

# Innovative thinking and exploration of teaching evaluation in colleges under the background of intelligent education

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**Abstract:** Intelligent education is the advanced stage of the development of digital education and a new form of education in the digital era. The teaching evaluation of university teachers is an important link to ensure the quality of talent training and improve the level of education and teaching. The digital and intelligent transformation provides new ideas and methods for the teaching evaluation of university teachers. This paper analyzes the four innovative ideas of multi-dimensional evaluation, data-based, evidence-based evaluation and process orientation of teaching evaluation under the background of intelligent education, and expounds the realization path and practical significance of the four innovative teaching evaluation concepts respectively, in order to provide ideas for the innovative reform of teaching evaluation in universities under the background of digital education.

**Key words:** intelligent education; teaching evaluation; innovation idea

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## 1 Introduction

Intelligent education is an advanced stage of the development of digital education, and a new form of education in the digital era. It is qualitatively different from the form of education in the industrial era, and its core concept is "people-oriented". *China Intelligent Education Development Report (2023)* argues that the new form of education is new in five dimensions: core concept, architecture, teaching paradigm, education content and education management. The new educational form will integrate physical space, social space and digital space, innovate education teaching scene, promote technology fusion, achieve data management as the core and intellectual technology as the driving force, promote education management and business process reengineering, and enhance the modernization level of education governance system and governance capacity. The rapid development of the new generation of information technology has provided an important technical support for the teaching evaluation [1]. In the context of modern information technology to promote the digital transformation of education, it is a forward-looking research work to explore the new ideas, new characteristics and new methods of teaching evaluation and formulate teaching plans more scientifically [2]. In recent years, the educational application prospect of generative AI and technology-driven immersive scenarios will improve learning experience, make the integration of reality and fiction the new normal of learning, and educational evaluation will realize digital transformation to provide support for the lifelong learning system.

The teaching evaluation of college teachers is an important link to ensure the quality of talent training and improve

the level of education and teaching. Generally speaking, it is based on the fact that certain evaluation standards are mainly carried out through expert evaluation, peer evaluation, student evaluation, teacher self-evaluation and other aspects, and the evaluation is mainly implemented through discussion, supervision and scoring, lectures, student evaluation and scoring. From the perspective of the development trajectory of higher education itself, whether in the past, "a piece of chalk, a teaching plan for a lifetime", or now "full play PPT", these problems in college teaching need to build a new evaluation system and evaluation method. At present, China's existing education and teaching mode is being subjected to the huge impact of information technology such as big data, artificial intelligence, digital twins, metadata, etc. Under the guidance of the professional certification concept of "student-centered - output guidance - continuous improvement" and the new education and teaching audit and evaluation scheme, the new round of audit and evaluation by the Ministry of Education requires "learning-centered, teaching-led" classroom teaching and the development of student achievement-oriented teaching evaluation [3]. It is difficult for the traditional teaching evaluation of college teachers to fully and accurately reflect the real teaching situation of teachers and the real learning performance of students. Digital and intelligent transformation provides new ideas and methods for the teaching evaluation of college teachers.

## **2 Innovative concept of teaching evaluation under the background of intelligent education**

### 2.1 Multi-dimensional evaluation concept

The teaching evaluation of traditional colleges and universities focuses too much on the evaluation function and the management benefit, which belongs to the single evaluation. Taking teaching evaluation as an example, it is simplified into quantifiable indicators, such as attendance rate, the number of class hours, the number of teaching papers, which lacks the ability to stimulate students' interest in learning, cultivate concern about students growth needs, etc., and lacks the evaluation functions of incentive, diagnosis and feedback as well as humanistic care, making evaluation overemphasize on explicit behavior. There is a certain subjectivity and one-sidedness. The construction of teaching evaluation in colleges and universities based on digital and intelligent means can promote the diversification and hierarchy of teaching evaluation content, reflect the teaching quality more comprehensively and accurately, and promote the evaluation content to be closer to the actual situation of teaching.

### 2.2 Data-based and evidence-based evaluation concept

The teaching evaluation in traditional colleges and universities pays too much attention to the subjective evaluation of students' experience based on the individual judgment of the early teaching, and it is difficult to directly conduct the objective evaluation based on the multi-source data analysis of the whole aspect and the whole process of college teachers' teaching investment and students' learning situation. This model does not follow the evidence-based evaluation concept of multi-source evidence, attaches too much importance to the subjective experience judgment of student satisfaction, and lacks some scientific nature. Under the background of intelligent education, the evaluation method is in the direction of digital and intelligent. Through the use of big data analysis and artificial intelligence technology, teaching evaluation can be based on a wider range of data, such as students learning progress, online participation, homework submission, etc., to realize the multi-dimensional and objective evaluation of teachers' teaching behavior. This way is helpful to improve the scientific nature and accuracy of evaluation, and more comprehensively reflect teachers' teaching strength and students' learning effect.

### 2.3 The evaluation concept of assessment for teaching and learning

The results of teaching evaluation in traditional universities are rewarded and punished through horizontal comparisons of teachers in the same school and department, lack of vertical evaluation, pedagogical optimization and improvement tracking of individual teachers. This mode lacks personalized support for the professional development and

growth of teachers, deviates from the developmental evaluation orientation, and it is difficult to promote teaching through evaluation, let alone promote development through evaluation. The new evaluation system supported by digital and intelligent technologies pays more attention to promoting teachers' professional teaching and students' academic development. Through the continuous tracking and analysis of teachers' teaching behavior, evaluation can not only identify the problems in teaching, but also can provide targeted improvement suggestions, so as to promote teachers' continuous optimization of teaching methods and strategies, and truly achieve the goal of "student-centered" assessment for teaching and assessment for development.

#### 2.4 Process-oriented evaluation concept

The traditional teaching evaluation in colleges and universities attaches importance to the peer evaluation, with little tracking and dynamic evaluation and analysis of the process of teaching behavior. Big data, the Internet of Things and other technologies can collect the data generated by students in the learning process in the whole process. The new evaluation method has begun to emphasize the dynamic tracking and timely feedback of the teaching process. By using digital tools, such as online learning platforms and teaching management system, teachers' teaching behavior and students' learning performance can be collected and analyzed in real time. This evaluation method not only focuses on the final teaching results, but also pays more attention to each link in the teaching process, such as classroom interaction, student participation, homework completion, etc. In addition, digital and intelligent evaluation tools make the evaluation indicators more specific and visual, providing teachers with more operational and targeted feedback, so as to effectively promote the innovation and improvement of teaching methods.

### **3 Innovation path of teaching evaluation under the background of intelligent education**

#### 3.1 Construct an evaluation index system of teaching behavior based on multi-dimensional data

The multimodal learning data throughout the whole process makes the final evaluation results more comprehensive and objective. The acquisition of multidimensional data not only includes the explicit teaching behavior indicators such as action skills and language content, but also includes the explicit teaching behavior indicators of emotional attitudes and values, so as to accurately and objectively analyze and diagnose the teaching behavior of university teachers. At present, many domestic universities develop and design teaching electronic records such as basic teaching organization electronic archives, the grass-roots organization activity plan calendar, and regularly carry out various teaching and research activities such as teaching symposiums, collective lesson planning, open classes, etc. The content of the activity, process and results are recorded digitally, upload them to cloud platform, and the school will analyze and organize the data as an important reference index for the evaluation of basic teaching organization. Through multi-source data fusion, a comprehensive and objective evaluation index will be constructed.

#### 3.2 Construct a teaching evaluation form based on evidence-based multi-source data fusion

With evidence-based teaching evaluation theory, big data and artificial intelligence technology as the starting point, based on the whole teaching process data chain, it conducts multi-dimensional and precise dynamic generative evaluation of the whole process of college teachers' teaching and students' learning, breaking through the subjectivity and empirical problems existing in the traditional evaluation of students' perceptions and supervisors' experiences, promoting the development of teaching evaluation towards scientific and digital direction. For example, through the real-time capture of images in the classroom by big data analysis, the captured images can be sliced and analyzed by time, including classroom attendance, student attendance, real-time head-up rate, front-row seating rate and so on. Through the statistics and analysis of the data, it is provided to the teaching supervisory team as one of the auxiliary references for the evaluation of teaching effectiveness to systematically evaluates the teaching status and behavior of teachers as well as the learning status of

students.

### 3.3 Construct the teaching and academic level evaluation content based on intelligent education means

In view of the traditional problem of only evaluating teaching but not learning, the hierarchical evaluation content of "teaching" and "learning" is constructed. The former is divided into four contents according to the degree of investment: teaching behavior, teaching cognition, teaching emotion and teaching intelligent. While the latter is divided into four contents according to the learning results: students' reaction, learning results, learning ability and core accomplishment. Through the integration of intelligent education to enrich the evaluation content of "teaching" and "learning", many domestic universities are integrating the construction of online education space, connecting the classrooms, courses, and platforms. For students, there are classroom interaction data, process performance data, learning data analysis, real-time analysis of learning behavior. For teachers, there are students' micro evaluation, online evaluation and suggestions, random peer evaluation, etc. By deconstructing the stratification, the teaching effect is evaluated to realize the multi-dimensional and dynamic evaluation of the whole teaching process, establish growth profiles of students' offline/online, on-campus/off-campus learning and activities, which comprehensively record and track the growth trajectory of students both inside and out of school, emphasize the evaluated diagnostic function, incentive function, prediction function, regulation function, and discover its potential and deficiency, so as to serve students' comprehensive development and personality growth [4].

## **4 The innovative significance of teaching evaluation under the background of intelligent education**

### 4.1 Promote the standardization of teaching evaluation for university teachers

Traditional teaching evaluation is often based on experience perception and lacks evidence support from multi-dimensional and multiple data sources. The evaluation model driven by digital intelligence integration breaks through the limitations of traditional subjective evaluation and pays attention to evidence-based evaluation. In the era of digital intelligent education, based on evidence-based teaching evaluation of multi-source data as the development trend of the future, the evidence-based guidance, multi-source data fusion concept are integrated into the evaluation framework to develop clear evaluation criteria and process. With the development of data, functions such as perception, analysis and prediction are realized, making evaluation more standard and operable, eliminating subjectivity and arbitrariness, realizing standardized evaluation, and helping to improve the comparability and fairness of evaluation results.

### 4.2 Promote the precise teaching evaluation of university teachers

Driven by the fusion of virtual and real multi-source data, a more accurate evaluation system is built, and all aspects of the teaching process are accurately captured through detailed multi-dimensional evaluation. The big data analysis method is able to automatically analyze and interpret multi-source data to provide intelligent decision support for evaluators. This innovation point will improve the speed of evaluation, improve the accuracy of evaluation, and make the evaluation more in line with the actual needs of teaching. At the same time, according to the characteristics and teaching styles of different teachers, we can also establish a dynamic model of teachers' teaching behavior, so as to realize a more comprehensive and accurate control of teaching activities. Accurate evaluation is helpful to guide teachers' teaching improvement more carefully and promote their personalized development.

### 4.3 Promote the comprehensive teaching evaluation of university teachers

The evaluation mode of intelligent education teaching pays attention to the two-way between teaching and learning. From the multiple dimensions of teaching behavior, cognition, emotion and intelligent, the evaluation content of "teaching" is constructed; from the aspects of students' reaction, learning results, learning ability and core accomplishment, the multi-level content of "learning" is constructed to realize the comprehensive evaluation content. In the construction of the

evaluation system, the full application of big data coding and artificial intelligence means can make the college teaching evaluation more diversified, comprehensive.

## **5 Conclusion**

In recent years, the number of teaching evaluation research supported by a new generation of information technology has been on the rise as a whole. The innovative reform of teaching evaluation in colleges and universities under the background of intelligent education is student-centered, reflects the main body of students, focuses on the two-way attention of teaching and learning, constructs a teaching behavior evaluation index system based on multidimensional data, a teaching evaluation form based on evidence-based fusion of multi-source data, and the content of the teaching evaluation level based on the digitized intelligent means to realize the multidimensional teaching evaluation and the integration of digitized and intelligent technology to help promote the teaching effect of college teachers and the dual enhancement of the core qualities of the students.

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## **Conflicts of interest**

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## **References**

- [1] Xu DD, Zhang H. 2023. Teaching evaluation supported by a new generation of information technology--research hotspots, trends and insights. *Software Guide*, 22(07): 247-252.
- [2] Zhu XM, Pan ZJ. 2023. Research on digital classroom teaching evaluation based on data analysis. *China Journal of ICT in Education*, 29 (09): 91-98.
- [3] Yang JB, Xu B. 2023. Research on the construction of student-centered classroom teaching quality in universities. *Technology Wind*, 6: 19-22.
- [4] Yang ZK. 2020. Using information technology to promote the reform and innovation of education and teaching evaluation. *People's Education*, 21: 30-32.

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