Construction and Practice of Education and Teaching Quality Assurance Systems in Applied Colleges and Universities under the Background of Digital Intelligence

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Abstract: This paper discusses the optimization strategy of education and teaching quality assurance systems in applied colleges and universities under the background of digital intelligence. It first summarizes the relevant theories of digital intelligence transformation and analyzes the impact of digital intelligence transformation on higher education. Secondly, this paper puts forward the principles of constructing the quality assurance system of applied colleges, including strengthening the quality assurance consciousness, improving teachers' digital literacy, and implementing digital intelligence governance. From the practical perspective, this paper expounds on strategies such as optimizing educational teaching resource allocation, constructing a diversified evaluation system of teaching quality, strengthening the construction and training of teaching staff, and innovating teaching management methods. Specific optimization measures are put forward, such as improving policies, regulations, and system guarantees, strengthening cooperation between schools and enterprises, integrating industry, school, and research, building an educational information platform, and improving the monitoring and feedback mechanism of educational quality.

Keywords: Digital intelligence transformation; Applied colleges and universities; Education and teaching quality; Assurance system; Optimization strategy

1. Introduction

Under the background of digital intelligence, applied universities are facing new challenges in ensuring the quality of education. This paper mainly discusses the optimization strategy of education and teaching quality assurance systems in applied colleges under the background of digital intelligence. On the one hand, this article helps to understand and grasp the influence of digital intelligence on the quality assurance of higher education, and provides a new perspective for theoretical development; on the other hand, it provides a set of practical

strategies for colleges and universities to meet the challenge of digital intelligence and improve the quality of educational teaching. Digital intelligence plays an important role in promoting the reform of higher education in China, improving the quality of talent training and enhancing the international competitiveness of higher education in China. Therefore, this paper has theoretical innovation value and a profound practical significance.

2. Theoretical construction of education and teaching quality assurance systems in applied colleges and universities under the background of digital intelligence

2.1. Overview of relevant theories of digital intelligence

Digital intelligence transformation, that is, the application of big data, artificial intelligence, and other technologies in higher education, has brought about technological changes as well as comprehensive innovation in educational ideas, models, and talents. This shift has led to the diversification of knowledge production and dissemination, such as online courses and video platforms that provide rich learning resources, challenging traditional talent training models. At the same time, the fragmentation of knowledge requires students to improve their learning abilities deeply and systematically, and teachers to adapt to new teaching scenarios and tools. Through digital intelligence, Peking University and Wuhan University realized the digitalization of courses and the construction of resource bases, so as to cultivate high-quality digital intelligence talents. According to the study by UNESCO and Tsinghua University, digital transformation of higher education is a key strategy to deal with the rise of digital technology, involving the transformation of talent training concepts, methods, and governance systems. Therefore, under the digital intelligence background, applied colleges should pay attention to the construction of educational teaching theory and teaching quality assurance system, and reform teaching mode, personnel training, and teacher's role in an all-round way to meet the challenge of new technology.

2.2. Theoretical basis of education and teaching quality assurance systems in applied colleges and universities

Digital intelligence transformation, which mainly refers to the deep application of modern information technology such as big data and artificial intelligence, has a profound impact on higher education. This transformation is not only a technology change but also a comprehensive innovation in educational ideas, teaching modes, and personnel training modes. Digital intelligence transformation promotes the diversification of knowledge production and dissemination. Online courses and video platforms provide rich learning resources and challenge the traditional talent training model. At the same time, the storage and organization of knowledge are increasingly fragmented, which puts forward new demands on students' deep and systematic learning. In addition, digitalization also puts forward higher requirements for teachers, who need to adapt to new teaching scenarios and master novel teaching methods. Shanghai Jiao Tong University, for example, has focused on developing a hybrid teaching mode, integrating online and offline teaching resources, and strengthening teaching interaction and personalized learning experience in its digital teaching reform. At the same time, through the establishment of an intelligent education platform, the realization of intelligent teaching resources, and real-time analysis of student learning data, Zhejiang University improved the teaching quality and efficiency. This transformation involves a systemic change in the philosophy, methods, and governance system of talent training to meet the new demands of digital industrialization on workers' knowledge, skills, and abilities.

2.3. Construction principles of education and teaching quality assurance systems in applied colleges and universities

Under the background of digitalization, the theoretical construction of education and teaching quality

assurance systems in applied colleges and universities should follow the following principles. According to the guidance of the Implementation Plan for Undergraduate Education and Teaching Audit and Evaluation in General Colleges and Universities (2021–2025), emphasis should be placed on strengthening the subjective consciousness of quality assurance, improving teaching quality standards, and establishing an effective operating mechanism for quality assurance [1]. This includes promoting diversification of quality standards and establishing long-term quality assurance mechanisms using quality management models such as PDCA (Plan-Do-Check-Act). Considering the key role of digital literacy of college teachers in digital transformation, we should pay attention to the improvement of digital literacy among teachers. This involves not only the skill level of the teacher but also the deep logic and value of the teaching model. We should combine the improvement of teachers' digital literacy with the reform of teaching mode to promote the improvement of educational quality and the development of students' adaptability. Digital intelligence governance plays an important role in the construction of a quality education system [2]. Digital intelligent governance is not only the application of technology but also the innovation of educational concepts and governance models. This requires universities to focus on digital intelligence of education governance when constructing quality assurance systems in order to meet the new demands of education in the digital age. In the digital background, the construction principles of the education and teaching quality assurance system of applied colleges and universities should include strengthening the quality assurance consciousness, improving the digital literacy of teachers, implementing digitalization governance, and constructing a comprehensive and effective quality assurance system.

3. Practical path of education and teaching quality assurance systems in applied colleges and universities under the background of digital intelligence

3.1. Optimizing the allocation of education and teaching resources

Universities are actively optimizing the intelligent teaching environment and strengthening the construction of online course systems [3]. Peking University has fully digitalized its courses and built 14,000 audio and video courses and 500,000 hours of digital resources to support integrated online and offline teaching. The school has also partnered with other colleges to offer quality general education programs, with more than 200 massive open online courses (MOOCs) on the National Wisdom Education Platform. Wuhan University implements the national education digitalization strategy, builds a comprehensive digital intelligence education system, and improves the curriculum of digital intelligence talents through the five-in-one strategy. National Smart Education Platform plays an important role in the digital transformation of classrooms and the optimization of teaching design through scientific customization and dynamic supply. These measures are conducive to the construction of education and teaching quality assurance systems in applied colleges and universities, meet the needs of the digital intelligence era, and improve educational quality and efficiency.

3.2. Constructing a diversified teaching quality evaluation system

The application of digital intelligence technology helps to establish a diversified and intelligent evaluation system. Through the collection and analysis of students' learning data, their learning process can be tracked and evaluated objectively and comprehensively in multiple dimensions. This can not only help teachers find problems and deficiencies in teaching but also adjust teaching strategies and methods in time to improve teaching quality. The combination of data and intelligence can promote the reform and innovation of teaching evaluation in colleges and universities. Traditional teaching evaluation is often based on experience perception and lacks evidence from multiple dimensions and data sources [4]. Data and intelligence-driven evaluation models break through these limitations and focus on evidence-based evaluation. Through evidence-based

pedagogical evaluation based on multi-source data, clear evaluation criteria and processes are formulated to standardize, refine, and synthesize evaluations. The development of new-generation digital technology provides new possibilities for educational evaluation reform. Non-inductive data acquisition, multi-mode data fusion processing, intelligent diagnostic analysis, and real-time accurate feedback can be achieved using technologies such as artificial intelligence, big data, and blockchain. These technologies can fully demonstrate students' knowledge structure, skill performance, and intrinsic potential, provide detailed digital portraits of each student, and facilitate the iterative upgrading of educational evaluation concepts and methods.

3.3. Strengthening the construction and training of teachers

Under the background of digital intelligence, the key to improving the quality assurance system of education and teaching in applied colleges and universities is to strengthen the construction and training of teachers. The improvement of teachers' digital literacy is crucial, which is not only technical ability but also deep thinking to understand the logic and value of technological change in teaching [5]. The Ministry of Education and other departments, through the National Smart Education Platform, promoted the digital transformation of the teaching force, provided resource support for teacher development, and promoted balanced development of education. The Guidance on Strengthening Reform of the Construction of Teachers in Universities in the New Era, issued by the Ministry of Education and other six departments, emphasizes the need to strengthen Party leadership in an all-round way, continuously improve teachers' ideological and political quality and moral cultivation, establish a platform for the development of teachers in universities, and focus on improving their professional quality and abilities. In the digital background, strengthening the construction and training of teachers is of great significance to the construction of teaching quality assurance systems in applied colleges and universities.

3.4. Innovating education and teaching management models

Digital intelligence transformation is a key direction for the high-quality development of higher education, facing opportunities and challenges brought by big data, artificial intelligence, and other technologies [6]. Applied colleges and universities should seize the opportunity to optimize intelligent teaching and strengthen online curriculum systems and interdisciplinary construction. One example is Wuhan University's "five-body drive" strategy to realize comprehensive digitalization of talent training. The digital transformation of education is a part of the construction of an educational powerhouse. It involves the transformation of concept, model, and mode, and promotes the integration and development of all elements by mining the value of educational data. Digital enabling classroom innovation, such as the construction of an intelligent campus at Central China Normal University, has promoted the transformation of teaching philosophy and content and improved the quality of education.

4. Optimization strategy of education and teaching quality assurance systems in applied colleges and universities under the background of digital intelligence

4.1. Improving policies, regulations, and institutional guarantees

In the age of digital intelligence, applied colleges and universities need to improve the policies and regulations to optimize the teaching quality assurance system [7]. Education digitalization is the direction of building a country with powerful education, facing the opportunities and challenges brought by new technologies. Colleges and universities should seize the opportunity to promote high-quality development through intelligent teaching, online course systems, and interdisciplinary construction. It is of strategic significance that the COVID-19 pandemic accelerates the digitalization of education and reshapes the education model and path. With abundant and convenient resources, digital education meets learners' inclusive, fair, and sustainable needs,

and is an important means to stimulate potential and lead social development.

4.2. Strengthening school-enterprise cooperation and the combination of industry-university-research

In the age of digital intelligence, the deep integration of industry, university, and research is the key to promoting the integration of education and technology talents [8]. High-level research universities play a central role in scientific and technological innovation and industrial innovation. They should build an innovation ecology integrating industry and education and explore a scientific and technological innovation governance system. The outline of the national "14th Five-Year Plan" emphasizes the construction of a technological innovation system with enterprises as the main body and the market as the guide, strengthening school-enterprise cooperation and the combination of industry, university, and research, solving problems such as the mismatch between results and needs, and imperfect cooperation mechanisms, and promoting the deep integration of industry and university research institutes as well as the development of new quality productivity.

4.3. Building an information-based education and teaching platform

In the transformation period of digital intelligence, applied universities should attach importance to the construction of information education and teaching platforms, integrate resources, and realize the integration of teaching, management, and service [9]. The platform should have intelligent resource integration capabilities, and use cloud computing, big data, and other technologies to optimize content and meet individual needs. It should include flexible interactive teaching modules, improve teacher-student interaction, and establish an evaluation system to monitor teaching quality. The platform should be scalable and compatible, support interdisciplinary research, and focus on user experience. Through this platform, colleges and universities can improve the intelligent and personalized level of education and teaching, provide technical support for teaching quality assurance, and promote continuous improvement and development.

4.4. Improving the monitoring and feedback mechanism of education and teaching quality

In the era of digital intelligence, improving the monitoring and feedback mechanism of education and teaching quality should start from the following aspects: building a dynamic, all-round monitoring network using big data and other technologies; optimizing the feedback process, shortening the information transmission chain, and ensuring timely and accurate feedback; strengthening the use of monitoring feedback results to form closed-loop management; paying attention to humanistic care and stimulating teachers' and students' enthusiasms to participate. The monitoring network should cover multiple dimensions such as teaching objectives, content, methods, and effects, and reveal problems through data analysis. The feedback mechanism should be direct and efficient so that teachers can quickly obtain information and adjust teaching strategies. Management should emphasize monitoring feedback results as a basis for teaching evaluation and teacher assessment to promote continuous quality improvement [10]. At the same time, it is necessary to pay attention to teachers' and students' psychological needs, encourage active participation, and jointly maintain the stability and improvement of teaching quality.

5. Conclusion

In this paper, a series of optimization strategies are put forward by discussing the teaching quality assurance system of applied colleges under the background of digital intelligence. It is found that the construction of educational teaching quality assurance systems adapted to the age of digital intelligence needs to start from three aspects: theoretical construction, practical path, and optimization strategy. In practice, universities should

pay attention to the optimal allocation of resources, the construction of a diversified evaluation system, the construction of teaching staff, and the application of innovative management models. In conclusion, this study provides a theoretical basis and practical guidance for the teaching quality assurance of applied universities under a digital background and has important reference value for the promotion of higher education quality and innovation of personnel training model. In the future, colleges and universities should continue to explore and improve the educational quality assurance system to adapt to the changing educational environment.

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