. This was a significant achievement of higher education informatization during the "Thirteenth Five-Year Plan" period. The outbreak of the pandemic in 2020 highlighted the pivotal supportive role of informatization in vocational colleges. Unlike the SARS outbreak in 2003, education could continue during the 2020 pandemic due to the maturity of informatization infrastructure and applications. Although there were initial challenges, subsequent developments steadily set the course right, effectively supporting primarily online-based teaching and related services.

Trends in Smart Campus Construction

The smart campus is often seen as a further enhancement and development of the digital campus, representing a higher form or phase of educational informatization. In 2010, Zhejiang University was the first to introduce the concept of the smart campus in China, in its "Twelfth Five-Year Plan" for informatization, where the smart campus was defined and described. Simply put, it encompasses ubiquitous networked learning, integrated innovative online research, transparent and efficient campus governance, diverse campus culture, and convenient campus life. In June 2018, the National Market Supervision and Administration and the National Standards Committee issued the GB/T 36342-2018 standard for the overall framework of smart campus construction. The construction of a smart campus mainly

employs key technologies such as the Internet of Things, cloud computing, mobile internet, and big data, combined with data resource development, to ensure resource and service sharing, accessible to anyone, anywhere, anytime. A smart campus offers a transparent and efficient management platform, real-time data analysis, flexible teaching methods, a ubiquitous learning environment, and convenient campus life. More and more institutions are now joining the ranks of smart campus construction, achieving notable results. The construction of a smart campus provides robust support for the promotion of educational informatization and the acceleration of educational modernization, holding significant practical value and profound implications.

Research Objectives

Following the guidance from policies including the "National Medium and Long-term Educational Reform and Development Plan Outline (2010-2020)", "Ten-Year Development Plan for Education Informatization (2011-2020)", "13th Five-Year Plan for Education Informatization", "Guiding Opinions of the Ministry of Education on Further Promoting the Development of Vocational Education Informatization", as well as the "Three Communications, Two Platforms", "Internet Plus" action plan, "Promoting Big Data Development Action Outline", "Education Informatization 2.0 Action Plan", and "Modernization of China's Education 2035".

This research analyzes the main problems that vocational colleges encounter in the application, management, and maintenance of teaching resources, and the reasons behind these problems. Combining theories of modern educational technology, creative education, non-directive teaching, constructivism, and educational communication, we aim to construct a teaching resource service platform for vocational colleges based on the smart campus concept. This study takes place in Guangdong Vocational College, China. The major concerns of this research include:

1. Investigating the academic performance issues at Guangdong Vocational College, and the employment status of graduates within their field of specialization.
2. Analyzing the significant factors affecting academic achievements and graduate employment rates via the Smart Campus Platform.
3. Evaluating the participation and satisfaction levels of students, teachers, and school administrators with the Smart Campus Platform.

The Smart Campus Platform of Guangdong Vocational College

Guangdong Vocational College is also committed to creating a comprehensive Smart Campus Platform, transforming it into a multifaceted system that simplifies campus management and enhances student services. The platform includes:

Intelligent Portal: This serves as the interface for various subsystems, allowing for seamless data flow and integrated services.

Internal Integration: This includes the administration, professors, and students. The system supports administrative operations, academic management, and student services.

Academic Management Information System: It oversees academic schedules, course materials, and performance tracking to improve the educational delivery.

Student Management Information System: This system manages student profiles, attendance, and engagement, fostering a personalized learning environment.

Financial Management Information System: It handles tuition fees, funding, and financial aid, ensuring financial processes are transparent and efficient.

Employment Information Platform: This platform connects students with job opportunities, internships, and career advice, enhancing their employability.

Infrastructure: The network, server, and database infrastructure form the backbone of the platform, ensuring reliable access to all services.

External Integration: The platform engages with parents, state bodies, and businesses, enhancing communication and collaboration.

This integrated platform aims to dramatically improve students' lives, academics, and professional prospects through a technologically advanced, interconnected education Ecosystem.

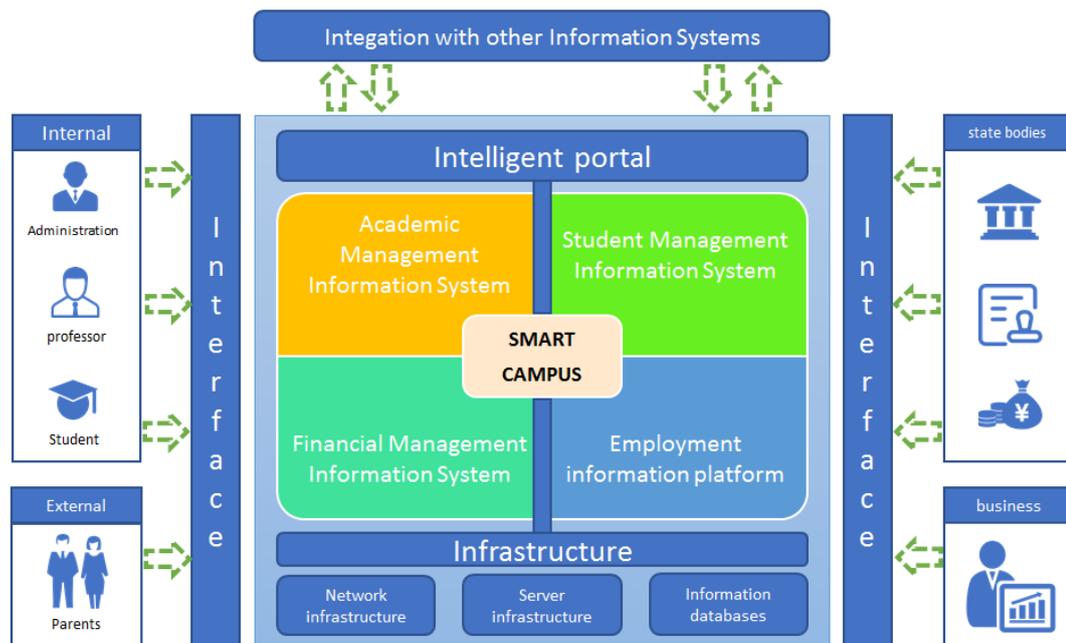


Figure 1: The Smart Campus Platform

Conclusion

This comprehensive study undertaken at Guangdong Vocational College sought to evaluate the efficacy of the Smart Campus Platform in enhancing the academic performance and employability of students. Through a detailed exploration of various facets of this technological intervention, the research unearthed several pivotal findings, which hold profound implications for the realm of vocational education, particularly in the digital age.

Main Findings and Detailed Analysis:

1. **Enhanced Academic Performance:** A pivotal finding of this study was the marked improvement in students' academic performance following the implementation of the Smart Campus Platform. This platform provided a more engaging and personalized learning environment, which facilitated deeper understanding and retention of course material. The integration of technology in educational delivery was found to be a significant factor in enhancing the learning experience, leading to better academic outcomes. This finding is in line with current educational theories that advocate for personalized learning environments enabled by technology.
2. **Increased Employability:** Another significant outcome was the increased employability of students who utilized the platform. This facet of the study underscores the platform's role in bridging the gap between academic learning and the practical skills demanded in the job market. The platform provided students with real-world skills that are highly valued by employers, thus enhancing their job prospects upon graduation. This aspect of the study is particularly relevant in the context of vocational education's aim to prepare students for specific careers.
3. **Positive Perception and Participation:** The study also revealed a high level of satisfaction and positive reception among students, teachers, and administrators. This positive perception is crucial as it underlines the acceptability and adaptability of technological innovations in educational settings. The enthusiastic participation and feedback from these stakeholders suggest a readiness and openness to integrate such advanced platforms in the educational process.
4. **Technical Support and Training:** The success of the Smart Campus Platform heavily relied on the provision of robust technical support and training. This aspect was pivotal in ensuring smooth adoption and effective utilization of the platform's features. The study highlights the importance of technical support in the successful implementation of technological solutions in educational settings.

Broader Implications:

1. **Educational Policy and Practice:** The findings from this study advocate strongly for the integration of smart technology platforms in vocational education. This aligns with global educational trends towards more technologically integrated learning environments. The study suggests that similar platforms could be beneficial in other vocational institutions, potentially revolutionizing the standard of education and employability of graduates.
2. **Curriculum Development:** The results highlight the need for educational content to be in sync with industry trends and market demands. This alignment is crucial for equipping students with the skills that are relevant and in demand, thereby enhancing their job readiness upon graduation.
3. **Technological Advancement in Education:** The study reinforces the notion that effective use of technology can transform educational experiences, making learning more engaging, efficient, and aligned with the needs of the modern job market.

The study, while providing valuable insights, is not without its limitations. Primarily, its scope was limited to Guangdong Vocational College, which may restrict the generalizability of the findings to other educational contexts or cultures. Additionally, the reliance on self-reported data could introduce biases. The study primarily focused on immediate outcomes, and thus the long-term impacts of the platform remain unexplored.

Future research should aim to address these limitations. Expanding the study to include a diverse range of educational institutions would help in assessing the broader applicability of the findings. Longitudinal studies could shed light on the long-term effects of such platforms on student outcomes. Investigating the integration of such platforms in different cultural and educational settings would provide a more holistic understanding of the role of technology in education on a global scale.

In conclusion, the Smart Campus Platform at Guangdong Vocational College represents a significant advancement in the integration of technology into vocational education. Its impact on both academic performance and employability is a testament to the potential of such platforms to revolutionize educational practices. The study highlights the need for continued research and adaptation to emerging educational and technological trends for the broad adoption and sustained success of such initiatives. The insights from this study are instrumental in guiding future educational policies and practices, not just within vocational education, but across the educational spectrum.

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Contact emails: kun_c@mail.rmutt.ac.th
kitipoom_v@rmutt.ac.th