

# Research on the Innovation of University Teaching Management Mechanism under the Background of Digital Transformation

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## ABSTRACT

It conducts research on the innovation of teaching management mechanisms in universities under the background of digital transformation, systematically expounds its value and significance for students' growth, and deeply analyzes the practical predicaments that colleges and universities are currently facing in aspects such as the design of high-quality teaching models, the integration of teaching data systems, and the digital literacy of teachers. Furthermore, innovative strategies such as creating a dynamic and optimized teaching model, establishing an intelligent interactive teaching data hub, and constructing a hierarchical and graded digital training system are proposed, with the aim of providing theoretical references for promoting the modernization transformation of teaching management in colleges and universities.

## KEYWORDS

Digital transformation; Teaching management; Mechanism innovation

## 1 Introduction

With the rapid development of information technology and the continuous update of educational concepts, digital transformation has become an important force driving the reform of higher education. Against this backdrop, how the teaching management mechanism of colleges and universities can adapt to the trend of The Times and achieve systematic innovation has become a key issue for improving the quality and efficiency of education. At present, although digital technology has brought unprecedented opportunities to teaching management, universities still face multiple challenges in the process of mechanism transformation, such as lagging teaching models, prominent data silos, and insufficient digital literacy of teachers<sup>[1]</sup>. Therefore, delving deeply into the innovative paths of teaching management mechanisms in colleges and universities under the background of digital transformation not only holds significant theoretical value but also has positive practical significance for achieving educational modernization and promoting high-quality development of higher education.

## 2 The Value and Significance of Innovation in Teaching Management Mechanisms in Colleges and Universities under the Background of Digital Transformation

The healthy growth of undergraduate students is the key to improving the quality of education, safeguarding the reputation of schools, and maintaining social harmony and stability. Under the background of digital transformation, the innovation of teaching management mechanisms in colleges and universities is conducive to promoting the healthy growth of undergraduate students, which is specifically manifested in the following aspects: Firstly, under the background of digital transformation, the innovation of teaching management mechanisms in colleges and universities has added courses such as biomedicine, artificial intelligence, and carbon neutrality, which can better meet the demands of future industries and national strategies. This greatly alleviates students' confusion and anxiety that "what they have learned is useless", enhances their sense of purpose and value in undergraduate learning, and promotes the healthy growth of undergraduate students. Secondly, under the background of digital transformation, the innovation of teaching management mechanisms in colleges and universities has integrated science and technology ethics, social responsibility, and engineering ethics into emerging interdisciplinary fields. This can not only enhance the knowledge imparting level of undergraduate students but also guide them to establish correct values and professional ethics<sup>[2]</sup>, helping undergraduate students to achieve steady progress in their future careers and empowering their healthy growth. For instance, under the background of digital transformation, the innovation of teaching management mechanisms at Huanghe Jiaotong University focuses more on core capabilities such as complex problem-solving, communication and collaboration, as well as innovation and creation. This can help undergraduate students cope with future uncertainties, enhance their self-confidence and adaptability, and achieve healthy growth.

### **3 Challenges Faced by the Innovation of Teaching Management Mechanisms in Colleges and Universities under the Background of Digital Transformation**

#### **3.1 There are Relatively Few Designs of High-quality Teaching Models**

Under the background of digital transformation, universities face the problem of having relatively few high-quality teaching model designs, which hinders the pace of innovation in teaching management mechanisms in universities. Firstly, under the background of digital transformation, there is an evaluation-oriented approach in universities that emphasizes research over teaching. Research papers and project funds are set as hard indicators for teachers' professional title evaluation and performance assessment, while teaching quality and teaching reform achievements are weakened as soft indicators. This leads to insufficient internal motivation for teachers to design high-quality teaching models and hinders the innovation of teaching management mechanisms in universities. Secondly, under the background of the new digital transformation, universities offer less effective guidance and practical support for emerging teaching models such as blended teaching, project-based learning (PBL), and flipped classrooms. They often provide scattered and unstructured teaching development training, which means there is a problem of weak teaching method training, making it difficult for teachers to efficiently design high-quality teaching models. Slow down the pace of innovation in the teaching management mechanism of colleges and universities.

#### **3.2 The Integration of Teaching Data Systems is Highly Difficult**

Under the background of digital transformation, universities are confronted with the problem of high difficulty in integrating teaching data systems, which is not conducive to the improvement of the innovation level of teaching management mechanisms in universities. Firstly, under the background of digital transformation, there are many sources of internal teaching management systems in colleges and universities. Coupled with the lack of data intercommunication among these systems, the student course selection information and learning behavior data in the educational administration system cannot be automatically synchronized to the learning platform. This leads to teachers having to manually create course and student lists, which makes it impossible to effectively correlate and analyze examination score data and online viewing duration, thus restricting the improvement of the innovation level of teaching management mechanisms in colleges and universities. Secondly, under the background of digital transformation, the traditional teaching data systems in colleges and universities lack standardized application programming interfaces, and the interface documentation is incomplete, making it difficult to achieve data intercommunication. This leads to problems such as high costs, poor stability, and long cycles, which hinders the innovation of teaching management mechanisms in colleges and universities.

#### **3.3 The Digital Literacy of the Teaching Staff Is Relatively Low**

Under the background of digital transformation, universities are confronted with the problem of low digital literacy among their teaching staff, which hinders the pace of innovation in teaching management mechanisms. Firstly, under the background of digital transformation, some teachers in colleges and universities are not proficient in basic office software such as smart classroom equipment, online teaching platforms, and classroom interaction software. They have no choice but to seek help from technical personnel, which greatly affects the smoothness of teaching and restricts the improvement of the innovation level of teaching management mechanisms in colleges and universities. Secondly, under the background of digital transformation, some teachers in colleges and universities are not good at using digital technology to design and organize teaching activities. They have failed to effectively design online and offline hybrid "golden courses", and also find it difficult to use big data for student situation analysis and personalized teaching. As a result, the effectiveness of online group collaboration and discussion is limited, which is not conducive to the innovation of teaching management mechanisms in colleges and universities. For instance, against the backdrop of digital transformation, some teachers at Huanghe Jiaotong University lack data literacy and are unable to effectively collect and interpret learning behavior data, academic performance data, and interaction data during the teaching process. As a result, they find it difficult to identify teaching issues and academic risks through data, leading to a relatively low level of precise teaching intervention and scientific decision-making, and hindering the pace of innovation in teaching management mechanisms.

## **4 Innovative Strategies for Teaching Management Mechanisms in Colleges and Universities under the Background of Digital Transformation**

### **4.1 Create a Dynamic and Optimized Teaching Model**

Under the background of digital transformation, in response to the relatively few challenges in designing high-quality teaching models, universities should create a dynamic and optimized teaching model to drive innovation in teaching management mechanisms. colleges and universities should break up the traditional curriculum system and restructure it into general education core modules, professional direction modules, and interdisciplinary expansion modules, creating a dynamic and optimized teaching model. They should allow students to independently create personalized class schedules based on their interests and career plans, and vigorously promote project-based learning to enable students to independently and comprehensively apply knowledge from multiple disciplines, thereby enhancing their innovative and practical abilities. Empower the innovative vitality of the teaching management mechanism to be released.

### **4.2 Establish an Intelligent Interactive Teaching Data Hub**

Under the background of digital transformation, in response to the high difficulty of integrating teaching data systems, universities should establish an intelligent interactive teaching data hub to drive the improvement of the innovation level of teaching management mechanisms. universities should establish a data governance committee to coordinate the efforts of the Information Office, various colleges, the Academic Affairs Office, the student Affairs office and other departments, jointly build an intelligent interactive teaching data hub, define the encoding, format and meaning of core teaching data elements, ensure the consistency and comparability of teaching data among different systems, and at the same time clarify the responsibilities, authorities and sharing processes of teaching data for each department. Break down the barriers of departmental teaching data and empower the innovation of teaching management mechanisms.

### **4.3 Shape a Hierarchical and Graded Digital Training System**

Under the background of digital transformation, in response to the low digital literacy of the teaching staff, universities should shape a hierarchical and graded digital training system and accelerate the innovation of teaching management mechanisms. colleges and universities should provide basic operation training for all teachers on digital teaching tools such as Learning Pass, Rain Classroom, and smart classroom equipment. They should also organize specialized workshops on blended teaching design, online course production, and data-driven teaching evaluation, forming a hierarchical and graded digital training system to cultivate digital teaching leaders for each college and drive innovation in teaching management mechanisms.

## **References**

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