World Journal of Educational Studies
Print ISSN: 2959-9989
Online ISSN: 2959-9997
DOI: https://doi.org/10.61784/wjes3050

MULTI-DIMENSIONAL EVALUATION FRAMEWORK FOR TEACHING QUALITY IN MANAGEMENT-ENGINEERING INTERDISCIPLINARY PROGRAMS UNDER THE 'DOUBLE NEW' INITIATIVE

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Abstract: Against the backdrop of the 'New Engineering + New Liberal Arts' initiative, universities are placing increasing emphasis on cultivating interdisciplinary talents. In this context, the construction of a robust teaching quality evaluation system for interdisciplinary programs integrating management and engineering has become particularly crucial. This study analyzes the current challenges in the evaluation of such programs, including limited diversity of evaluation subjects and methods, incomplete indicator systems, and weak mechanisms for feedback and improvement. To address these issues, a framework for a multi-dimensional, improvement-oriented evaluation system with broad stakeholder participation is proposed. The framework emphasizes the involvement of multiple stakeholders, the development of a comprehensive indicator system that reflects the characteristics of management–engineering integration, and the enhancement of scientific rigor and inclusiveness in evaluation. Moreover, the study focuses on optimizing the operational mechanism by standardizing procedures and strengthening data management. By establishing a systematic feedback loop and a process of continuous improvement, the framework enables closed-loop management of teaching quality and dynamic optimization of program development. This research provides a theoretical foundation and practical reference for building a scientific, reasonable, and highly operable teaching quality evaluation system.
Keywords: New Engineering; New Liberal Arts; Management–engineering Interdisciplinary programs; Teaching quality; Evaluation system

1 INTRODUCTION

The Ministry of Education of China, in its Opinions on Deepening Undergraduate Education and Teaching Reform to Fully Enhance the Quality of Talent Cultivation, emphasizes the need to improve the internal teaching quality evaluation systems in universities and to establish a full-process, multi-dimensional evaluation and assurance system for higher education quality [1]. Under the construction of the 'Double New' initiative—namely, New Engineering and New Liberal Arts—interdisciplinary talent cultivation has become a major trend in higher education. A growing number of interdisciplinary programs have emerged, among which management–engineering interdisciplinary programs are particularly prominent. These programs address the increasing demand for cultivating compound talents [2]. Integrating knowledge systems from management science and engineering technology, such programs emphasize the development of systems thinking, decision-making capabilities, and engineering practice skills. They are designed to tackle complex coordination problems between management and technology, and play a key role in supporting the digitalization and intelligent transformation of industries [3].

In recent years, to enhance the adaptability and forward-looking nature of talent cultivation, universities have continuously promoted curriculum reform and pedagogical innovation. Initiatives such as ideological and political education embedded in courses, project-based learning, and practice-oriented teaching have been strengthened. However, the evaluation systems for teaching quality remain fragmented and lag behind these reforms [4, 5]. In 2021, the Central Committee of the Communist Party of China and the State Council issued the Overall Plan for Deepening the Reform of Education Evaluation in the New Era, which explicitly called for overcoming entrenched problems such as excessive emphasis on test scores, academic credentials, paper publication, and academic titles. The plan advocates for the construction of a multi-dimensional and multi-level education quality evaluation system [6]. Against the backdrop of the rapid development of emerging industries such as engineering management, smart agriculture, and intelligent manufacturing, management–engineering interdisciplinary programs are tasked with cultivating high-quality, interdisciplinary talents for these sectors. Consequently, the demands for comprehensive and rigorous evaluation of educational quality in such programs have become increasingly urgent [7].

Although the curriculum structure and instructional content of management–engineering interdisciplinary programs have been continuously optimized, their teaching quality evaluation systems still rely heavily on traditional quantitative indicators. Such approaches fall short in capturing the diversity of teaching processes and aligning with the objectives

of cultivating interdisciplinary talents. There is an urgent need to establish a diversified evaluation system that is aligned with the disciplinary characteristics and talent development goals of these programs. A teaching quality evaluation system constitutes a core component of higher education quality assurance mechanisms. It serves as a critical tool for driving teaching reform, supporting faculty development, optimizing curriculum design, and promoting student growth. A scientifically sound and well-structured evaluation system can facilitate multi-stakeholder participation, continuous improvement, and multidimensional feedback, thereby advancing the shift in talent cultivation from 'teaching well' to 'learning well'.

Taking typical management–engineering interdisciplinary programs such as Industrial Engineering and Information Management as examples, the teaching process often covers multiple dimensions, including decision modeling, system optimization, project management, and data analysis. These areas require a comprehensive assessment of students' knowledge acquisition, practical skills, innovative thinking, and teamwork capabilities. However, in practice, teaching evaluation is still predominantly centered on exam-based assessments, which neglect the multidimensional nature of instructional objectives and the holistic development of students' competencies. As a result, evaluation outcomes fail to effectively reflect teaching quality or support the development of diverse student abilities, thereby hindering further improvements in talent cultivation quality.

Therefore, it is essential to base the construction of a scientific, systematic, and diversified teaching quality evaluation system on the compound talent cultivation objectives of management–engineering interdisciplinary programs. This system aims to establish a closed-loop of 'teaching–evaluation–improvement' to facilitate the continuous enhancement of teaching quality. The framework encompasses diverse evaluation stakeholders and multidimensional evaluation indicators, forming a multi-level evaluation mechanism jointly involving teachers, students, employers, and academic administrators. This study focuses on management–engineering interdisciplinary programs to explore the construction pathways and practical mechanisms of a multi-dimensional teaching quality evaluation system, with the goal of providing theoretical support and practical reference for optimizing professional education quality assurance systems.

2 EXISTING PROBLEMS IN THE TEACHING QUALITY EVALUATION SYSTEM FOR MANAGEMENT－ENGINEERING INTERDISCIPLINARY PROGRAMS

Under the multidisciplinary integration background of the 'New Engineering' and 'New Liberal Arts' initiatives, management–engineering interdisciplinary programs have been continuously developing and expanding, thereby placing higher demands on teaching quality assurance mechanisms. However, current practices of teaching quality evaluation in universities still face multiple constraints, which hinder their effectiveness in supporting the cultivation goals of compound talents. These challenges can be summarized in the following three aspects:

2.1 Limitations of Evaluation Stakeholders and Methods

Currently, the majority of universities still rely primarily on administrative authorities to lead teaching quality evaluation, supplemented by student surveys and teacher self-assessments. This results in a relatively singular set of evaluation stakeholders, lacking collaborative participation from diverse perspectives. Particularly in management–engineering interdisciplinary programs, where course content spans multiple disciplinary fields of management and engineering, a unidimensional evaluation approach fails to fully capture the professional complexity and practice-oriented nature of instruction. Moreover, evaluation methods mostly depend on paper-based surveys and fixed templates, lacking process-oriented, dynamic, and multi-scenario integrated tools, which impedes accurate identification of teaching effectiveness and students' competency development trajectories.

Although the Ministry of Education has proposed a '1+3+3' multi-dimensional evaluation framework in the latest undergraduate education teaching audit and evaluation, comprising a core self-assessment report, process reports such as undergraduate teaching status, current student and faculty experience, and outcome reports including graduate employment and employer feedback—covering perspectives from institutions, teachers, students, and enterprises—most universities remain under predominantly administrative control in actual implementation [8]. Chinese education scholar Xiong Bingqi pointed out in his educational commentary that current student evaluations of teaching exhibit clear formalism in both institutional design and operation. Teachers often adjust course content and methods to cater to students and obtain higher evaluation scores, causing evaluations to be 'more symbolic than substantive,' and even degenerating into 'tools for student punishment or reward of teachers,' severely deviating from the original intention of improving teaching quality [9]. Teaching quality evaluation has yet to achieve deep integration among students, faculty, and industry stakeholders. Furthermore, the methods lack dynamic process evaluation mechanisms, making it difficult to comprehensively capture the effectiveness of interdisciplinary talent cultivation.

2.2 Evaluation Indicators Overlook the Characteristics of Disciplinary Integration

Traditional teaching quality evaluation indicator systems are mostly based on single-discipline frameworks and lack sensitivity to the unique features of interdisciplinary programs. For management–engineering interdisciplinary programs, teaching emphasizes knowledge integration, systems thinking, and comprehensive decision-making abilities. However, current indicators predominantly focus on knowledge mastery and classroom performance, neglecting critical dimensions such as interdisciplinary competencies and engineering management literacy. Consequently, the evaluation

outcomes become disconnected from talent cultivation objectives, failing to effectively guide curriculum reform and pedagogical innovation.

Existing indicators often emphasize broad macro-level dimensions highlighted in general university assessments, such as social demand adaptability, resource adequacy, and student satisfaction. Yet, management–engineering interdisciplinary programs place greater importance on capabilities like systems thinking, project-driven learning, and interdisciplinary collaboration, which are either weakened or overlooked in the current indicator frameworks. Allen F. Repko, a leading scholar in interdisciplinary education theory in the United States, proposed a systematic theory of interdisciplinary research, emphasizing that interdisciplinary education should focus on integrating perspectives from different disciplines. This integration fosters the holistic development of students' systems thinking, problem-solving abilities, and collaborative skills through knowledge fusion [10]. Therefore, the existing indicator systems urgently require expansion and optimization from the perspective of disciplinary integration to better serve the talent cultivation goals of interdisciplinary programs.

2.3 Inadequate Feedback and Improvement Mechanisms in Evaluation

The ultimate purpose of teaching evaluation is to support instructional improvement and enhance quality. However, in the current system, evaluation results are often used primarily as criteria for faculty assessment and professional title promotion, lacking effective feedback mechanisms and support tools. Consequently, teachers find it difficult to obtain targeted recommendations for improvement. At the same time, academic management departments have yet to establish systematic follow-up and improvement procedures, and there is a lack of data-driven continuous optimization mechanisms. This culture of 'result-oriented but process-weak' evaluation restricts the dynamic enhancement of teaching quality and the establishment of a virtuous cycle.

The final goal of evaluation is to promote 'closed-loop improvement.' The Ministry of Education's latest undergraduate education teaching audit and evaluation framework explicitly calls for the construction of a full-process teaching quality closed loop centered on 'admission–cultivation–employment,' supported by mechanisms such as 'accountability tracking' and 'review inspections' to strengthen rectification implementation and supervision of outcomes [11, 12]. However, despite the comprehensive design of these systems, there remain significant gaps in practical implementation. Educational researcher Zhang Haojun pointed out that formative evaluation mechanisms in current university course assessments are still incomplete, lacking systematic feedback and improvement stages, making it difficult to achieve the 'evaluation–feedback–improvement–re-evaluation' closed-loop teaching reform process [13]. The failure of teaching evaluation to effectively support teaching capacity building and curriculum optimization, combined with the absence of robust feedback and continuous support systems, has become a critical bottleneck for improving teaching quality.

3 CONSTRUCTION AND IMPLEMENTATION PATHWAYS OF A MULTI-DIMENSIONAL TEACHING QUALITY EVALUATION SYSTEM FOR MANAGEMENT – ENGINEERING INTERDISCIPLINARY PROGRAMS

With the continuous development and deepening of management–engineering interdisciplinary programs, the traditional single-dimensional evaluation model can no longer meet the demands of disciplinary integration and compound talent cultivation. Therefore, constructing a scientific and systematic multi-dimensional evaluation system has become a key link in ensuring teaching quality and promoting talent development. Based on the characteristics of these programs and the aforementioned existing evaluation challenges, the construction and implementation of a multi-dimensional teaching quality evaluation system should follow the following four core pathways:

3.1 Diversified Design of Evaluation Stakeholders

In recent years, the field of educational evaluation has increasingly emphasized the participation of multiple stakeholders, encouraging involvement from teaching administrators, faculty teams, individual students, and employers to form a more comprehensive and objective evaluation perspective. Multi-stakeholder participation in evaluation helps to understand teaching quality from various angles, promotes coordinated development among parties, and avoids the limitations caused by a single viewpoint.

Currently, some institutions still limit their evaluation stakeholders to school administration and student evaluations, lacking effective participation from industry-related stakeholders such as employers. This results in a narrow scope of evaluation information that fails to meet the needs of interdisciplinary programs [14]. Educational researcher Zhang Quanhong, in his analysis of university faculty evaluation mechanisms, pointed out that overly singular evaluation stakeholders—mainly relying on teaching and research groups and school administration—neglect the involvement of students, parents, and teachers themselves. This leads to one-sided results that cannot comprehensively and authentically reflect teaching quality [15]. Particularly for management–engineering interdisciplinary programs, the lack of multi-stakeholder participation restricts comprehensive monitoring and dynamic optimization of teaching quality. Due to their disciplinary integration and strong applied nature, these programs require broad stakeholder involvement, especially feedback from industry enterprises, which plays a crucial role in adjusting talent cultivation plans and optimizing curriculum content. Multi-stakeholder participation not only enriches the evaluation perspective but also promotes deep integration of industry and education, thereby enhancing the quality of talent cultivation.

This study proposes constructing an evaluation stakeholder system centered on 'multi-stakeholder collaborative participation,' encompassing a multi-level and multi-dimensional network of teachers, students, administrators, and employers. Teacher evaluation not only focuses on classroom teaching effectiveness but also integrates peer review and teaching achievement demonstrations, reinforcing multi-faceted scrutiny of professional connotations and instructional methods. Student evaluation covers learning attitudes, engagement, and self-reflection, fostering student agency and self-improvement. Administrator evaluation emphasizes the implementation of teaching management policies and resource assurance, ensuring institutional support and enforcement for evaluation. Employers, as key providers of industry practice feedback, participate in evaluating talent cultivation plans and curriculum design to ensure alignment between teaching content and industry demands. Through the collaborative interaction of multi-level and multi-dimensional stakeholders, a scientific, comprehensive, and operational evaluation stakeholder system is established, laying a solid foundation for teaching quality assurance in management–engineering interdisciplinary programs.

3.2 Diversified Design of Evaluation Stakeholders

With the evolution of educational philosophies, evaluation indicators have gradually expanded to encompass multiple dimensions such as competency development, process management, and learning attitudes, aiming to reflect students' comprehensive qualities and developmental potential. Traditional teaching quality evaluation indicator systems have primarily focused on knowledge mastery, emphasizing the transmission of theoretical knowledge and assessment through examination scores, but have neglected systematic assessment of students' comprehensive abilities and practical application skills.

Existing indicator systems often fail to capture the disciplinary integration and compound competency requirements of management–engineering interdisciplinary programs. They lack indicators tailored to the intersection of management and engineering, rendering them unable to accurately evaluate students' interdisciplinary collaboration skills, systems thinking, and practical operational abilities. This deficiency undermines the relevance and effectiveness of evaluations [16]. Particularly when addressing complex project management and technological integration tasks, the compound qualities required of students are difficult to assess effectively through traditional single-dimensional indicator systems. Furthermore, differences in understanding of evaluation dimensions among faculty from various disciplinary backgrounds further weaken the scientific validity and comparability of teaching evaluations in such programs. Therefore, the teaching quality evaluation indicator system for management–engineering interdisciplinary programs should emphasize characteristics of disciplinary integration, strengthening multi-dimensional measurement of students' interdisciplinary abilities, comprehensive qualities, and practical application skills, in order to enhance the scientific rigor, relevance, and guiding value of evaluation outcomes.

This study designs an evaluation indicator system covering four dimensions: knowledge mastery, skill application, management capability, and attitudinal performance. Core indicators are refined to include interdisciplinary theoretical integration ability, engineering practical operation competence, project management skills, and innovation and entrepreneurship awareness. Within the knowledge mastery dimension, emphasis is placed on assessing students' understanding and integration of core theories in management and engineering. The skill application dimension focuses on evaluating students' proficiency and innovation in engineering practice and technical application. The management capability dimension concentrates on the cultivation and evaluation of comprehensive qualities such as project management methods, teamwork, and resource allocation. The attitudinal performance dimension highlights the development of learning attitudes, professional responsibility, and innovation and entrepreneurship awareness. By refining these core indicators, the study constructs a multi-dimensional evaluation framework that is both scientifically rigorous and well-aligned with the compound talent cultivation requirements of management–engineering interdisciplinary programs.

3.3 Operational Mechanism and Process Design of the Evaluation System

A well-established evaluation system operational mechanism requires a scientific evaluation process encompassing stages such as preparation, implementation, result analysis, and feedback. Each phase should have clearly defined standards and responsibilities to ensure that the evaluation work proceeds in a systematic and standardized manner. Traditional mechanisms often rely on unidirectional evaluation with a singular process, making it difficult to form an effective closed loop, thereby limiting the practical application of evaluation outcomes. Within the operational process, phase-specific documentation of teaching behaviors and student learning processes, as well as formative diagnostics, are frequently neglected, leading to a disconnect between feedback and subsequent application.

Currently, the operational mechanisms of evaluations in most universities lack standardization, transparency is insufficient, data collection and processing are delayed, and evaluation information is siloed, which significantly hinders the role of evaluation in promoting instructional improvement [17]. Various types of evaluation data are often managed separately, failing to achieve effective linkage and integrated utilization across different evaluation dimensions. Moreover, teachers and students have limited trust in evaluation data, restricting its application value in teaching adjustments and resource allocation. The evaluation system for management–engineering interdisciplinary programs should break away from traditional single-process evaluation and build a dynamic, multi-stage evaluation mechanism that strengthens the monitoring and adjustment capabilities throughout the entire course implementation.

Reasonable phase-specific evaluation nodes should be established, leveraging digital tools to enhance evaluation efficiency and accuracy, thereby improving the system's real-time responsiveness and operational effectiveness. The focus of mechanism design should be on constructing a closed-loop process throughout the entire cycle, rather than solely emphasizing result feedback, with systematized management aimed at enhancing the organizational effectiveness of evaluation operations.

This study constructs a standardized, clearly defined full-process closed-loop evaluation mechanism and proposes establishing a comprehensive evaluation system covering course design, classroom teaching, student learning, practical training, and graduation quality. The course design phase assesses the rationality of teaching objectives and content, ensuring a scientifically structured curriculum and a complete knowledge system. The classroom teaching phase focuses on dynamic monitoring of teaching methods, classroom interaction, and instructional effectiveness. The student learning process is continuously tracked through multi-dimensional indicators such as stage-based assessments, learning attitudes, and engagement levels. The practical training phase emphasizes comprehensive evaluation of abilities developed through experiments, internships, and project practices. The graduation quality phase centers on the summative assessment of students' comprehensive qualities, professional competencies, and innovative practice outcomes. Through systematic integration and data sharing across these phases, real-time feedback and multi-level analysis of evaluation information are achieved, ensuring scientific regulation and continuous optimization of the teaching process, effectively promoting the enhancement of talent cultivation quality in management–engineering interdisciplinary programs.

3.4 Feedback and Continuous Improvement Mechanism for Evaluation Results

The feedback and improvement of evaluation results are critical components for ensuring the continuous enhancement of teaching quality. Modern teaching evaluation theory emphasizes a 'evaluation–feedback–improvement' closed-loop mechanism, whereby evaluation outcomes guide instructional strategy adjustments to improve teaching effectiveness. Unlike the operational mechanism that focuses on 'how to evaluate,' the key aspect of the feedback mechanism lies in 'how to utilize' the results—specifically, how to effectively transform outcomes into drivers for teaching reform and faculty development.

In practice, teaching evaluations often remain at the stage of result publication, lacking effective feedback channels and improvement measures. Consequently, evaluation results fail to sufficiently translate into enhanced teaching capabilities and motivation for curriculum reform, resulting in the loss of evaluative value [18]. Evaluation results should be detailed down to course modules and individual instructors, and interpreted multidimensionally according to different disciplinary backgrounds, with targeted recommendations for improvement. The application of results should encompass multiple levels, including adjustments to teaching content, updates to instructional methods, and guidance for student learning. For management–engineering interdisciplinary programs, establishing a robust feedback mechanism is particularly important. By integrating faculty development plans and student growth portfolios, the mechanism ensures efficient alignment between evaluation content and talent cultivation objectives, promoting the establishment and implementation of multidimensional improvement pathways.

This study constructs a continuous improvement mechanism integrating feedback, supervision, and incentives to foster a virtuous cycle of 'evaluation guiding teaching, and teaching promoting evaluation,' ensuring the steady and sustained enhancement of teaching quality in management–engineering interdisciplinary programs. Through the establishment of scientific feedback channels, timely communication and effective application of evaluation results are realized, enabling teachers and administrators to adjust teaching strategies and improve instructional practices accordingly. A supervision mechanism is set up to clarify responsibility allocation and timeline checkpoints, ensuring that improvement measures are implemented as planned and progress is continuously maintained. Simultaneously, an incentive mechanism is developed to stimulate faculty engagement in teaching quality enhancement through recognition of outstanding educators and rewards for innovative teaching projects. The coordinated interplay among feedback, supervision, and incentives provides institutional support and practical pathways for the effective transformation of teaching quality evaluation results and precise allocation of educational resources.

4 CONCLUSION

This study focuses on the developmental needs of management–engineering interdisciplinary programs under the dual 'New Engineering' and 'New Liberal Arts' context, grounded in the objective of cultivating compound talents. It systematically reviews and analyzes prominent issues in current teaching quality evaluation systems, including the singularity of evaluation stakeholders and methods, limitations of evaluation indicators, and the absence of effective feedback mechanisms. In response to these challenges, the study proposes a multi-dimensional teaching quality evaluation framework tailored to the characteristics of management–engineering interdisciplinary programs, along with its implementation pathways.

The research constructs a diversified stakeholder structure involving students, teachers, industry experts, and administrators; proposes a multi-dimensional indicator system centered on knowledge mastery, skill application, management capability, and attitudinal performance; designs a standardized, clearly defined full-process closed-loop evaluation mechanism; and establishes a feedback and continuous improvement mechanism. The study achieves systematic optimization of teaching evaluation from structural, content, and procedural perspectives, providing

theoretical support and practical pathways to enhance talent cultivation quality and teaching management effectiveness in management–engineering interdisciplinary programs.

The constructed multi-dimensional evaluation system balances scientific rigor, relevance, and sustainability, not only addressing the practical demands of quality assurance in higher education teaching but also offering theoretical foundations and practical approaches for optimizing the talent cultivation model in management–engineering interdisciplinary programs. Future research can undertake empirical studies and application promotion at the university level, integrating specific program contexts to further enrich the system's connotations, refine indicator settings, and continuously drive teaching quality enhancement and disciplinary development.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

REFERENCES

[1] The Central People's Government of the People's Republic of China. Opinions of the Ministry of Educati on on Deepening Undergraduate Education and Teaching Reform and Comprehensively Improving the Qu ality of Talent Cultivation. Sep. 29, 2019. https://www.gov.cn/gongbao/content/2020/content_5469721.htm.

[2] Xu L. Innovative interdisciplinary models in engineering education: Transforming practices across global u niversities. Engineering Education Review, 2024, 2(3): 129-144.

[3] Zhao T, Zhu J, Jian Z, et al. Developing an Effective System for Engineering Management Education: A Teaching Practice and Evaluation Perspective. Education Sciences, 2024, 14(12): 1412.

[4] Guo Yirong, Song Yifan. How different types of resources affect teaching input: A multilevel empirical a nalysis based on a national survey of undergraduate university teachers. China Higher Education Research, 2024, (12): 85-92.

[5] Andrews S, Keating J, Corbo J, et al. Transforming teaching evaluation in disciplines: A model and case study of departmental change. Transforming institutions: Accelerating systemic change in higher education Pressbooks Retrieved May, 2020, 27: 2022.

[6] The Central People's Government of the People's Republic of China. The Central Committee of the Com munist Party of China and the State Council issued the Overall Plan for Deepening the Reform of Educa tional Evaluation in the New Era. Oct. 13, 2020. https://www.gov.cn/zhengce/2020-10/13/content_5551032. htm.

[7] Pacher C, Woschank M, Zunk B M, et al. Engineering education 5.0: a systematic literature review on c ompetence-based education in the industrial engineering and management discipline. Production & Manufa cturing Research, 2024, 12(1): 2337224.

[8] Cong Yuhao. Reflections on achieving high-quality development of the new round of undergraduate teachi ng review and evaluation under the background of education evaluation reform, 2023, 12(05): 1-5.

[9] Xiong Bingqi. Why student evaluation of teaching does not work. Jan. 19, 2016. https://zqb.cyol.com/html /2016-01/19/nw.D110000zgqnb_20160119_3-02.htm.

[10] Repko A F, Szostak R. Interdisciplinary research: Process and theory. Sage publications, 2020.

[11] The Central People's Government of the People's Republic of China. Director of the Education Supervisi on Bureau of the Ministry of Education answers reporters' questions on the Implementation Plan for the Undergraduate Teaching Review and Evaluation of Regular Higher Education Institutions. Feb. 7, 2021. h ttps://www.gov.cn/zhengce/2021-02/07/content_5585686.htm?utm_source=chatgpt.com.

[12] University of Jinan. Essential Guide to the Undergraduate Education and Teaching Review and Evaluation of Regular Higher Education Institutions (2021–2025), Part IV. Apr. 3, 2024. https://jndxb.ujn.edu.cn/ind ex/article/articleinfo.html?doc_id=3370636.

[13] Zhang Haojun. On the reform of college course assessment methods based on formative evaluation, 2018, (07): 180-182+192.

[14] Hou A Y C, Hill C, Justiniano D, et al. Is employer engagement effective in external quality assurance of higher education? A paradigm shift or QA disruption from quality assurance perspectives in Asia. Hig her education, 2022: 1-20.

[15] Zhang Quanhong. How to transform the teacher evaluation system from single to multiple perspectives, 2 009, (23): 7.

[16] Gao X, LI P, Shen J, et al. Reviewing assessment of student learning in interdisciplinary STEM educatio n. International Journal of STEM Education, 2020, 7: 1-14.

[17] Hazelkorn E, Liu L. Developing meaningful higher education evaluation systems: Putting China in context. International Journal of Chinese Education, 2018, 7(2): 207-228.

[18] Egetenmeier A, Strickroth S. Scalable Two-Minute Feedback: Digital, Lecture-Accompanying Survey as a Continuous Feedback Instrument. arXiv preprint arXiv:231019334, 2023.