

Research on Paradigm Reconstruction and Practical Path of Interdisciplinary Teaching Evaluation Empowered by Artificial Intelligence

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Abstract: In the era of artificial intelligence, AI technology has become a core driving force for educational innovation and development, especially in the field of interdisciplinary learning. Against the backdrop of digital education transformation, this paper analyzes the limitations of traditional interdisciplinary evaluation paradigms from the dimensions of evaluation objectives, data collection and evaluator participation. It proposes a four-dimensional reconstruction of interdisciplinary teaching evaluation: shifting from knowledge-centered objectives to competency-oriented objectives, transforming terminal summative evaluation to full-process tracking evaluation, upgrading static testing methods to dynamic diagnostic methods, and expanding single-subject evaluation to multi-stakeholder collaborative evaluation. From a practical perspective, this paper constructs a whole-process evaluation system covering pre-class diagnosis, in-class collaboration and post-class extension, and innovates intelligent application paths for portfolio assessment, group cooperative evaluation and concept map evaluation. The study emphasizes that AI-enabled evaluation must adhere to three principles: student-demand orientation, the irreplaceable dominant role of teachers, and technical practicability, so as to provide a complete theoretical framework and operable implementation schemes for the digital transformation of interdisciplinary teaching evaluation.

Keywords: Artificial Intelligence, Interdisciplinary Teaching, Teaching Evaluation, Paradigm Reconstruction, Practical Path.

1. Introduction

(1) Research Background

Educational evaluation is an important measure to deepen educational reform and a core approach to comprehensively improve education quality. At present, artificial intelligence has evolved from an auxiliary teaching tool into a core driving force for the reconstruction of the educational evaluation system. Empowering interdisciplinary thematic learning with artificial intelligence is an inevitable trend of interdisciplinary education in the new era, whose core value lies in helping frontline teachers fully implement the requirements of the new curriculum standards and ultimately fulfill the fundamental task of fostering virtue through education.

The Overall Plan for Deepening Educational Evaluation Reform in the New Era clearly puts forward the requirements of innovating evaluation tools and improving the intelligent level of evaluation. As an important carrier for cultivating students' core competencies, interdisciplinary teaching is trapped in the bottleneck of traditional evaluation paradigms. On the one hand, interdisciplinary teaching focuses on integrated knowledge, innovative thinking and complex problem-solving capabilities, while traditional standardized paper-and-pencil tests fail to capture students' dynamic learning trajectories. On the other hand, artificial intelligence has the capabilities of multi-modal data processing, machine learning and situational reasoning, which provide technical solutions to the complexity of interdisciplinary evaluation. According to the AI and Education: Guide for Policy Makers released by UNESCO, 62% of educational institutions worldwide have attempted to apply AI to interdisciplinary evaluation, yet two prominent problems coexist: insufficient technical empowerment and deviation from educational values.

Interdisciplinarity refers to practical activities that cross the

boundaries of a single discipline and integrate two or more subjects. In the era of artificial intelligence, AI technology has become a key force driving educational innovation and development, especially in the field of interdisciplinary learning. Digital technologies and products can help teachers and students obtain support from high-quality resources, gain real learning scenarios and traceable evaluation feedback.[1] It advocates constructing new knowledge systems through interdisciplinary integration to solve complex problems that cannot be settled within a single discipline. The Action Plan for Educational Informatization 2.0 states that standing at a new historical starting point, we must focus on the new talent cultivation demands of the new era, adopt ability-oriented talent development concepts, and take educational informatization as an endogenous variable for systematic educational transformation.[2] It aims to update educational philosophies, reform teaching models and reconstruct educational systems, advancing China's educational informatization to a world-leading level and offering Chinese wisdom and solutions for global educational digitalization. Riding the wave of digital development, we need to combine artificial intelligence to optimize interdisciplinary teaching and boost the development of educational informatization.

(2) Research Significance

Theoretical Significance

Traditional teaching evaluation mostly relies on standardized examinations and teachers' subjective observation, which cannot comprehensively reflect students' comprehensive abilities such as critical thinking and collaborative innovation in interdisciplinary learning. Artificial intelligence enables multi-modal data collection and multi-dimensional dynamic evaluation, helping construct an AI-driven theoretical model for interdisciplinary evaluation and expand the interdisciplinary research boundary between educational technology and curriculum

evaluation. Meanwhile, AI-powered evaluation can guide students to develop digital literacy and interdisciplinary collaboration competencies required by future society. The consensus goal of the reform of interdisciplinary teaching evaluation is to achieve the integrated development of teaching and evaluation, that is, interdisciplinary teaching evaluation, interdisciplinary teaching, and students' interdisciplinary learning form a continuous and dynamic cycle process of mutual interweaving, mutual promotion, mutual verification, and mutual improvement.[3]

Practical Significance

This research delivers operable transformation paths for schools and educational administrators, improving the scientificity and precision of interdisciplinary teaching. Interdisciplinary learning highlights knowledge integration and problem-solving capabilities. Artificial intelligence can analyze the interdisciplinary correlation of students' project reports via algorithms, and identify role divisions in group work through machine learning. For instance, intelligent tools can automatically assess students' systematic thinking in interdisciplinary projects, and affective computing technology can be adopted to analyze participation levels in group discussions. From the whole cycle of interdisciplinary teaching, this paper elaborates how intelligent technology empowers evaluation, offering enlightenment for the implementation of new curriculum standards and interdisciplinary teaching practices.

2. Limitations of Traditional Interdisciplinary Teaching Evaluation Paradigms

The effective implementation of interdisciplinary teaching in primary schools breaks the disciplinary barriers of traditional instruction and promotes the integration of knowledge and skills, enabling students to understand internal logical connections between subjects and flexibly synthesize knowledge to solve practical problems. Nevertheless, traditional single-subject evaluation methods cannot meet the practical demands of interdisciplinary teaching.

(1) Deviated Evaluation Objectives

Traditional single-subject evaluation centers on the mastery of fixed knowledge points and question types, adopting standardized tests and structured assessments. It only judges whether students grasp fragmented knowledge, while neglecting the assessment of interdisciplinary literacy including social responsibility, systematic thinking and innovative capacity, resulting in a disconnect between evaluation results and students' real comprehensive abilities.

(2) Restricted Data Collection

Interdisciplinary learning generates diversified learning outputs such as texts and videos, yet traditional evaluation mainly adopts paper-and-pencil tests and teachers' subjective scoring. A survey conducted by the Ministry of Education in 2023 indicates that 78% of interdisciplinary projects still adopt the single model of paper test plus teacher scoring, which fails to objectively capture students' real performance in authentic tasks. Traditional evaluation only judges written reports, ignoring underlying algorithm logic, teamwork and creative thinking, leading to one-sided evaluation results.

(3) Single Evaluation Participants

In traditional evaluation modes, teachers act as the sole evaluators, while students only passively receive feedback

without opportunities for self-assessment and peer evaluation. AI is merely used for automatic marking of objective questions, rather than dynamic learning analysis and personalized feedback. In interdisciplinary group projects, students' participation, communication and collaboration abilities are judged solely by teachers, which is prone to subjective bias. Moreover, students lack channels to reflect on learning strategies via evaluation, and AI cannot provide targeted improvement suggestions, weakening the educational function of assessment.

3. Restructuring of the Interdisciplinary Teaching Evaluation Paradigm Empowered by Artificial Intelligence

(1) Restructuring of Evaluation Objectives

The design of its goals should not only reflect students' mastery of knowledge, skills and thinking methods in multiple disciplines, but also demonstrate the development of interdisciplinary understanding and core literacy.[4] Requirements laid out by both core competencies and curriculum standards emphasize the comprehensive cultivation of students and the development of well-rounded individuals. The core approach to evaluating interdisciplinary thematic learning empowered by digital and intelligent technologies lies in adhering to competency-oriented principles. Traditional evaluation centers on students' mastery of disciplinary knowledge points, whereas the AI-enabled evaluation system focuses on interdisciplinary core competencies such as critical thinking, complex problem-solving, innovative collaboration, and so on, bringing about a shift from assessing "what students know" to evaluating "what students can do". Through a cognitive computing framework, artificial intelligence breaks down abstract competencies such as "systems thinking" into observable behavioral indicators, including "identifying connections between disciplines" and "making decisions by weighing multiple factors", which makes core competencies measurable and actionable. For instance, in the interdisciplinary project "New Energy Development", artificial intelligence can assess the following competencies by analyzing students' engineering design proposals, economic feasibility reports and social impact analyses:

Integration of disciplinary knowledge: It identifies the density of conceptual connections across physics (energy conversion), mathematics (cost modeling), sociology (community impacts) and other subjects within the proposals.

Complex problem-solving capacity: An ability development curve covering "problem decomposition - hypothesis verification - scheme optimization" can be generated based on the iterative revision of students' proposals.

Furthermore, learning analytics enables artificial intelligence to dynamically adjust evaluation criteria for project-based learning. For students with strong logical reasoning but insufficient creative expression, AI technology can raise the assessment weight of "innovative argumentation" in a targeted manner. In this way, the growth of students' personalized competencies can be fully reflected. Consequently, interdisciplinary evaluation objectives are no longer limited to the simple acquisition and command of knowledge, and carry stronger comprehensive attributes.

Interdisciplinary teaching is designed to foster students'

information awareness and higher-order thinking. Its assessment focuses on core capabilities and adheres strictly to competency orientation, including creativity and social responsibility. Teaching activities should be organized around cultivating students' core competencies and guiding them to conduct interdisciplinary research, with continuous self-reflection and improvement throughout the learning process. Advanced intelligent technologies represented by artificial intelligence are expected to break the limitations of traditional educational assessment models and blaze new trails for interdisciplinary teaching evaluation. The adoption of artificial intelligence creates unprecedented opportunities for competency assessment. It supports real-time classroom evaluation, delivers immediate feedback to students and facilitates targeted instructional adjustments. Teachers can launch in-class instant quizzes using tools such as Questionnaire Star or question banks embedded in teaching platforms. Students can submit answers via mobile phones, and the system will automatically generate scores and feedback right away. This intelligent evaluation model removes the time and space constraints of traditional paper-and-pencil tests. Meanwhile, machine learning algorithms facilitate a paradigm shift from "scoring based on final results" to "empowering the whole learning process".

(2) Restructuring of the Evaluation Process

Influenced by long-term exam-oriented education and subject-based education, there exists a problem of a single form of activity organization in the implementation process.[5] First and foremost, artificial intelligence expands interdisciplinary teaching evaluation beyond learning outcomes to cover the entire learning process. The introduction of AI fundamentally reshapes the procedural dimension of interdisciplinary teaching evaluation, marking a transition from "terminal evaluation" to "whole-process evaluation". Conventional evaluation mainly conducts static measurement of learning results. In contrast, the AI-powered evaluation system collects multimodal data, conducts real-time analysis and delivers dynamic feedback to achieve three-dimensional tracking and assessment of the entire learning journey. Specifically, educational technology built upon educational data mining and learning analytics can automatically record students' behavioral trajectories in interdisciplinary projects, such as the semantic contribution made in online collaborative discussions, the standardization of experimental operations, and the level of integration of multidisciplinary knowledge. These records fully demonstrate the strengths of interdisciplinary teaching and its value in nurturing students' comprehensive competencies. Moreover, artificial intelligence can conduct in-depth analysis of unstructured learning data including sketches of design plans and videos of oral presentations, extracting key features that reflect interdisciplinary competencies. This process-oriented evaluation not only captures "what students do", but also reveals "how students think". This is of great significance for learners, and provides teachers with insights into students' cognitive processes that cannot be obtained through traditional evaluation methods. For example, in a STEAM education project, the AI system analyzes process data such as the revision frequency of students' engineering logs and the evolution of interdisciplinary terminology used, so as to accurately identify the phased development of their systems thinking and implement authentic formative assessment.

Such restructuring of the evaluation process transforms

teaching evaluation from a purely evaluative tool into a comprehensive instrument with diagnostic, predictive and optimizing functions, supplying data support for the continuous improvement of interdisciplinary learning quality. The shift from "end-point scoring" to "whole-process tracking" visualizes the learning process. Real-time feedback and intervention also realize the empowering effect of "evaluation as learning", upgrading interdisciplinary teaching from a result-oriented model to a growth-oriented one.

(3) Restructuring of Evaluation Methods

The in-depth application of artificial intelligence drives the intelligent upgrading of interdisciplinary teaching evaluation methods, realizing a paradigm leap from static assessment to dynamic diagnosis. Machine learning-based intelligent evaluation systems break the time and space restrictions of traditional static tests. By continuously collecting and analyzing multi-dimensional learning data, dynamic evaluation models can be constructed. In particular, deep learning algorithms help the system build real-time models of students' cognitive trajectories, behavioral patterns and emotional states, and artificial intelligence technologies capture dynamic characteristics of competency development. This intelligent evaluation method boasts three prominent advantages: First, real-time feedback is available. For example, the system can instantly analyze students' performance of interdisciplinary thinking in group discussions. Second, it supports predictive assessment. Algorithms predict learning outcomes based on historical data and provide advance evidence for instructional intervention. Third, the evaluation model features adaptive evolution and personalized adjustment. It continuously optimizes assessment indicators and weight allocation through online learning mechanisms.

In project-based learning, for example, artificial intelligence can dynamically adjust evaluation criteria for dimensions such as "disciplinary integration" and "innovation" to match the developmental needs of different learning stages. Teachers can promptly observe students' developmental status and deliver personalized guidance. This gives full play to the merits of interdisciplinary teaching. Timely detection and intervention during the learning process help remove obstacles to students' development. Furthermore, this intelligent dynamic evaluation improves the accuracy and timeliness of assessment. More importantly, it makes it technically feasible to build a virtuous cycle of "assessment - diagnosis - optimization". Teaching evaluation therefore evolves into a developmental tool that promotes interdisciplinary learning and facilitates student progress throughout the learning journey. In terms of evaluation methods, it is necessary to take into account both the assessment of learning outcomes and the learning process, including knowledge and skills tests, questionnaires and scale evaluations, materialized learning outcome assessments, interactive discourse and behavior analyses, and other approaches.[6]

(4) Restructuring of Evaluation Objects

The adoption of artificial intelligence substantially broadens the scope of objects in interdisciplinary teaching evaluation, bringing about a systematic shift from the evaluation of individual academic performance to the coordinated development of multiple stakeholders. This concerns two core questions: who conducts the evaluation, and who gets evaluated. In terms of evaluators, the sole assessor (teachers) has evolved into a combination of teachers

and artificial intelligence. Traditional evaluation mainly measures students' knowledge mastery, while the AI-enabled evaluation system expands evaluation objects into a multi-dimensional complex including individual learners, learning groups, teaching content and teaching environments, enabling multi-faceted assessment of students.

At the individual level, AI data analysis evaluates not only students' cognitive development, but also non-cognitive factors such as metacognitive ability and emotional attitudes. At the group level, relevant technologies accurately map interaction patterns and knowledge flow within learning communities, assessing the effectiveness of teamwork. In addition, the AI system can automatically evaluate the quality of teaching resources (e.g., the suitability of interdisciplinary cases) and the supportiveness of teaching environments (e.g., the interactivity of virtual experiment platforms), forming an integrated evaluation system covering "students, teachers, resources and environments".

In one interdisciplinary project, for instance, the intelligent evaluation system can simultaneously track multiple dimensions: individual students' ability to transfer concepts, the knowledge integration efficiency of groups, the difficulty level of project tasks, and the supporting effect of digital tools. It thus provides comprehensive data evidence for teaching improvement.

This restructuring of evaluation objects shifts the focus of interdisciplinary teaching evaluation from the traditional "student-centered" model to a "learning ecosystem-centered" model. It highlights the comprehensive nature of interdisciplinary education and the cultivation of innovative talents, and establishes a more systematic and scientific assessment framework for improving the overall quality of interdisciplinary education.

4. Practical Paths of Interdisciplinary Teaching Evaluation Empowered by Artificial Intelligence

(1) Artificial Intelligence Empowering the Evaluation System

In response to the requirement emphasized in the Compulsory Education Curriculum Plan (2022 Edition) to ensure consistency among "teaching, learning and assessment", this research constructs an operable teaching model where generative artificial intelligence facilitates interdisciplinary student competency development from the perspective of integrated teaching, learning and assessment covering "pre-class, in-class and post-class" stages. Centered on competency development, this interdisciplinary teaching model establishes a full-cycle evaluation system spanning the three phases of "pre-class, in-class and post-class". Supported by a three-way interactive evaluation framework consisting of "teachers, technological tools including artificial intelligence, and students", it accurately pinpoints students' competency growth and promotes in-depth integration of teaching and assessment.

Prior to class, artificial intelligence helps teachers systematically design teaching objectives, content and assessment tools, laying a solid foundation for teaching implementation. In the preparatory stage, teachers can leverage artificial intelligence to diagnose competency objectives. With knowledge mapping technology, they can examine interdisciplinary teaching objectives as well as students' prior knowledge and capabilities, analyze the

correlation between teaching content and students' existing proficiency, and assess the suitability of content. Taking the interdisciplinary core concept of "sustainable development" as an example, teachers can verify whether it matches students' cognitive level and life experience. Meanwhile, artificial intelligence can dig into the correlations among multiple themes, enabling teachers to optimize the structure of curriculum content.

During class, relying on the three-way interaction among "teachers, artificial intelligence tools and students", artificial intelligence collects multi-dimensional data in real time to synchronize assessment with teaching, realizing dynamic and interactive evaluation throughout the teaching process. First, in terms of data collection and analysis, intelligent terminals powered by artificial intelligence gather students' behavioral data such as interaction frequency and operational steps in group work, linguistic data including opinions expressed and questions raised in discussions, as well as thinking data like the drafting tracks of mind maps and the iteration of solutions. Artificial intelligence then analyzes these data to identify students' thinking performance in interdisciplinary learning and judge whether students can accurately define core problems from multi-disciplinary perspectives. Supported by timely data feedback, teachers can conduct on-site evaluation and intervention to inform students of their learning progress and existing problems. If the system detects fragmented thinking or comprehension barriers when students integrate interdisciplinary knowledge, it will automatically push relevant learning resources or remind teachers to offer targeted guidance to adjust students' learning direction promptly, so that students can better understand and apply interdisciplinary knowledge.

After class, the focus shifts to comprehensive assessment of interdisciplinary competencies and learning improvement, where artificial intelligence delivers long-term and continuous evaluation effects. It consolidates pre-class and in-class assessments to carry out comprehensive evaluation from the competency dimension, covering core abilities including multi-disciplinary knowledge application, innovative thinking and problem-solving capacity. Based on the evaluation results, artificial intelligence conducts personalized learning diagnosis to identify deep-seated obstacles in students' interdisciplinary learning, such as the root causes of knowledge transfer difficulties. Through intelligent recommendation systems, customized learning materials are provided, and suitable study partners are matched such as forming complementary learning groups to support students' independent after-class improvement, thereby achieving long-term effects of artificial intelligence on teaching assessment. Furthermore, evaluation conclusions derived from relevant data are fed back into teaching. Artificial intelligence shares post-class evaluation data with teachers to optimize subsequent interdisciplinary teaching design, realizing continuous assessment empowered by AI. Evaluation results and analytical insights guide follow-up interdisciplinary teaching adjustments so as to strengthen the interdisciplinary initiative of both teachers and students. Besides, with feedback data generated by artificial intelligence, teachers can promptly identify difficulties encountered by students in interdisciplinary learning and continuously improve their own interdisciplinary teaching proficiency.

(2) Application Paths Empowered by Artificial Intelligence

The introduction of artificial intelligence has brought

innovative reforms to interdisciplinary teaching assessment. Supported by intelligent algorithms and big data analysis, evaluation methods including process portfolios, group collaboration assessment and concept mapping have been comprehensively upgraded. Teaching evaluation can now reflect students' interdisciplinary competencies more comprehensively and precisely, fully unlocking the educational and developmental value of assessment.

First, for process portfolio assessment. With intelligent terminals, artificial intelligence collects full-cycle data of students' interdisciplinary learning in real time, including multi-dimensional materials such as audio records of classroom discussions, videos of experimental operations and tracks of logical reasoning. These materials are automatically archived into digital portfolios, breaking the limitations of purely textual and fragmented records. Moreover, artificial intelligence dynamically updates portfolio data, marking a major breakthrough over traditional portfolio evaluation. When students encounter bottlenecks in interdisciplinary exploration such as stagnant knowledge transfer, the system automatically delivers targeted learning resources to support their development, turning portfolios into "talkative growth companions".

Second, group collaboration assessment. Group work is a widely adopted classroom teaching method. In the interdisciplinary teaching of primary school mathematics and science, the group cooperative learning model is a commonly used method in classroom teaching. Many inquiry and practice projects require students to complete them through group cooperation. This not only strengthens the communication and interaction among group students but also facilitates the collision of ideas among students, enabling them to achieve knowledge sharing.[7] Proper evaluation of group collaboration can strengthen communication and interaction among group members, stimulate intellectual collisions and facilitate knowledge sharing among students. When artificial intelligence is integrated into group assessment, objective data replace teachers' subjective judgments. The system accurately identifies integrators who make quiet contributions and innovators who promote cross-border ideas in group projects, ensuring fairness in interdisciplinary collaboration assessment and eliminating subjective bias from teachers. Data feedback encourages students to reflect on effective communication within interdisciplinary teams and improve metacognitive abilities for cross-disciplinary cooperation. Meanwhile, teachers can dynamically adjust grouping strategies and tutoring priorities based on AI-generated reports to build a more vibrant interdisciplinary collaborative environment.

Lastly, concept map assessment. Concept maps allow teachers to visualize students' capacity to understand, integrate and apply interdisciplinary knowledge, and clearly present the knowledge structure constructed in students' minds, offering new approaches and perspectives for interdisciplinary evaluation. Artificial intelligence further deepens knowledge integration by assisting students in building concept maps. It breaks individual cognitive boundaries, establishes logical connections between implicit knowledge across multiple disciplines, and facilitates the transformation of fragmented information into an interconnected interdisciplinary knowledge network. In addition, assessment can shift focus from static concept map outcomes to dynamic thinking trajectories, clearly demonstrating how students' interdisciplinary thinking

evolves from vagueness to systematic clarity. This helps students build logical knowledge systems and reorganize fragmented, one-dimensional knowledge into structured networks, which constitutes the core value of interdisciplinary teaching. Concept map assessment empowered by artificial intelligence truly becomes a catalyst for cultivating interdisciplinary competencies. It provides a technology-driven new model for evaluating innovative talents in the new era and identifies precise targets for thinking training.

5. Reflections on the Evaluation of Interdisciplinary Teaching Empowered by Artificial Intelligence

(1) Focus on Students' Practical Need. Emphasizing student-centeredness, guiding them to actively explore science rather than merely having teachers "impart science", according to the new learning science, knowledge actually cannot be "passed on".[8] Students are the main body of learning, and stimulating their learning interest is of vital importance. Interdisciplinary teaching is inherently challenging, so we must always centre on students when conducting AI-powered evaluation. On the one hand, in terms of interest stimulation, the application of artificial intelligence technologies should focus on building evaluation scenarios that conform to students' cognitive rules and life experiences. We can leverage the appeal of artificial intelligence to primary school students and carry out teaching and evaluation based on their real demands. For example, immersive role-playing experience can arouse students' internal motivation for learning. On the other hand, in terms of demand adaptation, learning analytics technology of artificial intelligence can dynamically capture the differentiated needs of students in interdisciplinary learning. In this way, evaluation becomes not merely a measuring tool but also a service, ultimately fulfilling the fundamental educational goal of encouraging students to enjoy learning and study actively.

(2) Emphasize Integration with Teachers. The "teacher + AI" model is adopted in interdisciplinary evaluation. Nevertheless, teachers are irreplaceable as the main evaluators. AI-based classroom teaching tools and AI-assisted evaluation serve only as auxiliary instruments for human teachers. The humanistic value of teachers in interdisciplinary teaching cannot be replaced by technology, which is a bottom line we must adhere to in evaluation practice. When conducting interdisciplinary evaluation, teachers can break away from the preset evaluation framework of artificial intelligence and put forward insights from dimensions such as "humanistic care" and "social impact" that artificial intelligence cannot reach. They can guide students to break free from the constraints of technological rationality and achieve the leap from knowledge integration to wisdom generation. Therefore, AI should act as teachers' assistant to handle data collection, routine analysis and other trivial tasks, while teachers control the value orientation of evaluation. Giving full play to teachers' principal role preserves the humanistic warmth of interdisciplinary teaching.

(3) Prioritize the Practicality and Operability of AI in Interdisciplinary Education. As mentioned above, AI technologies can only deliver meaningful evaluation when they are implementable and tangible, which also aligns with the new curriculum standards and the cultivation of core competencies. When applying AI to interdisciplinary teaching evaluation, we must guard against formalism where

technology is pursued for its own sake. We should not let technology narrow our vision and stick to the practical and operable principles. For instance, in AI-assisted interdisciplinary portfolio assessment, redundant data analysis modules should be eliminated so that teachers can quickly understand and apply evaluation results. Meanwhile, a dynamic feedback system for technology application effects should be established. We can regularly investigate teachers' and students' user experience and optimize the functional modules of AI tools in a timely manner, ensuring that technology genuinely supports interdisciplinary teaching evaluation instead of becoming a burden on teaching.

6. Conclusion

Empowering interdisciplinary teaching evaluation with artificial intelligence is an inevitable path of educational digitalization to fulfill the fundamental task of fostering virtue through education. Traditional evaluation focusing on static knowledge testing cannot match the complexity of interdisciplinary learning, while AI realizes four-dimensional paradigm transformation in evaluation objectives, processes, methods and participants via multi-modal data and intelligent algorithms, shifting assessment from result certification to growth facilitation. The whole-cycle pre-class diagnosis – in-class interaction – post extension model with teacher-AI-student tripartite interaction provides operable solutions for digital teaching assessment. Future research needs to further explore the cultivation paths of teachers' artificial intelligence literacy to better implement interdisciplinary education practices.

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