

Research on the Innovation Practice of Teaching Management in the Background of Digital Transformation

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Abstract: This article explores the impact of digital transformation on teaching management in higher education institutions and proposes innovative paths and practical strategies for teaching management based on the PDCA model. The paper first analyzes the challenges and opportunities brought by digital transformation, and then, through a case study of Chengxian College of Southeast University, it shows how digital transformation promotes the optimization of teaching management and puts forward corresponding policy recommendations. The findings show that digital transformation requires higher education institutions to innovate in teaching management models, content and methods, resources and environment, so as to improve teaching management efficiency and teaching quality, and cultivate high-quality talents to meet the development needs of future society.

Keywords: Digital transformation; Teaching management in higher education institutions; PDCA model; Innovative practice

1. Introduction

With the rapid development of information technology, digital transformation has become an important trend in the field of higher education worldwide. This transformation has not only changed the way of teaching and learning but also brought new challenges and requirements for the teaching management of colleges and universities. In the wave of digitalization, colleges and universities must re-examine and reconstruct the teaching management system to improve the efficiency of teaching management, promote the improvement of education quality, and ultimately cultivate high-quality talents who can adapt to the development of future society. Therefore, the purpose of this study is to explore the innovative path of teaching management in colleges and universities under the background of digital transformation, with the aim of providing theoretical support and practical guidance for the modernization of teaching management in colleges and universities.

2. Innovative Paths for Teaching Management under the Background of Digital Transformation

In the context of digital transformation, university teaching management is facing unprecedented challenges and opportunities. To adapt to this transformation, universities need to innovate in teaching management models, teaching content and methods, as well as teaching resources and environment, so as to improve the quality and efficiency of teaching, and cultivate high-quality talents who can adapt to the future social development.

2.1 Innovating the Model of Teaching Management

The traditional teaching management model often relies on manual operation and paper-based documents, which appears to be inefficient and inflexible in the digital age. Therefore, the innovation of teaching management mode is firstly reflected in the transformation from traditional management mode to digital management mode. The digital management mode realizes the automation and intelligent management of teaching activities through information technology means, such as academic management system and online learning platform, improving management efficiency and response speed.

2.2 From the traditional management mode to the digital management mode

The transformation of digital management model involves more than just the application of technology; it represents an update in management philosophy. It demands that university administrators re-think and re- design teaching management processes to align better with the characteristics of the digital age. For example, by establishing a unified data platform, it is possible to achieve centralized management and analysis of teaching data, providing scientific basis for teaching decisions.

2.3 Use of Big Data and Artificial Intelligence to Optimize Teaching Decisions

The development of big data and artificial intelligence technologies provides new tools for teaching management. By collecting and analyzing students' learning data, universities can more accurately understand students' learning needs and preferences, thus optimizing curriculum setting and teaching content. Artificial intelligence technology can also be used for the recommendation of personalized learning paths and the automatic evaluation of teaching quality, making teaching decisions more accurate and efficient.

2.4 Innovating the Content and Methods of Instruction

With the richness of digital resources and the diversification of learning methods, teaching content and methods also need to be continuously innovated. Universities should introduce online courses and blended teaching, combine online learning with offline interaction , and provide more flexible and diverse learning experience. In addition, strengthening practical teaching and project-oriented learning is also an important innovation direction. They help cultivate students' hands-on ability and problem-solving

2.5 Introducing online courses and blended teaching

Online courses and hybrid teaching are important innovations in teaching content and methods under digital transformation. Online courses can break through the limitations of time and space, providing students with more learning resources and choices. Hybrid teaching combines the advantages of traditional classroom teaching and online learning, and improves the interaction and effectiveness of teaching through online and offline interaction.

2.6 Enhancing Practical Teaching and Project-Oriented Learning

Practice teaching and project-oriented learning emphasize students' active participation and hands-on operation, which helps cultivate students' innovative abilities and practical skills. Universities can cooperate with enterprises to develop courses and projects with strong practicality, so that students can learn and grow in the process of solving practical problems.

2.7 Innovative Teaching Resources and Environment

Innovation in teaching resources and environment is another important aspect of digital transformation. Colleges and universities need to develop and share digital teaching resources such as e-textbooks, online courses, virtual laboratories, etc., to provide students with more abundant and convenient learning resources. At the same time, the construction of intelligent teaching environment is also the key to improve the quality of teaching, including smart classrooms, remote teaching facilities, etc., which can provide more flexible and efficient support for teaching ^[1].

2.8 Development and Sharing of Digital Teaching Resources

The development and sharing of digital teaching resources is an important way to improve the efficiency and quality of the use of teaching resources. Colleges and universities can establish open course resource platforms to encourage teachers to develop and share high-quality digital teaching resources, and promote the sharing and exchange of teaching resources.

2.9 Construction of Intelligent Teaching Environment

The construction of intelligent teaching environment involves the upgrading of teaching facilities and the innovation of teaching technology. For instance, by installing intelligent teaching systems and equipment such as smart blackboards and remote live broadcasting equipment, the interactivity and interest of teaching can be improved, and more convenient teaching tools can also be provided for teachers. Digital transformation has brought new opportunities and challenges for teaching management in colleges and universities. Through innovation in management models, teaching content and methods, teaching resources and environment, colleges and universities can better adapt to the needs of the digital era, improve the efficiency and quality of teaching management, and cultivate more high-quality talents who are suitable for the future social development.

3. The Application of PDCA Model in Teaching Management of Colleges and Universities

Against the backdrop of digital transformation, the PDCA model provides a systematic and cyclical improvement approach for teaching management in colleges and universities. This model forms a closed-loop management process through the four stages of planning (Plan), execution (Do), inspection (Check), and action (Act), ensuring the continuous optimization and quality enhancement of teaching activities [2].

The planning (P) phase is where the PDCA cycle begins, involving the establishment of educational management goals and strategies. In the context of digital transformation, the planning phase requires clarity in educational management goals, such as enhancing teaching quality, optimizing curriculum structure, and increasing student satisfaction, and devising corresponding strategies. This includes using data analysis to predict student needs, design course content, and plan the allocation of teaching resources. Digital tools, such as learning management systems (LMS) and student information systems (SIS), can provide data support and decision-making assistance for this phase.

The Execute (Do) phase is the process of putting the strategies from the Plan phase into practice. In educational management, this may involve implementing new teaching methods, updating curriculum content, training teachers to adapt to digital tools, and more. The success of the Execute phase relies on clear communication, effective resource allocation, and the active participation of teachers. Digital platforms and tools, such as online collaboration tools and cloud storage services, can enhance execution efficiency and ensure the smooth running of educational activities.

The Check phase involves monitoring and evaluating educational management activities. In the context of digital transformation, the Check phase can utilize data analysis tools to track the effectiveness of teaching activities and collect student feedback. Evaluate teaching outcomes. The objective of this phase is to identify problems, measure progress, and provide a basis for subsequent improvement. Digital assessment tools, such as online surveys and automated grading analysis systems, can enhance the efficiency and accuracy of evaluations.

The Act stage is about making necessary adjustments and improvements based on the feedback from the Check stage. In the context of digital transformation, the Act stage may include updating teaching strategies, refining teaching methods, optimizing technology application and so on. The goal of this stage is to standardize effective practices and to incorporate shortcomings into the next PDCA cycle for continuous improvement [3].

The advantages of PDCA model in digital transformation lie in its flexibility and adaptability. It can quickly respond to changes in the educational environment, and the continuous cycle iteration promotes the continuous improvement of teaching management. The integration of digital tools and platforms makes the implementation of PDCA model more efficient, and data-driven decision support is also more accurate. Moreover, PDCA model also encourages cross-department cooperation and full-staff participation, which helps to construct a student-centered teaching management system. In this way, universities can better adapt to the challenges of digital transformation and enhance the quality and effectiveness of teaching management.

4. Analysis of the Practice of Innovation in Teaching Management of Southeast University Chengxian College

- 1) Case Background: The Current Situation of Teaching Management in Southeast University

Chengxian College

Southeast University Chengxian College as a private institution of higher learning, faces the dual challenge of improving the quality of education and management efficiency in its teaching management. With the rapid development of information technology and the continuous deepening of educational reform, the traditional teaching management model can hardly meet the current needs of educational development. The college urgently needs to introduce new management concepts and methods to improve the scientificity and effectiveness of teaching management. Against this backdrop, the college began to explore innovative teaching management practices based on the PDCA model, aiming to achieve the optimization of teaching management and the improvement of teaching quality through continuous cyclical improvement ^[4].

2) Practice Strategy: Innovative Practice of Teaching Management Based on PDCA Model

The PDCA model is adopted by Southeast University Chengxian College as a practical strategy for innovative teaching management. The PDCA model includes four phases: planning (P), execution (D), inspection (C), and action (A). In the planning phase, the college clearly clarified the goals and policies of teaching management, formulates detailed teaching plans and activity plans. In the execution phase, the college implements teaching tasks and perfects the construction of the teaching staff according to the established plans, and strengthens the management of the teaching process. In the inspection phase, teaching effects are checked and evaluated through student questionnaires and teaching evaluations, and problems are found in time. Finally, in the action phase, the college summarizes experience and lessons, makes an in-depth analysis of existing problems, and formulates corresponding improvement measures, preparing for the next PDCA cycle.

3) Practice Effectiveness: Improving Teaching Management Efficiency and Teaching Quality

Through the innovative practice of teaching management based on PDCA model, Southeast University Chengxian College has achieved significant results in the efficiency of teaching management and the quality of teaching. First, the teaching management process has been optimized, and the management efficiency has been significantly improved. Through clear division of labor and process reengineering, the repetition and redundancy in the management work have been reduced, and the management response speed and service quality have been improved. Secondly, the quality of teaching has been effectively improved. Through continuous inspection and improvement, the teaching methods and means of teachers are more diversified, and the interest and satisfaction of students have been significantly improved. In addition, the teaching management system of the college is more scientific and systematic, which has laid a solid foundation for continuous improvement and innovation and development. Through the cyclic application of PDCA model, the teaching management work of the college is more standardized, and the teaching achievements are more significant, which provides a strong guarantee for training high-quality talents.

5. Challenges and Countermeasures for Teaching Management Innovation in Colleges and Universities under Digital Transformation

Against the backdrop of digital transformation, university teaching management is standing at a new crossroads. This transformation involves more than just technological innovation; it is a profound change in the concepts and practices of university teaching management. Faced with this transformation, university teaching management is confronted with multifaceted challenges, which include not only technological updates but also the improvement of personnel capabilities and adaptive adjustments to policies and systems ^[5].

The technical challenge is the most direct and urgent issue in the process of innovation in teaching management in colleges and universities, and the digital technology. The rapid development requires the high-level universities to keep the teaching facilities and tools modernized, which involves not only the renewal of hardware but also the maintenance and upgrade of software. The high-level universities need to invest the corresponding capital and human resources to ensure that the advanced teaching techniques and the continuity of teaching activities are not affected. Moreover, with the rise of cloud computing, big data, artificial intelligence and other technologies, the high-level universities also need to explore the application of these technologies in teaching management, so as to improve the intelligent level of teaching management ^[6].

Human challenges involve enhancing the digital competency of teachers and administrators. In the process of digital transformation, teachers and administrators need to master new technologies and

tools to adapt to the demands of digital teaching. This requires universities to strengthen training and professional development, enhancing the information literacy of the teaching staff so that they can flexibly use digital tools for teaching design, teaching implementation, and teaching evaluation. At the same time, administrators also need to enhance their digital management capabilities to adapt to new teaching and management models and processes.

Policy challenges, on the other hand, involve adaptive adjustments to the educational management system. As digital transformation deepens, traditional educational management systems may no longer align with the new teaching environment and demands. Universities need to formulate teaching policies and management norms that match the digital transformation to facilitate the smooth progress of teaching activities. This includes updating the teaching evaluation system, establishing incentive mechanisms, and adjusting teaching resource allocation strategies, among others.

In response to these challenges, universities can take the following measures to build a teaching management system that supports digital transformation:

1) Establish a digital teaching resource library, integrate high-quality resources inside and outside the school, and provide teachers and students with abundant teaching content ^[7]. This can not only improve the utilization efficiency of teaching resources but also promote the renewal and innovation of teaching content.

2) Promote innovative teaching models, such as blended learning and flipped classrooms, to enhance teaching interactivity and learning efficiency. These new teaching models can better meet learning needs, improve learning motivation and outcomes.

3) Enhance teacher training to improve their ability to apply information technology, so that they can flexibly use digital tools for teaching. Teacher training should include multiple aspects such as teaching design, teaching implementation, and teaching evaluation, so as to comprehensively improve teachers' digital teaching abilities.

4) Optimize teaching management systems, establish a teaching evaluation system and incentive mechanism that are adapted to digital transformation, and stimulate the enthusiasm of teachers and students. The optimization of teaching management systems should aim to improve the quality and efficiency of teaching, while taking into account the actual needs of teachers and students.

5) Enhance school-enterprise cooperation and promote the integration of education and industry, providing students with practical platforms and strengthening the alignment of teaching content with market demands. School-enterprise cooperation not only offers students practical opportunities but also makes the teaching content more closely aligned with reality, enhancing students' employment competitiveness.

Through these measures, universities can better respond to the challenges brought by digital transformation, achieve innovation in teaching management and improve the quality of teaching. This not only requires the active action of universities, but also the extensive participation and support of the government, enterprises and society, and jointly build a teaching management system adapted to the digital age.

6. Conclusion

This article reveals the profound impact of digital transformation on teaching management in higher education through the research on the practice of innovation in teaching management in the context of digital transformation. Based on the PDCA model, this article proposes innovative paths and practical strategies. The research finds that digital transformation requires systematic innovation in teaching management models, content and methods, resources and environment in higher education institutions to improve teaching management efficiency and teaching quality. Through the case analysis of Chengxian College of Southeast University, this article shows how digital transformation promotes the optimization of teaching management, and proposes corresponding policy suggestions.

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