CONSTRUCTION OF THE EVALUATION INDEX SYSTEM FOR DEEPER TEACHING

[1]Yanhua Chen

Panyapiwat Institute of Management, Thailand

[1]Leosion2009@qq.com

Received: October 20, 2024; **Revised** :November 15, 2024; **Accepted** :December 28,2024

Abstract

This study aims to construct and validate an evaluation system for deeper teaching in classrooms to enhance the teaching quality of teachers and the deeper learning ability of students at the compulsory education stage. By comprehensively analyzing the theoretical foundations of deeper learning and deeper teaching, and integrating relevant domestic and international literature, the key characteristics of classroom deeper teaching are clarified, and a series of operational evaluation indicators are proposed. The study employed the Delphi method for multiple rounds of expert consultation to ensure the scientific nature and applicability of the evaluation system and to guarantee content validity. The evaluation indicator system encompasses multiple dimensions, including teaching objectives, teaching content, teaching methods, student engagement, and classroom interaction. Preliminary data collection and analysis results demonstrate high reliability and validity of the scales.

Keywords: Deeper Teaching in Classrooms, Deeper Learning, Educational Evaluation, Empirical Research

Introduction

Deeper learning has become a key characteristic of evaluating top-tier courses and a crucial influencing factor in decision-making for higher education institutions. In recent years, deeper learning has garnered significant attention from governments, schools, and researchers worldwide, emerging as an important strategy for transforming learning methods, improving student training quality, fostering core competencies, and building intelligent teaching frameworks. The relationship between teaching and learning is inherently integrated; without effective teaching, learning is meaningless, and vice versa. To promote students' deeper learning, it is essential to rely on deeper teaching in the classroom. As the primary setting for deeper learning, classrooms play a vital role in addressing superficial, shallow, and utilitarian learning approaches (Yang Qing, 2020). As the main arena for implementing teaching, classrooms shoulder the important mission of cultivating students' innovative thinking and abilities.

[1]Chinese Graduate School, Panyapiwat Institute of Management, Thailand

The current teaching situation in China overly emphasizes students' academic performance, leading to the neglect of the classroom teaching process. The prevalence of superficial and performative teaching methods hampers the development of fundamental abilities, basic thinking methods, experiential activities, and emotional attitudes and values in students. Deeper teaching is not about superficial or performative teaching but involves a profound approach. This depth is not merely about increasing the difficulty and breadth of teaching but about understanding students, delving into teaching materials, comprehending students' needs, and identifying the qualities, knowledge, and skills required for their future development. It involves combining teachers' capabilities and professional literacy.

Teaching evaluation is not only a mechanism for assessing various educational activities undertaken by teachers to achieve educational goals but also a critical basis for teachers to reflect on their teaching practices and explore strategies for optimization. Deeper teaching emphasizes the in-depth understanding and application of knowledge rather than mere memorization and repetition. However, current standards for the visualization and measurability of deeper teaching are unclear, and existing evaluation systems lack universality. This represents a significant challenge in the field of educational research and provides an opportunity for this study. This research will attempt to construct a classification evaluation system for deeper teaching in classrooms. This system will include multiple evaluation indicators to help educators better understand and measure the effectiveness of deeper teaching. Based on these indicators, corresponding scales will be developed to create measurement tools that make the assessment of deeper teaching operable and practical.

Literature Review:

1.Concept Definition:

1.1 Deeper Learning

Deeper learning is a learning mechanism that deeply integrates pedagogy, psychology, neuroscience, and information technology, emphasizing the mastery of transfer and critical, relational communication, and collaboration skills by learners. The evaluation of deeper learning focuses not only on explicit performance (such as classroom performance, learning logs, and academic achievements) but also on implicit performance (such as psychological, cognitive, and motivational learning behaviors), examining the relationship between behavioral performance and learning outcomes (Hu Hang & Yang Yang, 2022).

1.2 Deeper Teaching

Deeper teaching is a teaching philosophy and method that emphasizes a deeper understanding and mastery of course content by both teachers and students during the teaching process. This requires not only in-depth explanations by teachers but also thorough learning by students to achieve the predetermined teaching objectives.

1.3 Teaching Evaluation

Teaching evaluation is an assessment activity based on teaching objectives. It uses scientific methods and tools to observe and measure the classroom teaching process and its changes, make value judgments, and optimize the teaching process accordingly.

2.Literature Review

2.1 Current Research on Deeper Teaching

Research on deeper teaching originated in 1908 when George W. Myers first explored the deeper meaning of elementary mathematics teaching (Myers, G.W., 1908). Marton and Säljö divided student learning into surface learning and deep learning, pointing out that the depth of students' learning has a decisive impact on learning outcomes (Marton F, 1976). In the field of education, the concept of deeper teaching is mostly defined from the perspective of deeper learning. Ediger emphasizes that deeper teaching focuses on students' correct understanding and induction of concepts (Ediger, M., 2016). Biggs, Entwistle, and Ramsden believe that deeper learning involves using various methods to apply knowledge, logic, and emotions to real life, and the teacher's role is to promote the development of these abilities in

students (Biggs, 2001). In China, many researchers have conducted studies on deeper teaching. For instance, Guo Yuanxiang's view is that the philosophical stance of knowledge is static, representing the symbolic existence of human cognitive experience and a product of rationality, which does not meet the needs of modern society for human development. In contrast, the pedagogical stance of knowledge focuses more on human generation and development, making this dynamic concept superior to the static philosophical stance. Overall, deeper learning and deeper teaching have garnered significant attention from scholars at various levels. Research has found that deeper teaching can effectively promote the occurrence of deeper learning, thereby providing well-rounded individuals for society.

2.2 Current Research on Classroom Teaching Evaluation

The importance of classroom teaching quality is widely reflected in international research. For example, Sosanya-Tellez and Carla Ann conducted self-evaluation studies on the performance of excellent teachers, proposing that if all students aspire to become culturally competent individuals, teachers must engage in efficient and high-quality teaching, which is deeper teaching. They also emphasized that teachers should consciously evaluate their own teaching dynamically, not only assessing their teaching but also the students in the classroom. They argue that without capable and high-quality teachers, educational reform cannot succeed (Sosanya-Tellez, C., 2010).

Similarly, extensive experimental research by Burnett has shown that high-quality teaching and classroom activities can help students achieve better grades, exhibit more appropriate behavior, and attain a higher quality of life. These findings suggest that classroom teaching evaluation is more of a dynamic evaluation, focusing on the evaluation of the interaction process between teachers and students (Burnett, P. C., 2002). Therefore, a scientific framework for evaluating teachers' teaching is of great significance for improving classroom teaching quality.

On this basis, international researchers are dedicated to constructing scientific, reasonable, and operable classroom teaching evaluation frameworks to identify the common elements of high-quality classroom teaching. The most representative frameworks are the FFT (Framework for Teaching) evaluation framework and the CLASS (Classroom Assessment Scoring System) evaluation framework. The following table summarizes related research on teacher teaching evaluation frameworks by timeline.

Table 1 Comparison of Related Research on Teacher Teaching Evaluation Frameworks

Framework name	Framework source	evaluative dimension
Teaching Evaluation Framework (FFT)	Danielson Group（2004）	Teaching planning and preparation
		Teaching environment
		Teaching implementation
		Teaching professional responsibility
CLASS (Classroom Assessment Scoring System)	University of Virginia（2008）	Emotional support
		Classroom organization
		Teaching support
Effective teaching framework, FET	The Denver Teachers' Union (2009)	Classroom teaching
		Professional quality
		Intellectual quality
		connectedness
Productive Teaching Framework " (Productive Pedagogies Framework, PPF)	Research team at the University of Queensland（2016）	Intellectual quality
		Connectivity
		social support
		Differential identification

In recent years, the evaluation indicators and standards for classroom teaching in China have begun to place greater emphasis on the cultivation of students' abilities and emotional development. The weight of these new evaluation indicators in the evaluation process has gradually increased, reflecting the educational philosophy of humanistic care and holistic development. This shift not only helps to improve teaching quality but also promotes the overall development of students, thereby better achieving the fundamental goals of education.

Specifically, a search on CNKI using the keyword "classroom teaching evaluation" from January 2013 to January 2023 yielded a total of 6108 articles. Among these, there were 2223 journal articles, 371 core journal articles, 411 master's theses, and 4 doctoral dissertations.

In summary, the main contributions of existing research can be summarized as follows:

1.Research on theories and strategies related to deeper teaching is currently relatively abundant.

2.Teaching evaluation standards are gradually being refined.

3.Increasing emphasis is being placed on the cultivation of students' overall development abilities in teaching evaluations.

Although there is a wealth of research related to teaching evaluation, researchers often focus on a single perspective in the process of constructing evaluation systems. The evaluation indicators are not comprehensive enough, and some comprehensive evaluation indicators lack key focus points. Furthermore, there is relatively little research combining deeper teaching with teaching evaluation, and most of it focuses on evaluating specific subjects. There is a lack of universally applicable evaluation indicators for deeper teaching, and even fewer studies provide a classification evaluation of classroom deeper teaching. In summary, the findings are as follows:

1.Existing teaching evaluation indicators rarely balance comprehensiveness with key focus areas.

2.There is relatively little research combining deeper teaching with teaching evaluation.

3.Research on the classification evaluation of deeper teaching is even more lacking

Research Methods

In this paper, the author will adopt mixed methods research, including survey methods and expert consultation. These methods will help comprehensively, deeply, and accurately study the classification evaluation system for deeper teaching in classrooms. Mixed Methods Research (MMR) combines quantitative and qualitative research methods and techniques. The study uses a questionnaire survey method. First, based on relevant theories of deeper teaching and previous research, classroom deeper teaching evaluation indicators were designed, followed by the development of corresponding scales, and a series of pretests and revisions were conducted to ensure the content validity and structural validity of the scales. Subsequently, a questionnaire survey was conducted on the target sample, collecting a large amount of data.

In this study, the Delphi method was mainly used to conduct expert consultations on the classroom deeper teaching evaluation scale, and subsequently, revisions were made to ensure that each dimension and item of the scale was professionally validated and supported. This study primarily used this research method to interview first-level teachers at the compulsory education stage to gain in-depth understanding of their teaching experiences and extract teaching elements as the basis for developing deeper teaching evaluation indicators.

The aim of this study is to construct a classification evaluation system for deeper teaching in classrooms, thus choosing the Delphi method as the main research approach. Frontline teachers sometimes get deeply involved in their teaching activities, lacking theoretical guidance; educational researchers might focus too much on theoretical studies while ignoring practical importance; doctoral and master's students, being both researchers and practitioners, might have a limited perspective influenced by their fields, leading to an incomplete observation of issues. Therefore, to ensure diversity among the study subjects and to provide more comprehensive and rigorous judgments and opinions on the classroom evaluation system, this study selected frontline teachers, university experts, and current graduate students as Delphi method survey subjects.

This study will use SPSS 26.0 and AMOS 26.0 statistical analysis software to process and analyze the collected data. These data will help the author improve the evaluation system, ensuring its reliability and validity.

Research Results

This study, by comprehensively reviewing literature, referencing theoretical frameworks, interviewing frontline teachers, and analyzing actual teaching needs and classroom situations, initially drafted the primary and secondary indicators of the evaluation system based on the connotation of deeper teaching and the cognitive process of deeper learning, with reference to domestic and international expert research, curriculum standards, and practical situations.

1.Primary Indicators

Professor Guo Yuanxiang emphasized in "On Deeper Teaching: Origins, Foundations, and Concepts" that the essence, foundation, and core concept of deeper teaching lie in pursuing the development of students' core literacy, aiming to promote students' deeper learning, which needs to overcome the limitations of surface teaching through deeper teaching to guide students into deeper learning. Dr. Hu Hang indicated the cognitive process of deeper learning in "The Occurrence Process, Design Model, and Mechanism Explanation of Deeper Learning" and proposed the S-ACIG cognitive process model of deeper learning. After analysis, given the integrative relationship between deeper teaching and deeper learning, this study matched the four stages of the deeper learning cognitive model, forming the evaluation system's four primary indicators: "Awareness," "Reconciliation," "Induction," and "Transfer."

2.Secondary Indicators

Through theoretical research on the four stages of Awareness, Reconciliation, Induction, and Transfer, secondary indicators were proposed: "Student Learning Diagnosis" "Interest Stimulation" "Diverse Teaching Resources" "Effective Knowledge Transmission" "Questioning to Guide Thinking" "Teaching Strategy Selection" "Integration of Disciplinary Knowledge" "Student Reflection Guidance" "Knowledge Reconstruction and Editing" "Student Cognitive Construction" "Cognitive Optimization" "Knowledge Contextual Transfer" "Student Work Creation" "Innovation Thinking Stimulation" "Multidimensional Learning Evaluation."

Ultimately, the classroom deeper teaching evaluation system indicators were formed as shown in the table below.

Table 2 Initial Compilation of the Classroom Deeper Teaching Evaluation Scale

Primary Indicators	Secondary Indicators	Indicator Instructions
Awareness	Student Learning Diagnosis	Identify and adjust the teaching content to meet the students' learning level for course introduction and provide differentiated teaching support.
	Interest Stimulation	Clear teaching objectives, combine students' experience to stimulate interest, and guide students to explore the application of learning content.
	Diverse Teaching Resources	Develop diversified teaching resources and combine with information technology to support students' flexible learning.
	Effective Knowledge Transmission	Use vivid language and solid subject knowledge to enhance students' understanding and cultivate the ability of information evaluation.
Reconciliation	Questioning to Guide Thinking	Use a variety of questioning methods to guide in-depth thinking, design transformational questions to expand thinking.
	Teaching Strategy Selection	Use exploratory activities and other strategies to connect the old and the new knowledge to promote students' learning.
	Integration of Disciplinary Knowledge	Reconstruct the teaching material knowledge, combined with other subjects, guide students to deep learning.
	Student	Students are encouraged to participate in class projects, express questions,

	Reflection Guidance	and use computational thinking methods to solve problems.
Induction	Knowledge Reconstruction and Editing	Effectively comb the subject knowledge, enhance the system clarity, and help students to transform the theoretical knowledge into practical skills.
	Student Cognitive Construction	Guide students to explore subject knowledge, cultivate critical and innovative thinking, and systematically sort out what they have learned.
	Cognitive Optimization	Encourage students to think about various solutions and guide students to optimize their learning results.
Transfer	Knowledge Contextual Transfer	Guide students to think about the application of knowledge in life, expand and transfer thinking, and distinguish between similar concepts.
	Student Work Creation	Organize theme activities, guide students to create, provide feedback to improve the works, and cultivate innovation ability.
	Innovation Thinking Stimulation	Arrange independent challenging tasks, guide students to apply high-order cognitive strategies, and realize the comprehensive application of knowledge.
	Multidimensional Learning Evaluation	Comprehensive use of a variety of evaluation methods and subjects to comprehensively evaluate students' core qualities and learning results.

Based on the aforementioned indicator system, the study drew on the educational framework of the "Compulsory Education Curriculum Plan and Curriculum Standards (2022 Edition)", integrating the cognitive processes of deeper learning, digital resource representation technologies, and the latest research results in deeper learning assessment methods. Additionally, opinions and suggestions from frontline teachers were collected through interviews, ultimately leading to the compilation of the "Classroom Deeper Teaching Evaluation Scale".

In educational research, developing an effective scale is crucial to ensuring the accuracy and reliability of research results. For the Classroom Deeper Teaching Evaluation Scale developed in this study, validating its effectiveness and reliability is particularly important to ensure that the scale accurately reflects teachers' deeper teaching abilities. Therefore, this study employed the Delphi Method, a systematic and scientific approach, to collect and integrate expert opinions, thus validating and refining the content of the scale. After two rounds of expert consultation, the development of the Classroom Deeper Teaching Evaluation Scale was completed based on the suggestions from the expert panel.

To further validate the Classroom Deeper Teaching Evaluation Scale constructed in the preliminary study, this study designed a corresponding questionnaire based on the scale for pilot testing. The pilot test involved small-scale data collection, followed by reliability and validity analysis of the pilot data, and then exploratory factor analysis. According to the sample size estimation method, a sample size of at least 100 is generally required, and the sample size should be at least five times the number of items (Gong Xue, 2022).

The study collected a total of 342 questionnaires. After data cleaning, 41 invalid data entries were removed, resulting in 301 valid questionnaires, with a recovery rate of 88%.

Reliability and validity analysis is an indispensable step in conducting a questionnaire survey. During this process, SPSS (Statistical Package for the Social Sciences) is a widely used statistical analysis tool that provides a series of powerful analysis methods for conducting reliability and validity tests. SPSS effectively supports this process, ensuring the scientific and reliable results of the study. This study used SPSS 26 for related analysis work.

After reliability and validity analysis, the overall Cronbach's α coefficient of the dataset was 0.949, exceeding 0.7, indicating that the 50 items have good internal consistency. Further analysis showed that the corrected item-total correlation value for item 49 was 0.385, less than the reference value of 0.4, so it was deleted. The corrected item-total correlation values for the remaining items were all greater than 0.4, so they were retained. The Kaiser-Meyer-Olkin (KMO) measure reached 0.954, significantly higher than the commonly accepted threshold of 0.6. This result indicates that the collected questionnaire data is statistically very

suitable for factor analysis. The study used factor analysis methods, including common factor variance, pre-rotation variance explanation, scree plot, post-rotation variance explanation, and rotated component matrix, to prove and extract four factors.

The reliability and validity tests of the pilot dataset showed that the compiled scale has good reliability and validity, confirming its applicability in actual teaching situation surveys. Additionally, through the exploratory factor analysis method, item D33 was deleted, and 49 items were retained. During this process, four common factors were successfully extracted, which were consistent with the dimensions initially set during the scale compilation.

Finally, the formal compilation of the Classroom Deeper Teaching Evaluation Scale was completed. As shown in the table below.

Through preliminary theoretical research, literature review, and interviews with frontline educators, this study constructed a set of classroom deeper teaching evaluation indicators and then compiled the corresponding scale, designed questionnaires, and conducted pilot data research. After reliability and validity analysis, a scale tool was successfully developed to measure teachers' deeper teaching levels. This tool provides an effective evaluation instrument for teaching practice, thereby promoting the enhancement of teachers' deeper teaching levels and the realization of students' deeper learning.

References

Burnett, P. C. (2002). Teacher praise and feedback and students' perceptions of the classroom environment. Educational Psychology, 22, 5-16.

Biggs, J. (1999). What the student does: Teaching for enhanced learning. *Higher education research & development*, 18(1), 57-75.

Ediger, M. (2016). Teaching the new social studies. College Student Journal, 50(2), 275-277.

Gong, X. (2022). Construction of competency index system for general practitioners in China (Doctoral dissertation, China Medical University).

Guo, Y. (2009). The nature, structure, and deep teaching of knowledge. Curriculum. Teaching Material. Method, 29(11), 17-23.

Hu, H., & Yang, Y. (2022). Evaluation paths and strategies of deep learning from the perspective of multimodal data analysis. China Distance Education, (2), 13-19, 76.

Marton, F., & Saljo, R. (1976). On qualitative differences in learning: Outcome and process. British Journal of Educational Psychology, 46(1), 4-11.

Myers, G. W. (1908). The deeper and the richer meanings of mathematical teaching in elementary schools. II. The Elementary School Teacher, 8(7), 367-380.

Sosanya-Tellez, C. (2010). Transformative teacher evaluation: Self evaluation for high performing teachers (Doctoral dissertation, Portland State University).

Yang, Q. (2020). Misunderstandings about "classroom deep learning". Chinese Journal of Education, (9), 71-76.