Research on Quality Management of Online Teaching in Colleges and Universities in the Era of Artificial Intelligence

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Abstract. With the rapid development of the mobile Internet, the integration of modern information technology and education is deepening, the way of learning and knowledge dissemination has undergone significant changes, and the advantages of the technology-enabled online and offline combination of "two-line integration teaching" are becoming increasingly prominent, and it has become the future trend of higher education development. Changes in the form of teaching have put forward new requirements for teaching quality management. Colleges and universities must seize the historical opportunity of the great development of information technology, improve the quality monitoring and guarantee system of teaching under the mode of "two-line integrated teaching", accelerate the reform of talent cultivation mode, and promote the high-quality development of education by education information technology.

Keywords: Artificial Intelligence; Online Teaching; Teaching Quality; Teaching Management introductory.

1   Introduction

In recent years, with the rise of big data, cloud computing, artificial intelligence, virtual reality and other intelligent information technologies, all areas of society are undergoing a broad and profound transformation, and the field of education is no exception.

The Internet has intervened in the field of education and teaching in an all-round way, and the way of learning has shown a subversive adaptation, which is centred on the change from the binary interaction of "teachers and students" to the ternary interaction of "teachers, students and machines". The effective and deep integration of online education and artificial intelligence has become the new normal in the field of education. General Secretary Xi Jinping mentioned in his condolences to teachers and educators on the 36th Teachers' Day that China "supports the world's largest online education"[1]. The development of online education is not only a trend of technology and the development of the times, but also an important practice of implementing the Party's education policy and building a high-quality education system. The development of online education is the right thing to do, and it is the right thing to do to bring into play the power of the Internet, artificial intelligence, science and technology, capital and other parties to improve the quality of online teaching, strengthen the quality management of online teaching, establish a new pattern of high-quality development of higher education, and create a new mode of education for the future of the world.

2 The Necessity of Strengthening Online Teaching Quality Management in the Age of Artificial Intelligence

2.1 The need to improve the quality of online teaching

Improving the quality of higher education is not only a need for the development law of higher education itself, but also a need for building an innovative country. For offline teaching, colleges and universities generally set up special teaching quality management institutions, such as teaching quality monitoring centre (or teaching assessment centre), to carry out overall monitoring of the quality of teaching, planning and top-level design, and has formed a more mature and scientific internal teaching quality monitoring system in colleges and universities, which plays an important role in promoting the quality of talent cultivation and continuous improvement. Online teaching, as an important part of the new era of college teaching, poses a new challenge to college teaching managers[2]. Colleges and universities must strengthen online teaching quality management research, constantly improve the teaching quality management system, strengthen the online teaching process management, and actively explore new ideas and new methods of teaching supervision in the new period, in order to comprehensively improve the quality of online teaching and the quality of talent cultivation in colleges and universities.

2.1.1 The need for the healthy development of online education

Since the second half of the 1990s, with the development of information technology and the advent of the knowledge-based economy, China's distance education has entered a period of strategic innovation and take-off. around 2010, Khan Academy, flipped classroom, MOOC began to become popular in China, and online education gradually entered a period of explosion, and for a time, the history of education ushered in a "digital tsunami" of unprecedented proportions. "[3]. The goal of "spreading the world's best educational resources to the remotest corners of the earth" seems to have been realised. With the rapid development of the mobile Internet, the form of online education is becoming more and more diversified, and the development speed is getting faster and faster. In the field of higher education, online education has shown great potential in teaching and learning, and has been developing rapidly with its unique advantages of flexibility, convenience, interaction and openness. One of the core elements of online education is the excellent quality of courses[4]. In the future, online education must hold on to the lifeline of "quality" in order to be stable and to make progress.

2.1.2 The need for innovative development of higher education teaching forms

With the advent of Industry 4.0, which is characterised by intelligent manufacturing, the reform and practice of blended teaching mode based on information technology has become a new trend in the development of higher education[5]. The combination of online and offline "dual-line fusion teaching" breaks the "lecture" teaching mode that has long existed in the college classroom, dismantles the barrier between online and offline teaching, and promotes mutual support and organic synergy between online and offline teaching to form a new form of teaching that integrates online teaching and offline teaching[6]. Online teaching and offline teaching integration of the new form of teaching. The change of teaching form has put forward new requirements for teaching quality management. Colleges and universities must seize the

historical opportunity of information technology development, accelerate the reform of talent cultivation mode, and promote the high-quality development of education with education information technology.

2.2 Challenges to online teaching in the age of artificial intelligence

The rapid development of artificial intelligence technology has brought many innovations to education, while also placing higher demands on teachers, educational environments

demand, further requiring education to move from shallow to deeper. Online education, as an important form of education globalisation, is bound to face a series of challenges in addition to the enormous support of AI technology. Online teaching faces the challenges of the lack of teachers' intelligent literacy, platform construction, teaching software and teaching environment to be improved, as well as the adjustment of online education management.

2.2.1 Lack of Intelligent Literacy among Online Teaching Teachers in the Age of Artificial Intelligence

In the process of the integration of artificial intelligence and online education, online teachers' low intelligent literacy is a common and prominent problem nowadays.This is manifested in the teachers' difficulties in screening different teaching tools according to the different needs of students, in their familiarity with the use of different technological tools, and in their use of digital intelligence technological tools to address classroom management and interactive feedback with students, and so on. More prominently, some teachers are only simply superimposed on the integration of the use of AI technology and teaching, and so on. The root cause of this series of problems is that many teachers do not have a high level of intelligence literacy. The main reason for this series of problems consists of two aspects: on the one hand, it is due to the lack of sufficient attention to intelligent literacy by online teachers. From the perspective of the construction history, many online platforms are in the construction stage, and even the Great Wall Chinese, which has a 17-year history of development, still has many imperfect modules, and lacks a unified training mechanism for the platform and normative requirements for teachers' intelligent literacy[7]. It can be said that the development of many courses and the design of language teaching are relatively random. At the same time, the teaching mode is relatively loose, resulting in the integration of AI technology and online education becoming optional rather than mandatory.

Item. Many teachers then use the method of "moving online" for offline classroom lectures,

2.2.2 Platform development, delivery software and teaching environment to be improved

Platform development, delivery software and teaching environment need to be improved

As we all know, in the era of artificial intelligence, the promotion of online education cannot be separated from the support of technology and resources. With the opening of China's "new base station" operations, such as big data, artificial intelligence and 5G base station, the promotion of online education has achieved remarkable results, however, there are still many technical and resource deficiencies if it is to be promoted globally.

First of all, quality platform resources are the most important problem at present. From the perspective of platform courses, many platforms only offer courses on language elements,

lacking a complete curriculum system, and the selection and content of teaching materials also vary, while the functions of the teaching software used are not perfect. In short, there is a lack of high-quality platforms and lecture software, which is yet to be developed in the market. Lecture software, as a medium of classroom, not only helps classroom learning and communication, but also helps classroom management. At present, the lecture software matching online education is more often used in ZOOM, SKYPE, Tencent meeting and other software. However, the experience is relatively poor, lack of good classroom management and effective interaction with parents, etc., and its experience needs to be improved. Meanwhile, artificial intelligence technology has initially solved the problem of online classroom environment through VR and other technologies[8]. However, from the viewpoint of the current online teaching classroom practice, the lack of the overall atmosphere of classroom learning, students have little interaction with each other, the lack of some group activities in the online classroom has basically become the norm, and most of the learners have a short period of time in the classroom contact, but the lack of "immersive" teaching environment, it is difficult to form a mind, and has always been a constraint on the learning of learners. However, the lack of an "immersive" teaching environment and the difficulty of forming thinking have been constraining learners' learning. With the advent of the artificial intelligence era, online teaching is shifting from the application stage of emerging technology-assisted environments and tools to the stage of in-depth involvement of artificial intelligence and the integration of online education.

2.2.3 Artificial Intelligence Requires Urgent Adjustments in Online Education Management

Impact. It is true, as Professor Sun Fuchun of Tsinghua University said, "Artificial intelligence applied to online education creates good conditions for individual adaptive learning, and behind this is the enhancement of human-machine collaborative teachers' ability, and the improvement of the efficiency and level of intelligent decision-making management." The successful case of the construction of KDDI's smart education campus reminds people that AI technology, as a new initiator in the tool revolution, is more important for management if it is to fulfil its essential function, in addition to its technical application. Scholars are in agreement about what role AI can play in education, depending on how much AI is positioned and integrated into education management. After decades of construction, offline education management has become a system. However, online education is still under construction, and the integration of AI in particular is a new topic that is still being explored. How to integrate artificial intelligence from the perspective of the classroom, school, and students to meet the different needs of different students, to meet the individual needs of different students, individual education

How to refine and summarise experience, how to use data for decision-making, integrate advantageous resources for teaching promotion, etc., are all important issues that online teaching urgently needs to explore and solve. In short, a series of explorations and adjustments are needed to think about how to combine the management status quo of online teaching, explore the reorganisation of educational processes and structures through various types of service robots, so that teachers' teaching ability can be expanded, and further expand teachers' teaching ability, so that students' learning potential can be tapped and better learning experiences can be gained.

2.3 Optimisation of Paths to Improve Online Teaching Quality in the Age of Artificial Intelligence

In the era of artificial intelligence, it has gradually become a consensus that online teaching has become an integral part of regular teaching activities. In the field of higher education, educators need to think deeply about the development trend of higher education and changes in the demand for talent training in the context of the new era, embrace the educational application of modern information technology, and endeavour to explore ways to improve the application of intelligent information technology in the field of higher education, the way, the method, the function and the value. Then, how to maximise the positive role of information technology and use it to boost the development of higher education and improve the quality of online teaching needs to be considered and grasped from the following aspects.

(i) Innovating the concept of education and teaching and promoting online teaching models

Reform of intelligent information technology represented by Internet technology is the most influential technology ever in the history of mankind, the Internet, mobile communications, artificial intelligence, big data, VR/AR and other new technologies and new equipment into the field of education, after the teaching of a wide range of in-depth application, to the quality of teaching and teaching efficiency to bring a great enhancement of the important symbols of China's higher education towards modernisation.

Colleges and universities need to take the spirit of reform, seize the opportunity to extend the time and space boundaries of education by applying information technology such as "Internet +", "Smart +", and fully mobilise teachers and students to participate in the initiative and enthusiasm of teaching reform, and to explore new modes of education and teaching. First, increase the policy support for online teaching, the online teaching workload of teachers into the scope of teaching performance assessment, and incentive performance pay linked to motivate the majority of teachers to actively engage in teaching reform and innovation, online teaching from the "acute" to "normalised" a new transformation. "The second is to take students' effective learning as the fundamental concept, stimulate students' learning motivation through the embedding of gamification elements, and promote the reform of teaching programmes with "cultivating students' independent learning ability" as the core.

Strengthening the construction of online teaching platforms and resources to create a favourable online education ecosystem for teachers and students.

The smooth promotion of online teaching depends on stable teaching platform support and technical service support. Colleges and universities should accelerate the construction of education informatisation, actively promote cross-departmental cooperation, improve platform and hardware construction, thoroughly solve the problems of network congestion and platform loading that may occur in online teaching, and fully support teachers and students to carry out online lectures and learning; upgrade the online teaching platform, strengthen the technical service support, and provide teachers and students with a reliable guarantee of online teaching services; promote the construction project of smart classrooms, and realise the normalisation of recorded broadcasting, and Effectively change the face of the main teaching site.

Promoted by the Ministry of Education's "Undergraduate Teaching Quality and Teaching Reform Project", China's colleges and universities have successively carried out the

construction of online course resource libraries, such as high-quality courses, high-quality video public courses, and resource-sharing courses, providing a large number of high-quality online course resources for China's higher education. In order to promote the sharing of high-quality resources, colleges and universities should keep pace with the times by developing an information platform, setting up an "online course" module on their official websites, integrating and converging high-quality online educational resources such as Wisdom Tree, College State, China University MOOC School Cloud and other high-quality online educational resources under the module, to help teachers and students conveniently obtain educational resources through the platform, and to help teachers obtain valuable educational resources that can be effectively transformed into classroom teaching from the platform. It helps teachers to obtain valuable resources from the platform that can be effectively transformed into classroom teaching, and makes it convenient for students to listen to high-quality online courses from famous universities and teachers according to their personal interests and development needs, so as to broaden their horizons of knowledge and serve as a useful supplement to their coursework.

Enhancing Teachers' Informatisation Teaching Capability and Building a High-level Online Teaching Faculty.

Teachers' informatisation teaching ability is weak as a whole and decreases with age, and there are problems such as the lack of close integration between training in the application of technology in teaching and the teaching of teachers' subjects. Information technology teaching ability is not a simple superposition of various abilities, but a kind of knowledge structure generated by teachers through continuous learning, practice and reflection in the process of information technology teaching[9]. On the one hand, teachers' IT skills training is continuously strengthened through pre-service training, thematic training, online self-study, exchange practice, etc., so as to enable teachers to master the basic methods of informatised instructional design in the integration of IT and subject specialisms, as well as the basic skills in the use of digital media to assist teaching and learning, and to guide them to optimise the teaching process by exploring it from wider perspectives of the educational scenario and the effectiveness of teaching and learning, so as to Improve teachers' intelligent informatised teaching ability; on the other hand, establish an assessment system for teachers' online teaching ability, through which problems and deficiencies exposed by teachers in the implementation of the teaching process can be identified, so as to solve the problems and make up for the deficiencies in a targeted manner, and to achieve the purpose of spirally improving teachers' digital competence and digital literacy.

(iv) Use of modern information technology to stimulate deeper learning among students

Online education as a means of teaching, in the relationship between teaching and learning, teaching is a means, learning is the fundamental purpose. From the learning motivation and learning effect Chinese Journal of Multimedia and Network Teaching online education teaching level, learning can be divided into shallow learning and deep learning. Shallow learning is a way of learning in which learners passively accept learning content through rote memorisation. Deep learning is a higher-order learning style in which learners use metacognitive skills to actively learn new ideas and knowledge. Colleges and universities should take students' effective learning as the core, use modern information technology, carry out curriculum reconstruction from curriculum objectives, curriculum structure, curriculum

content, curriculum implementation to curriculum evaluation, pay attention to the actual needs of students, and flexibly use teaching methods such as project-type, seminar-type, and flipped classroom, to guide students to shift from shallow learning to higher-order learning in the depth of thinking.

(v) Innovative information technology-enabled education and building an online teaching quality monitoring system

With the deep integration of information technology and education and teaching, colleges and universities should take the initiative to build a new type of teaching quality monitoring system that meets the development requirements of the new era and reflects the characteristics of talent cultivation, so that the school's teaching work is stable and orderly, the quality of teaching and learning continues to improve, and the goal of talent cultivation can be effectively guaranteed.

First, formulating and improving standards for online teaching work. According to the research and evaluation paradigm of education and teaching and the characteristics of online teaching, we will formulate standards for online teaching and publish online teaching guidelines to guide and regulate the implementation of teachers' online teaching activities. Strengthen the construction of supervision organisations at the university and college levels, pay attention to the synergy between the two levels of supervision, open up information feedback channels, collect and deal with opinions and suggestions in a timely manner, make continuous improvements, achieve full coverage of online teaching quality monitoring, and endeavour to promote the online teaching from "keeping operation" to "improving quality"[10]. We will endeavour to promote the transformation of online teaching from "keeping operation" to "improving quality" and from "speaking well" to "learning well".

Second, the use of modern information technology to promote the personalisation of learning guidance. Using the advantages of intelligent information technology data recording, widely collect learners' learning data, capture learners' learning paths and learning preferences through behavioural analysis of process data, and achieve adaptive planning of subsequent learning paths; carry out knowledge tracking based on the analysis of learners' learning outcomes, model students' knowledge status and mastery, and achieve adaptive assessment of students' abilities, so as to boost the personalisation of learning guidance. Personalisation.

Thirdly, process evaluation has been strengthened. On the part of teachers, the four aspects of teachers' preparation of information technology tools, the selection and use of online teaching resources, the specific development of the online teaching process and the evaluation of the course by students after the class are added as the basic investigation contents and incorporated into the quality evaluation system; on the part of students, stage-by-stage investigations are carried out at each stage of the learning process, and the proportion of the usual grade in the total grade is increased, so as to encourage students to actively participate in the online classroom activities; To strengthen the tracking and feedback of students' learning, implement comprehensive supervision and management that emphasises both self-discipline and self-discipline, and multi-party linkage, so as to encourage students to maintain a good state of learning.

Fourth, cultivate online teaching supervision team. Colleges and universities should set up more full-time online teaching supervisors, and clarify the number of online teaching

supervisors, selection criteria, skills requirements and other content, and standardise online teaching supervision standards and processes. Do a good job of online teaching supervisors and colleges, teaching platforms, effective docking between teachers, clear before, during and after class teaching supervisors focus on the content, timely feedback on the effect of teaching quality, problematic suggestions, typical practices, to help continue to improve the quality of online teaching.

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3   Conclusions

In the age of intelligence, we act according to the situation. The new round of scientific and technological revolution and industrial change is in the ascendant, big data and artificial intelligence will make online education more intelligent, precise and personalised, and a new type of education service pattern integrating school education and online education will be formed at an accelerated pace. In the future, digital intelligence technology will be integrated into every corner of education, every link, and human-machine coexistence and collaboration will become the new normal. Colleges and universities should seize the opportunity to innovate the concept of promoting the deep integration of modern information technology and education, reshaping the traditional education process, innovative information technology-enabled education and teaching, and effectively strengthen the quality management of online teaching to ensure that online teaching and offline teaching of the same quality and efficiency, to help the "education power" construction. I believe that the future of online teaching in colleges and universities, the spring breeze is still strong, the future can be expected.

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