

A Review of Research on Theory and Practice of Higher Education Evaluation

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Abstract: As an important tool to improve the quality of education and promote the reform of education, the theory and practice of higher education evaluation has always been a hot topic. This study comprehensively analyzes the research progress in the theoretical basis, method and construction of evaluation system of higher education evaluation. The paper first reviews the purpose of higher education evaluation from the traditional summative evaluation to formative evaluation, analyzes the development process of educational evaluation, and discusses its theoretical framework, including cognitive evaluation theory, social cognitive evaluation theory, pragmatic evaluation theory, evaluation model, etc., emphasizing that evaluation should promote students' learning and cultivate self-evaluation ability and focus on the sustainability of students' lifelong learning. Furthermore, the practical methods of educational evaluation, including evaluation types, evaluation methods, such as quantitative evaluation, qualitative evaluation and comprehensive evaluation, and the implementation steps of evaluation are further discussed. Finally, the paper explores the application and rationality of performance evaluation in higher education and expounds the current development trend of educational evaluation, including the integration of diversified evaluation methods and evaluation tools based on modern educational technology.

Keywords: Higher Education Evaluation; Theoretical Basis; Practice Procedure; Limitations and Challenges

1. Introduction

Congratulations! As a crucial aspect in the

field of education, educational evaluation plays a key role in measuring the quality of education, improving education and teaching, and promoting the growth of students. The research of educational teaching evaluation combining theory and practice is not only the need of educational reform and development, but also reflects the importance of solving practical problems and promoting continuous progress. This paper aims to explore the theory and practice of educational evaluation and analyze the key problems and challenges. It provides suggestions for the further improvement and development of educational evaluation.

1.1 The Concept and Function of Educational Evaluation

Liu Bengu believes that educational evaluation refers to the process of systematically collecting, sorting, analyzing and explaining educational activities, aiming at evaluating the degree of realization of educational goals and the quality of teaching process and effect. The connotation of education and teaching evaluation includes the process of evaluating and analyzing students' performance in the learning process, learning outcomes, learning attitudes, teaching process, teaching methods, use of textbooks, school management and teaching environment. Its main purpose is to provide objective feedback on students' learning situation and teaching effect for teachers, schools and education management departments, and to give scientific basis for teaching reform and educational decision-making [1].

In view of the role of educational evaluation, Liu Zhijun proposes that educational and teaching evaluation is helpful to evaluate teaching quality. Through the evaluation of teachers and teaching methods, problems in teaching can be found, so as to improve

teaching methods and improve teaching quality. Through evaluation data, schools and education management departments can formulate more targeted teaching plans and policies to meet students' learning needs, improve teaching effects, help education administrators better monitor the operation of the education system, evaluate teachers' teaching effects, and formulate education policies and reform directions [2]. Through the evaluation of schools, teachers and curriculum, problems can be found in time, and adjustments and improvements can be made to ensure the effective operation of the education system.

To sum up, education and teaching evaluation occupies an important position in the education system and is a key link in the improvement of education quality and personal development.

1.2 Development Process of Educational Evaluation

The development of educational teaching evaluation has undergone a process of transformation from a single achievement evaluation to a diversified and comprehensive evaluation. From the initial focus on the single evaluation of students' academic performance, to the gradual focus on the overall development of students and the overall quality evaluation of school education, Wu Gang made a relatively comprehensive overview of this [3].

Since ancient times, various evaluation methods and ideas have been reflected and evolved in different historical stages. The evaluation of education and teaching in ancient times focused on moral education, moral cultivation and moral standards, and the evaluation method was mainly reflected in Confucius' teaching method of "making gifts and making music". In ancient Greece, the main purpose was to train soldiers and govern the city-state, and the evaluation focused on physical and intellectual strength, namely the Athenian school of "bodybuilding" and the Spartan school of "military training". The evaluation of education and teaching in the Roman period laid emphasis on the cultivation of utilitarianism, practical skills and labor skills. The evaluation of education and teaching in the middle Ages was mainly reflected in the development of various religious schools, and the evaluation criteria

were mainly the mastery of religious knowledge and the adherence to faith. During the Renaissance, education and teaching evaluation began to pay attention to the cultivation of comprehensive quality, and famous talent selection examinations such as the Imperial Examination system in China and the entrance examination of Cambridge University in England appeared one after another. The Enlightenment movement in the 18th century also had a profound impact on the evaluation of education and teaching, emphasizing rationality and freedom, advocating universal education and quality education.

The development of modern educational teaching evaluation can be traced back to the end of 19th century and the beginning of 20th century. With the intensification of industrialization and urbanization, educational teaching evaluation tends to be scientific and standardized. Einstein put forward the pluralistic theory of intelligence and thinking, which promoted the evaluation method to be more diversified and integrated. Since the 1960s, education and teaching evaluation has gradually become large-scale and comprehensive, and various standardized evaluation and large-scale tests such as SAT and GRE have appeared one after another, and began to pay attention to the comprehensive evaluation of students' comprehensive quality and ability.

Educational evaluation in the 21st century is gradually developing towards the direction of individuation, digitalization and intelligence. With the development of artificial intelligence and big data technology, educational teaching evaluation is becoming more accurate and effective. Individual evaluation and comprehensive quality evaluation gradually become the trend of the future, paying attention to students' personality characteristics and potential development. At the same time, digital technology also provides more diversified and convenient means for evaluation, such as the application of online evaluation, data analysis and other tools.

In general, the development of educational teaching evaluation has experienced a long and rich change, reflecting the different stages of educational ideas and social development. The ancient moral orientation, the Middle Ages religious orientation, the Renaissance and

Enlightenment popularization orientation, the modern scientific and comprehensive, the 21st century personalized and digital, all provide rich resources and impetus for the development of educational teaching evaluation concept. In the future, education and teaching evaluation will pay more attention to the cultivation of students' personality and overall quality, with the support of intelligent and digital technology to help the continuous progress and development of education.

2. Theoretical Basis of Educational Evaluation

The theoretical system of educational evaluation is the guidance and support of educational and teaching evaluation activities, which guarantees the scientificity and objectivity of educational evaluation activities. The development and perfection of evaluation theory has an important influence on the quality and effect of educational and teaching evaluation activities.

Liu Bengu holds that the theoretical system of educational teaching evaluation mainly includes three aspects: evaluation theory, evaluation model and evaluation method. Evaluation theory is the foundation of educational teaching evaluation, which includes the basic concept, nature, function and principle of evaluation. Evaluation model is the concrete application of evaluation theory, and it is the concrete application of evaluation theory in practical evaluation activities. Evaluation method is the concrete operation means of evaluation model, including various methods of data collection, analysis and interpretation.

2.1 Basic Concepts of Educational Evaluation

The basic concepts of educational evaluation include evaluation, detection, test and evaluation. Evaluation is a process of comprehensive, objective and internal investigation and judgment of things. In the field of education, evaluation refers to the process of systematically and purposefully collecting, analyzing and judging the learning process and outcomes of students. Detection is a diagnostic test or measurement of students, usually a regular and systematic assessment activity, designed to help teachers timely

adjust the teaching content and methods, and help teachers and students to take timely measures to solve.

Testing refers to the process of measuring and evaluating students' knowledge, skills and abilities through examinations or tests. Tests are usually given at specific times and under specific conditions to assess a student's learning outcomes. The test results can help teachers understand the students' learning situation, evaluate the teaching effect, and promote the students' learning motivation.

Assessment aims to understand whether teaching objectives are being met, whether teaching methods are effective, and whether students are achieving the expected learning outcomes. Its results can not only provide a basis for schools and education departments to make decisions, but also help students and parents understand the learning situation and promote personal growth and development.

To sum up, detection, test and evaluation are the basic concepts in educational teaching evaluation, and they play an important role in educational practice. Through a deep understanding of these concepts, we can better evaluate students' learning, improve teaching methods, improve teaching quality, and promote the development and progress of education.

2.2 Development of Educational Teaching Evaluation Theory

Liu Bengu and Zhang Xilin made a detailed review of the development process of educational teaching evaluation theory [4].

2.2.1 Traditional evaluation theory

The development of educational teaching evaluation theory can be traced back to the early 20th century. At first, the evaluation of education and teaching mainly focused on the results of tests and students' performance, which was called "traditional evaluation". It has been accepted in the field of education for a long time and has formed a set of stable evaluation system and methods. This theoretical system mainly includes the purpose of evaluation, the object of evaluation, the content of evaluation, the method of evaluation and the standard of evaluation.

It holds that evaluation should comprehensively cover all aspects of education, not only evaluating students' academic performance and comprehensive quality, but

also evaluating teachers' teaching level and teaching effect, evaluating schools' quality of running schools and the level of education and teaching management, and evaluating the efficiency and development of the entire education system. Third, the evaluation content of the traditional evaluation theory of education involves many aspects such as knowledge and skills, quality of thinking and value concept. The evaluation should comprehensively consider students' knowledge level, ability quality and comprehensive quality, not only examine students' academic performance, but also pay attention to students' innovative thinking and practical ability, and guide students to form a correct outlook on life and values.

In the 1950s and 1960s, behaviorist evaluation theory emerged, emphasizing observation and measurement to evaluate students' mastery of specific behaviors. Subsequently, the rise of cognitive psychology promoted the development of cognitive evaluation theory, emphasizing that evaluation should pay more attention to students' thinking process and problem-solving ability.

2.2.2 Modern evaluation theory

With the continuous development of education theory, people began to realize that evaluation should pay more attention to the promotion of students' all-round development, rather than just curriculum knowledge and exam results. This has led to a greater focus on evaluation versatility, reliability, and validity. Therefore, educators have come to realize that evaluation should be an ongoing process, not just periodic tests or exams. It is recommended to comprehensively evaluate students' learning outcomes from multiple perspectives, including self-evaluation, peer evaluation and teacher evaluation. As an important research direction, modern evaluation theory covers many theories, including cognitive evaluation theory, social cognitive evaluation theory and pragmatic evaluation theory.

Cognitive evaluation theory is an important branch of evaluation theory, mainly concerned with thinking and cognitive activities in the evaluation process. It believes that evaluation is not only a simple conclusion, but more importantly, the thinking and reasoning process in the evaluation process. Typical examples include Flores's unconscious knowledge theory and Darren Brown's

conscious knowledge theory.

The theory of unconscious knowledge proposed by Flores holds that there is a large amount of unconscious knowledge in the evaluation process, which plays an important role in the evaluation process. Evaluators may unconsciously use this unconscious knowledge to make judgments and decisions. This theory challenges the simplification and idealization of the thinking process in the traditional evaluation theory, and emphasizes the subjectivity and complexity of the evaluator in the evaluation process. Brown's conscious knowledge theory pays more attention to the evaluators' active monitoring and adjustment of their own thinking and cognitive processes. According to this theory, evaluators should be aware of their own thinking bias and cognitive bias, and take corresponding measures to eliminate these biases in order to improve the objectivity and accuracy of evaluation. The theory of conscious knowledge provides a more active and conscious evaluation method for evaluators.

In summary, cognitive evaluation theory focuses on how evaluation affects learning and cognitive processes. The key concepts include metacognitive awareness, reflection and cognitive load. Metacognitive awareness means an individual has a clear understanding of and control over his own cognitive processes and strategies. Hence evaluation can help individuals to improve their metacognitive awareness, so as to better grasp the methods of learning and problem solving. Meanwhile, evaluation is not only a summary of learning outcomes, but also a reflection and improvement of their own learning process. Through evaluation and reflection, individuals can understand knowledge more deeply and develop the ability to self-regulate. Furthermore, the evaluation design should take into account the cognitive load of individuals to avoid too much information or too difficult problems, so as not to affect the accuracy of the evaluation results.

The theory of social cognitive evaluation emphasizes the important influence of social environment on the evaluation process. According to this theory, evaluation is not only affected by individual cognitive ability, but also by social culture, values and social relations. Typical examples include the communication evaluation theory of

Watzlawick and the social cognitive evaluation model of John Hills.

According to Joffre's communication evaluation theory, the evaluation process is a dynamic communication process, in which the evaluator and the appraised interact and communicate through speech, behavior and non-verbal symbols. Evaluation is not only the transmission of information, but more importantly, the understanding and consensus reached between each other. This theory emphasizes the close relationship between evaluation and communication, and proposes a brand new evaluation paradigm.

Hills' model of social cognitive evaluation pays more attention to the influence of social culture and social relations on the evaluation process. According to this model, evaluation is not only the result of individual psychological activities, but also the reflection of social environment and social relations. Evaluators should be aware of the influence of their social environment and social culture on their evaluation behavior, and take it into account and adjust it. The social cognitive evaluation model provides a more comprehensive evaluation perspective for evaluators.

In sum, the theory of social cognitive evaluation focuses on the consideration of social factors and interactions in the evaluation process, attaches importance to the interaction and sociality of evaluation, and believes that evaluation should not only be a one-way measurement, but a process of jointly constructing knowledge. Key concepts include dialogue, collaborative learning and social cognitive ability. In the evaluation process, the dialogue between the evaluator and the assessed is crucial. Through dialogue, the evaluator can better understand the perspective and thought process of the person being evaluated, so as to make a more comprehensive and objective evaluation. Assessments can be used as part of collaborative learning to help students solve problems and discuss ideas collaboratively, thereby promoting their learning and development. Finally, evaluation should take into account students' social cognitive ability, including cooperation ability, emotional management and other factors.

The theory of pragmatic evaluation emphasizes the practicality and functionality of evaluation, and argues that evaluation should serve the

actual needs and solve the practical problems. The core viewpoint of pragmatic evaluation theory is that evaluation should be combined with practice to meet the needs of society and individuals. Typical examples include James Blackiston's positivist evaluation theory and Mary Campbell's effectiveness evaluation theory.

Bracchist's positivist evaluation theory holds that evaluation should be as objective and scientific as possible based on facts and evidence. Evaluators should support their evaluation conclusions through empirical research and data analysis to improve the credibility and persuasiveness of the evaluation. This theory emphasizes the objectivity and scientificity of evaluation and provides a rigorous and reliable method for evaluation.

Campbell's effectiveness evaluation theory pays more attention to the actual effect and social impact of evaluation. According to this theory, evaluation is not only a seemingly theoretical activity, but more importantly, its actual impact on society and individuals. Evaluators should pay attention to whether their evaluation activities can produce the expected effect, and adjust and improve them according to the actual situation.

In short, pragmatic evaluation theory emphasizes the practicality and effectiveness of evaluation, and believes that evaluation should serve the actual needs and help promote learning and improve performance, a more practical and effective evaluation method. The key concepts include purpose oriented, multivariate evidence and effectiveness evaluation. They think evaluation should be designed and implemented according to specific purposes and needs, ensuring that evaluation results can provide useful information for decision making and improvement. Meanwhile, the evaluation process should integrate multiple data and evidence to ensure the comprehensiveness and objectivity of the evaluation results. And Evaluation should not only focus on the learning outcomes themselves, but also consider the impact and effect of evaluation in educational practice.

To sum up, modern evaluation theory covers a number of theoretical schools, which have their own characteristics but are interrelated, and together constitute the theoretical system of evaluation field.

2.3 Educational Evaluation Model

Educational evaluation model is a framework or method to systematically evaluate and analyze educational activities. Mr Liu argues that his model has several core elements. Among them, the evaluation goal is the starting point and settling point, and the purpose, scope and focus of the evaluation are clearly defined. The evaluation standard is the requirement and measurement basis of the evaluation object, and its formulation should fully consider the teaching objectives, students' needs and teaching practice. Evaluation method is a concrete means and procedure to implement evaluation activities, which can include quantitative evaluation and qualitative evaluation. The evaluation result is the summary and description of the status and effect of the evaluation object, and provides reference and basis for subsequent improvement.

The establishment of educational evaluation model should pay attention to comprehensiveness and multi-dimension. Comprehensiveness requires the evaluation process to cover all aspects of education, including students' cognitive ability, emotional attitude, practical ability and so on. Multi-dimensionality requires the diversification of evaluation methods, so as to understand the situation and performance of evaluation objects more comprehensively [5].

In practical application, the educational teaching evaluation model needs to be innovated and perfected constantly. With the development of society and the reform of education, the evaluation object, evaluation criteria and evaluation methods may change, and the model needs to be adjusted and updated in time to meet the new needs and challenges.

Standardized test based evaluation model is a common quantitative evaluation method to evaluate students' academic performance through uniform exams. This model focuses on measuring students' mastery of specific knowledge and skills, usually using objective test scoring criteria. However, standardized testing also has some limitations, such as ignoring students' non-cognitive abilities and performance in specific times and circumstances [6].

Chai Huanyou et al. believe that the

comprehensive evaluation model comprehensively considers evaluation data from different sources, including standardized test scores, classroom assignments, student project works, oral performance and other evaluation forms, which aims to comprehensively assess the learning outcomes of students and better understand the overall abilities and potential of students. So it emphasizes personalized evaluation, which helps to describe students' learning status more comprehensively [7].

Teacher evaluation model focuses on the evaluation of teachers' teaching effect and professional development, usually including peer evaluation, student evaluation, teaching observation and other evaluation methods. This model aims to help teachers improve their teaching level and motivate them to continuously improve their teaching methods and practices, so as to improve students' learning outcomes.

In general, educational teaching evaluation model is an indispensable and important link in educational work, and its design and implementation directly affect the quality of education and the learning effect of students. Only by establishing a scientific, comprehensive and objective evaluation model can we better promote the reform and development of education and realize the ultimate realization of educational goals and missions.

3. The Construction of Educational Evaluation Index System

3.1 Types of Educational Evaluation

In the evaluation of education and teaching, there are many types, each type has its own characteristics and applicable scenarios.

3.1.1 Classification according to evaluation purpose

(1) Diagnostic evaluation: It aims to help teachers understand students' learning status, find problems in time and take measures to improve them. The focus is on providing feedback to help students improve their learning.

(2) Quantitative evaluation: focuses on quantitative analysis of teaching activities and learning outcomes, including assessment of test scores, rankings, etc. Quantitative evaluation can objectively reflect students'

learning level and help schools and decision makers to make scientific decisions.

(3) Objective evaluation: It focuses on the assessment of the achievement of teaching objectives and emphasizes whether students have mastered the required knowledge and skills. Objective evaluation can help teachers adjust teaching methods and ensure the realization of teaching objectives.

(4) Comprehensive evaluation: It is the evaluation of students' comprehensive ability, including knowledge, skills, emotional attitude and so on. The comprehensive evaluation aims to understand students' learning situation comprehensively and provide reference for students' personalized development.

3.1.2 Classification according to evaluation method

(1) Standardized evaluation: evaluation is carried out in accordance with unified standards and procedures, and more quantitative evaluation methods are used, such as unified standardized tests. Standardized evaluation can objectively compare the academic performance of different students or different schools.

(2) Classroom evaluation: It refers to the teacher's evaluation of students through classroom observation, group discussion, homework assignment and other ways. Classroom evaluation can find students' learning problems in time and help teachers adjust their teaching strategies.

(3) Self-evaluation: It means that students or teachers evaluate their learning effects or teaching quality through self-reflection and self-assessment. Self-evaluation helps to improve the learning and teaching ability of students and teachers.

(4) Peer evaluation: refers to the evaluation method of students or peers evaluating each other and providing feedback and suggestions to each other. Peer evaluation can promote mutual learning among students and improve learning results.

3.1.3 Classification according to evaluation content

(1) Evaluation of learning outcomes: It is to evaluate the specific results achieved by students in the learning process, such as knowledge mastery and skill application ability. Learning outcome evaluation is one of the core contents of educational teaching evaluation.

(2) Learning process evaluation: It focuses on

evaluating students' participation, learning attitude and learning methods in the learning process. Learning process evaluation can help students improve learning methods and improve learning results.

(3) Teaching quality evaluation: It is to evaluate the teaching effect and teaching quality of teachers. Teaching quality evaluation can help school administrators adjust teaching work in time and improve teaching quality.

To sum up, there are various types of educational and teaching evaluation. In practical application, appropriate evaluation types should be selected according to different evaluation purposes, evaluation objects and evaluation contents. The diversity and flexibility of educational teaching evaluation can fully reflect the learning situation of students and promote the all-round development of education.

3.2. Methods and Tools for Educational Evaluation

3.2.1 Quantitative evaluation method

Quantitative evaluation method is a method to quantify and analyze students' academic achievement and performance through digital means [8].

It mainly includes standardized test, assignments evaluation, classroom participation and Questionnaire survey. First, common types of standardized tests include multiple choice, fill-in-the-blank, and short answer questions. This method can objectively evaluate students' learning level and knowledge mastery, and also provide important data reference for schools and education departments. Second, evaluation of students' learning based on the quality and accuracy of the assignments they complete. Assignments can include reading comprehension, writing exercises, lab reports, etc. Third, by recording students' participation in class, including asking questions, answering questions, group discussion, etc., to assess students' learning enthusiasm and understanding. Last but not least, through the design of questionnaires and statistical analysis of respondents, students' satisfaction with teaching content and teaching methods, feedback and other information can be understood. Questionnaire survey can comprehensively understand students' learning

situation and teaching effect, and provide an important reference for teaching improvement.

3.2.2 Qualitative evaluation method

The opposite of quantitative evaluation method is qualitative evaluation method, which focuses more on subjective evaluation of students' comprehensive quality, learning attitude and innovation ability, and its main means include comprehensive evaluation, case analysis, interview and so on.

It mainly includes the following forms: questionnaire survey, observation, interview and case analysis.

Firstly, questionnaire survey is the main way to collect students' opinions and feedback. Through the design of questionnaire, we can understand students' learning needs, satisfaction and suggestions, so as to promote the improvement of teaching quality. Secondly, teachers evaluate the comprehensive quality of students by observing their behavior in the learning process, such as learning attitude, cooperation ability, problem-solving ability, etc. Thirdly, interview is an important means of qualitative evaluation method. Through face-to-face communication and in-depth discussion with students, students' learning motivation, interests, self-cognition and other aspects can be understood. It can also dig deeply into students' personality characteristics and development needs, and provide important support for students' personalized development. Fourthly, through the description and analysis of real cases, students' problem-solving ability and teamwork ability are evaluated. This method can be close to the actual situation, in-depth understanding of students' actual performance and potential, and provide important clues for students' personality development.

3.2.3 Comprehensive evaluation

Comprehensive evaluation is a integrated assessment of students' learning attitude, classroom performance, participation, etc., in order to fully understand students' learning and overall development and provides an important reference for the personalized growth of students.

Zhao believes that the comprehensive evaluation method mainly includes the following forms: evaluation combination, comprehensive quality evaluation, feedback and improvement [9].

Therefore, the comprehensive use of different

evaluation methods and tools can more comprehensively and objectively evaluate the learning effect and development of students, provide scientific basis for education and teaching work, and promote the continuous improvement of education and teaching quality.

3.3 Implementation Steps and Processes of Educational Teaching Evaluation

On the basis of Wu Gang's educational teaching evaluation process, the author believes that the evaluation purpose, evaluation index design, data collection and analysis, result feedback and decision should include the following contents.

As shown in Table 1, educational evaluation is an important part of educational quality assurance system, and its implementation steps and processes need to be systematized and standardized. The above table outlines four main steps of educational teaching evaluation: clear evaluation purpose, evaluation index design, data collection and analysis, result feedback and decision making. Each step contains specific action guidelines to ensure the effectiveness and usefulness of the evaluation process. In the stage of clarifying the purpose of evaluation, the key is to determine the specific evaluation objectives, evaluation objects and evaluation standards, so as to provide a clear direction for the subsequent evaluation work. The evaluation index design stage requires the formulation of a comprehensive evaluation framework and the definition of specific evaluation indicators and their weights to ensure the objectivity and impartiality of the evaluation. The data collection and analysis stage involves collecting data from a variety of channels and using statistical analysis methods to process the data to identify problems and improvement points in teaching. Finally, in the results feedback and decision stage, the evaluation results need to be presented in the form of reports and communicated to all interested parties so that data-based decisions and improvements can be made. Through this series of orderly steps, educational teaching evaluation can provide valuable feedback for educational practice and promote the continuous improvement of teaching quality.

4. The Application of Modern Educational Evaluation Technology

Modern educational teaching evaluation technology refers to the use of advanced technical means and methods to systematically, scientifically and comprehensively evaluate students' learning process and results. Traditional evaluation of education and teaching mainly relies on examinations and tests, but these methods can only reflect

students' knowledge level, and it is difficult to evaluate students' comprehensive ability and personality. Therefore, the emergence of modern education and teaching evaluation technology has filled the shortcomings of traditional evaluation methods and provided strong support for education reform and improving teaching quality.

Table 1. Implementation Steps and Processes of Educational Evaluation

Procedure	Contents
Step 1 Clear evaluation purpose	(1) Determine the evaluation objectives: the evaluation objectives should be clear and specific, such as evaluating the quality of teaching, students' learning, curriculum effects, etc. (2) Clear evaluation objects: evaluation objects can be teachers, students, teaching environment, etc., which need to be determined according to specific circumstances. (3) Establish evaluation standards: build up evaluation standards system, evaluation indicators to be specific, measurable, easy to collect and analyze data.
Step 2 Evaluation index design	(1) Develop evaluation framework: determine the scope and structure of the evaluation, including input, process, output and influence. (2) Clear evaluation indicators: indicators should be specific, objective and operable, covering teaching methods, learning achievements, teaching resources utilization and other aspects. (3) Determine index weights: Determine weights for different indicators to reflect their importance in evaluation.
Step 3 Data collection and analysis	(1) Data sources selection: Data can be collected through questionnaires, test scores, observation records and other ways. (2) Data processing and analysis: statistical analysis methods, such as descriptive statistics, correlation analysis, regression analysis, etc. are employed to process and interpret the data. (3) Identification of problems and improvement: problems are found through data analysis to provide basis and suggestions for improving teaching.
Step 4 Feedback and decision making	(1) Result report: The evaluation results will be presented in the form of a report, including problem finding, improvement suggestions, etc. (2) Communication with relevant parties: Share evaluation results with teachers, students, administrators and other relevant parties to promote consensus and improvement. (3) Decision-making and improvement: Based on the evaluation results and feedback, formulate specific measures and plans are used promote the improvement of education quality.

4.1 Big Data Analysis

Big Data analysis is a technique that collects, processes, and analyzes large-scale data to discover hidden patterns, trends, and correlations. It can mine and analyze massive student learning data to better understand students' learning habits and preferences, conduct in-depth analysis of students' learning behavior, learning performance and other data, find rules and trends, and provide data support for teaching improvement.

4.2 Intelligent Evaluation System

Intelligent evaluation system uses artificial intelligence technology to develop an intelligent evaluation system for intelligent analysis and evaluation of students' learning. Through speech recognition, natural language processing, machine learning and other technologies, intelligent evaluation system can

provide teachers with real-time feedback on students' performance, personalized learning suggestions and auxiliary decision-making, and improve evaluation efficiency and accuracy. Hence, it can more accurately understand the learning characteristics and needs of students, which provides an important guarantee for personalized teaching.

4.3 Virtual Reality Technology

Virtual reality technology through the way of computer simulation carries out practical learning and experiment methods to provide students with a richer and more real experiment experience, so as to better evaluate the actual hands-on ability and scientific literacy of students. Through the virtual experiment technology, students can carry out complex experimental operation and observation in the virtual environment, explore the experimental law and theoretical

knowledge and enhance the learning effect and depth.

In a word, the application of modern educational technology brings new opportunities and challenges to educational teaching evaluation. They can effectively improve the quality of education, student learning effect and teaching efficiency, and realize personalized education and education reform. The diversity and complexity of educational and teaching evaluation can be better understood through the in-depth discussion of educational evaluation methods and technologies, and provide important references for teaching reform and individualized development of students.

5. Problems and Challenges of Educational Evaluation

Educational teaching evaluation is a crucial part in the field of education, which can help to evaluate learners' learning effectiveness, teaching quality, and the effectiveness of educational policies. However, educational teaching evaluation also faces many problems and challenges, the solution of these problems will directly affect the healthy development of the education system.

5.1 Limitations and Challenges of Educational Teaching Evaluation

5.1.1 Limitations of standardized evaluation

Although the traditional standardized test evaluation is objective, it ignores the individual differences of students and cannot fully reflect the actual level and potential of students, which is easy to cause evaluation distortion [10]. At present, education and teaching evaluation often focuses too much on standardized tests and results, which ignores individual differences and diversified learning needs of students, and cannot fully reflect the real level of students [11].

5.1.2 The pressure brought by test-oriented education

In order to pursue high scores and higher enrollment rate, schools and teachers tend to pay too much attention to students' test-taking ability, resulting in excessive concentration of educational resources and lack of comprehensive quality training of students.

5.1.3 Disconnect between educational evaluation and teaching contents

Educational evaluation should be combined

with teaching contents and teaching objectives, but in practice, there is a big disconnect between educational teaching evaluation and teaching content, and the evaluation results have limited guiding effect on teaching improvement.

5.1.4 Comprehensive evaluation of education and teaching

Some educational teaching evaluation methods are too simple, lack of differentiation and individuation, and cannot fully take into account the individual differences and special needs of students, which is easy to cause psychological pressure and anxiety of students. Single evaluation index

At present, the evaluation of education often only focuses on the cognitive ability of students, but neglects the evaluation of students' emotions, attitudes, skills and other important aspects, which leads to the one-sidedness of the evaluation results.

5.1.5 Subjectivity of teacher evaluation

Teacher evaluation is often affected by subjective factors and lacks objectivity and fairness, which may lead to inaccuracy and unfairness of evaluation results.

5.2 The Development Direction and Trend of Future Educational Evaluation

5.2.1 Introduce new technology

Educational evaluation will rely more on the support of new technologies, such as artificial intelligence, big data analysis, etc., through the comprehensive monitoring and analysis of students' learning process, personalized evaluation can be achieved to improve the accuracy and effectiveness of evaluation.

5.2.2 Explore diversified evaluation methods

Educational evaluation should pay more attention to the exploration and application of diversified evaluation methods, including comprehensive evaluation, project evaluation and self-evaluation, so as to better reflect the overall quality and learning effect of students and take into account the cognition, emotion and attitude of students.

5.2.3 Enhance the pertinence and guidance of evaluation

Educational evaluation should pay more attention to the guiding role of evaluation results, help students and teachers understand their own strengths and weaknesses, and put forward improvement suggestions to promote the personalized development of students and

the improvement of teaching quality.

5.2.4 Personalize appraisal

Advanced data analysis technology and artificial intelligence technology are used to achieve personalized evaluation of students and better meet the needs of different students.

5.2.5 Be well-rounded

The future evaluation should pay more attention to the overall development of students, not only pay attention to academic ability, but also include social practice, emotional literacy, innovation ability and other aspects of evaluation[12].

6. Conclusions

From the theoretical point of view, educational evaluation is a complex concept, covering the determination of evaluation objectives, the selection of evaluation content, the establishment of evaluation standards and methods, and the application of evaluation results. However, the current educational teaching evaluation theory still has some problems, such as uniformity, quantification and exam-oriented, which need to be deepened and expanded to better meet the diversified and personalized educational needs.

On the practical level, educational evaluation is widely used in school teaching, education management, education policy and other fields. With the development of educational informatization and big data technology, the practice of educational teaching evaluation is constantly innovating and expanding. Emerging practice methods such as education and teaching evaluation based on big data, intelligent evaluation system and learning analysis have injected new vitality into education and teaching evaluation, and improved the scientific and targeted evaluation. However, there are also problems such as delayed evaluation results, narrow evaluation contents, and single evaluation tools. Therefore, it is necessary to continuously improve practical methods in combination with theoretical research to improve evaluation effect and application efficiency.

There are some limitations to the study. First of all, this study mainly relies on literature review and theoretical analysis, and lacks the support of empirical research. Future research should use empirical methods, such as case studies, questionnaires, and experimental design to verify the validity of our theoretical

hypotheses and suggestions for improvement. Secondly, our research scope is relatively limited, mainly focusing on the evaluation system at the stage of higher education. The evaluation system of basic education, vocational education and other informal learning environment is also important, and future research should be extended to these fields. Moreover, this study fails to fully consider the differences of educational evaluation systems under different cultural and social backgrounds. Under the background of globalization, the construction of educational evaluation system needs to consider the influence of multi-culture and the adaptability of different social needs. Therefore, these will become the future direction of research.

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