Research on the Current Status and Improvement Paths of Research-Based Teaching Ability of Young Teachers in Non-“Double First-Class” Undergraduate Institutions

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Abstract: To effectively enhance the research-based teaching ability of young teachers in non-“Double First-Class” undergraduate institutions, this paper conducts an in-depth analysis of the current status and improvement paths of their research-based teaching ability. The study reveals that young university teachers generally face core issues such as insufficient innovation in curriculum design, lack of integration between research and teaching, and imperfect teaching evaluation systems. Based on these findings, the paper proposes improvement paths for teachers’ research-based teaching ability from the perspectives of the macro environment, university organization, and individual teachers, providing a theoretical basis for enhancing the research-based teaching ability of young teachers in non-“Double First-Class” undergraduate institutions.

Keywords: non- “Double First-Class” undergraduate institutions; young teachers; current status of research-based teaching ability; improvement paths

Introduction

Currently, China’s higher education is undergoing a critical strategic transformation toward connotative development and the construction of “Double First-Class” universities. The OBE (Outcome-Based Education) concept, which is student-centered, outcome-oriented, and emphasizes continuous improvement, is gradually becoming the core guiding principle of higher education reform. Research-based teaching, as a problem-oriented, student-centered, and teacher-led instructional model, focuses on cultivating students’ innovative abilities and thinking patterns during the knowledge transmission process, and has become an important direction for reforming higher education teaching. As the backbone of the faculty in higher education institutions, the strength of young teachers’ research-based teaching ability directly determines the quality of cultivating innovative talents. Therefore, enhancing young university teachers’ research-based teaching ability is not only a key approach to promoting higher education reform but also a core path to improving the quality of innovative talent cultivation [1].

As a main component of China’s higher education system, young teachers in non-“Double First-Class” undergraduate institutions generally face practical challenges such as insufficient research resources, weak academic accumulation, and lack of external support systems, which impose more complex constraints on improving their research-based teaching ability. Thus, focusing on diagnosing the current status and constructing improvement paths for the research-based teaching ability of young teachers in these institutions is a core issue for understanding the development of their research-based teaching ability. This focus holds significant practical importance for overcoming bottlenecks in higher education teaching quality improvement and optimizing paths for cultivating innovative talents.

1.The Connotation of Research-Based Teaching Ability of Young University Teachers

Research-based teaching ability of young university teachers refers to the composite capability system whereby teachers deeply integrate academic research into teaching practice, transform cutting-edge disciplinary achievements into teaching resources through systematic design and

inquiry-based learning scenarios, guide students to engage in critical thinking training and autonomous research, and continuously optimize teaching strategies based on academic reflection on teaching[4-5]. Its essence lies in the teacher's ability to reconstruct the teaching process according to the logic of academic inquiry, which is specifically manifested in the ability to transform disciplinary problem chains in teaching design, the ability to guide inquiry-based learning during teaching implementation, and the ability to evaluate research-based outcomes in teaching assessment. These ability components are interrelated and work collaboratively to form the core competency framework of research-based teaching.

2. Current Status of Research-Based Teaching Ability of Young University Teachers

2.1 Current Status of Teaching Design Ability

In the dimension of teaching design ability, research-based teaching ability is reflected in teachers' professional competence to develop inquiry-based and open teaching design plans based on teaching objectives and student learning analysis. This competence involves creating authentic problem situations to guide students through the complete research process of hypothesis formulation, experimental design, and logical verification, thereby cultivating scientific thinking and innovative ability. Currently, most young university teachers come from an "academic" training background, entering teaching positions immediately after completing their doctoral or master's degrees. A systematic lack of application of the research-based teaching paradigm is generally evident in their teaching design [6]. This competency gap originates both from the neglect of the Scholarship of Teaching and Learning during pre-service training and from the existing teacher training systems, which still focus primarily on traditional lecturing skills. Specifically, there are significant coverage gaps in training content related to cutting-edge areas such as how to transform research achievements into teaching problem chains, design interdisciplinary research-based learning tasks, and develop curriculum resources based on disciplinary frontiers[6-7]. Although the concept of research-based teaching has gained consensus within higher education, its deep implementation in teaching design practice still faces a capability gap in translating concepts into actionable plans, highlighting an urgent need to build targeted support systems for capacity enhancement [2].

2.2 Current Status of Teaching Implementation Ability

As a core component of teachers' research-based teaching ability, the teaching implementation phase carries the crucial mission of transforming theoretical knowledge into practical skills. Teachers need to comprehensively apply diverse teaching strategies during this process, including group collaboration and discussion, problem-chain guidance, autonomous inquiry learning, case study analysis, and project-based learning, to activate students' learning interest and academic inquiry awareness. Especially by introducing project cases in authentic contexts and guiding students to deeply engage in the full research process of data collection, analysis and modeling, and conclusion validation, teachers can effectively improve knowledge absorption efficiency while simultaneously cultivating academic thinking and practical research skills [8]. However, the current teacher professional development evaluation system generally emphasizes "research over teaching," causing young teachers to face a real tension between the pressure to produce research outputs and the investment of effort in teaching innovation. This situation directly results in a significant lack of intrinsic motivation for implementing research-based teaching, thereby constraining the deep advancement of educational reform.

2.3 Current Status of Teaching Evaluation Ability

As one of the key components of teachers' research-based teaching ability, the teaching evaluation phase undertakes the important functions of guiding teaching direction and assessing training effectiveness. Traditional evaluation systems often focus on the memorization and reproduction of basic knowledge, whereas research-based teaching emphasizes tracking the knowledge inquiry process and developmental assessment of innovative thinking ability. The construction of the current research-based teaching evaluation system still faces significant shortcomings: evaluation dimensions tend to be singular, the formative evaluation mechanism remains underdeveloped, and alignment with higher-order ability cultivation goals needs improvement. Young teachers need to build a multidimensional evaluation index system, covering core elements such as research report quality,

scientific rigor of experimental design, and team collaboration effectiveness. Through diversified evaluation tools, they can achieve a comprehensive assessment of learning outcomes, thereby effectively promoting the coordinated development of students' research capabilities and overall competencies.

3.Improvement Paths for Research-Based Teaching Ability of Young University Teachers

3.1 Macro-Environmental Level

Improving the research-based teaching ability of young university teachers from the macro-environmental level requires systematic advancement in three aspects: optimization of the research ecosystem, innovation in the teaching environment, and funding guarantee systems.

3.1.1 Deep Reconstruction of the Research Environment and Construction of Feedback Mechanisms

Strategically deploy interdisciplinary research platforms, integrate laboratory resources to form shared collaborative networks, and establish institutionalized channels for transforming research outcomes into teaching resources, thereby promoting young teachers to convert cutting-edge research projects into inquiry-based teaching cases. Build normalized academic exchange mechanisms by regularly organizing interdisciplinary seminars and faculty-student research workshops, creating dialogic spaces for multidimensional idea collisions. Establish special start-up research funds for young teachers, clearly stipulating that no less than 15% of the budget is allocated for teaching transformation, thereby strengthening institutional designs for research feedback to teaching.

3.1.2 Paradigm Shift and Innovation Empowerment in the Teaching Support Environment

Leverage the construction of smart teaching laboratories to build integrated teaching research platforms combining virtual simulation, data visualization, and intelligent interaction, supporting teachers in conducting evidence-based teaching behavior research. Create academic research zones dedicated to teaching scholarship, incorporate innovations in research-based teaching into core academic evaluation indicators, and establish mechanisms that recognize teaching academic achievements as equivalent to research outputs. Develop cross-institutional virtual teaching and research collaboration platforms and create dynamically updated resource libraries for research-based teaching, enabling comprehensive sharing and iterative optimization of quality course cases, inquiry tools, and evaluation schemes.

3.1.3 Precision Allocation and Efficiency Improvement of Dedicated Teaching Funds

Establish a tiered and categorized funding guarantee system for research-based teaching, setting up special funds that cover course development, practical platforms, student research, and teacher training. Clearly specify in budget preparation that the proportion of funding supporting student research activities within individual research-based teaching projects shall not be less than 30%. Concurrently, set up special incentive funds for teaching innovation by young teachers, forming a closed loop of funding usage that includes "basic guarantee, innovation incentive, and outcome transformation," thereby providing sustainable material support for teachers' research-based teaching reform [3].

The macro-environment construction system, through deep integration of research and teaching, coordinated upgrades of hardware and software, and precise allocation of institutional resources, builds an ecosystem supporting the development of young teachers' research-based teaching ability, providing a long-term driving mechanism for university teaching reform.

3.2 University Organizational Level

To build a systematic support system for the development of young university teachers' research-based teaching ability at the organizational level, a three-dimensional advancement strategy should be implemented, focusing on institutional construction, cultural ecology, and incentive mechanisms.

3.2.1 Institutional Construction: Building a Full-Chain Support System

3.2.1.1 Innovation in Teacher Development Systems

Establish a tiered training system for research-based teaching ability, designing three hierarchical training modules: foundational training for new teachers (including research-based teaching theoretical

frameworks and curriculum design methodologies), advanced workshops for core teachers (focusing on interdisciplinary case development and inquiry-based classroom organization), and leadership programs for senior teachers (emphasizing the transformation of academic teaching achievements). Create "teaching-research" integration workshops, offering immersive training through authentic research project deconstruction exercises, PBL course design practice, and collaborative innovation case discussions between faculty and students, thereby strengthening teachers' ability to transform academic inquiry into teaching practice.

3.2.1.2 Reconstruction of Evaluation and Appointment Systems

Develop a diversified and categorized teacher evaluation system: add a special category for "research-based teaching contributions" in the professional title evaluation criteria, incorporating quantitative assessment of teaching case development, inquiry-based course construction effectiveness, and student research mentorship outcomes, with a weight of no less than 30%. Implement separate evaluation and appointment procedures for teaching-focused positions, establish a "research-based teaching professor" track, and create promotion channels equivalent to those for research-focused positions, accompanied by dedicated resources to support teaching academic research [4].

Establish a three-dimensional teaching evaluation framework: a) student development dimension, focusing on developmental indicators such as growth in higher-order thinking (critical thinking, problem-solving abilities) and improvement in research literacy; b) teaching scholarship dimension, including recognition of research-based teaching reform papers, teaching innovation awards, and curriculum ideological and political research projects as academic achievements; c) innovation practice dimension, introducing diversified evaluation tools such as peer in-depth lesson reviews (emphasizing the rationality of inquiry activity design), student learning portfolio analysis, and tracking assessment of teaching innovation effectiveness.

3.2.1.3 Optimization of Teaching Management Systems: Creating Flexible Teaching Support Mechanisms

a: Establish dedicated funds for research-based teaching, with an annual budget no less than 15% of the school's total teaching expenditure, covering course development (recommended funding per project: 20,000–50,000 RMB), student research training (annual per capita support standard ≥ 800 RMB), and virtual teaching and research community construction [5].

b: Promote pilot reforms of "modular courses," allowing teachers to allocate 20%-30% of flexible credits within professional training programs for developing interdisciplinary inquiry modules and research-oriented practical courses.

c: Build a university-level "research-based teaching collaborative community," establish cross-college teaching team certification systems, and provide annual special awards (recommended 50,000–100,000 RMB per team) for teams that develop distinctive teaching models.

3.2.2 Cultural Ecology Dimension: Cultivating an Immersive Development Environment

Construct a quality culture system oriented toward teaching scholarship:

3.2.2.1 Establish the "Research-Based Teaching Culture Month" Brand Event

Organize flagship events such as the Frontier Forum, inviting nationally recognized teaching experts to deliver special reports on "Research Feeding Back into Teaching"; Innovation Workshops, where outstanding teachers share experiences in transforming research cases within PBL course design; and Achievement Exhibitions, featuring student research outcomes alongside awards for "Research Projects with the Highest Teaching Transformation Value."

3.2.2.2 Build a Long-Term Mechanism for the "Teaching Scholarship Community"

Utilize platforms such as virtual teaching and research rooms (weekly online seminars), cross-institutional workshops (quarterly case sharing), and international teaching forums (annual academic exchanges) to promote the formation of a "research-based teaching academic circle" among teachers.

3.2.2.3 Integrate Research-Based Teaching Concepts into Campus Cultural Identity Systems

Set up an "Inquiry-Based Learning Achievement Corridor" in academic buildings, launch a "Teaching Scholarship Column" on the official website, and regularly publish cases of teaching innovation by faculty as well as stories of student research development.

3.2.3 Incentive Mechanism Dimension: Building a Dual-Drive System

Establish a multi-dimensional incentive matrix:

3.2.3.1 Honorary Incentives

Set up the university-level "Excellence Award in Research-Based Teaching" (selecting 10 recipients annually, each awarded 30,000 RMB), with awarded achievements included as one of the criteria for professional title promotion.

3.2.3.2 Resource Incentives

For teachers offering high-quality research-based courses, provide a 1:1.5 recognition of teaching workload, along with preferential access to laboratory facilities and favorable graduate student recruitment quotas.

3.2.3.3 Development Incentives

Prioritize teachers selected as key research-based teaching staff at the university level for recommendations to national or provincial teaching competitions, teaching excellence awards, and funding support for international pedagogy training.

Through the dual driving forces of institutional guarantees and cultural immersion, systematically design the organizational level of universities, incorporate research-based teaching capacity development into the institution's connotative development strategy, and form a virtuous cycle of "institutional support – practical innovation – cultural recognition," thereby building a sustainable capacity growth ecosystem for the professional development of young teachers.

3.3 Teacher Personal-Level Development Pathways

To build a four-dimensional intrinsic development mechanism for research-based teaching ability at the personal level, teachers need to follow a systematic path integrating teaching and research, reshaping academic concepts, advancing reflective capacity, and driving autonomous development, thereby achieving spiral enhancement of professional competence.

3.3.1 Integration of Teaching and Research: Establishing a Transformation System of Academic Research Feeding Back into Teaching

Teachers should establish a bidirectional transformation mechanism between research thinking and teaching practice:

3.3.1.1 Frontier Knowledge Transformation

By tracking top discipline journals (such as Science Education and Educational Research), participating in international academic conferences (with at least one keynote speech annually), and leading or participating in provincial or ministerial-level teaching reform projects (at least one every three years), teachers translate the latest academic findings into inquiry-based teaching scenarios.

3.3.1.2 Case Development Project

Following the transformation path of "research project deconstruction – core problem refinement – teaching task design," build a teaching resource library containing over 100 hierarchical cases, each supported by a four-in-one scheme of "research background – inquiry objectives – implementation guidelines – evaluation rubrics."

3.3.1.3 Academic Expression Transfer

Transform training in scientific paper writing into the ability to guide research reports, and develop the "Seven-Step Academic Argumentation" teaching model to cultivate students' complete research thinking chain from literature review to logical deduction.

3.3.2 Professional Concept Innovation: Establishing Teaching as an Academic Identity

Establish the professional value that teaching is academic inquiry:

3.3.2.1 Foundations in Cognitive Science

Systematically study classic works such as How People Learn, master the application model of the "Zone of Proximal Development" theory in research-based teaching, and establish a dynamic assessment framework for student cognitive development, conducting no fewer than two diagnostic analyses of learning status each semester.

3.3.2.2 Problem-Oriented Teaching Perspective

Position oneself as a "researcher-teacher" and regard the teaching process as an "evidence-based educational experiment," selecting one to two core teaching issues annually (e.g., "strategies for guiding cognitive conflict in group collaboration") for continuous tracking research lasting over three years.

3.3.2.3 Metacognitive Ability Cultivation

Design tools such as "learning strategy logs" and "inquiry process reflection forms" to help students build a self-regulated metacognitive system, while simultaneously enhancing teachers' ability to diagnose and intervene in the development of higher-order thinking.

3.3.3 Advancing Reflective Teaching: Establishing a Comprehensive Reflection and Improvement Mechanism

Construct a cyclical action research model based on

"observation–analysis–improvement–validation":

3.3.3.1 Multimodal Reflection Tools

a: Formative Recording: Use the "Critical Classroom Incident Coding Sheet" (including 30+ observation indicators) for video analysis, generating a Teaching Inquiry Activity Effectiveness Report monthly;

b: Evidence Collection: Gather multidimensional data through student inquiry logs, portfolio-based evaluations, and dynamic cognitive assessments (e.g., Critical Thinking Disposition Inventory);

c: Theoretical Transformation: Convert reflection outcomes into scholarly outputs, including at least one CSSCI-indexed journal article every two years or one school-based professional development module annually [7].

3.3.3.2 Spiral Improvement Model

Apply the "Plan–Act–Reflect–Improve" (PARI) cycle to address specific issues, such as "uneven participation in group discussions" or "insufficient guidance on open-ended questions," by conducting at least three rounds of iterative improvement experiments and generating a set of transferrable teaching strategies.

3.3.4 Self-Driven Development: Constructing a Personalized Path for Capacity Building

Implement a professional development plan guided by a "Dynamic Competency Mapping" approach:

3.3.4.1 Capability Diagnosis and Planning

Conduct self-assessment based on the Standards for Research-Based Teaching Competency in Higher Education (including 4 primary and 12 secondary indicators), and formulate a three-year Competency Enhancement Roadmap that identifies key development areas such as case development, interdisciplinary collaboration, and digital integration.

3.3.4.2 Diverse Learning Communities

a: Join national-level scholarly networks for research-based teaching (e.g., the Research-Based Teaching Branch of the China Association of Higher Education), and participate in quarterly workshops;

b: Form a university-level "Inquiry-Based Teaching Innovation Group" to conduct interdisciplinary lesson studies (once per month) and collaborative lesson planning (no fewer than three sessions per course);

c: Complete certification in the Design and Implementation of Research-Based Teaching micro-specialization (over 90 credit hours) on a MOOC platform and obtain a teaching scholarship certificate from the International Society for the Scholarship of Teaching and Learning (ISSOTL).

3.3.4.3 Empowerment Through Digital Competence

Master research tools such as NVivo for qualitative analysis and G.Power for statistical analysis; use virtual simulation technology to develop at least three research-based teaching modules and establish a technology-enabled inquiry teaching paradigm.

This intrinsic motivation mechanism transforms academic literacy into teaching competence, elevates teaching practice into scholarly research, embeds reflective improvement as a professional habit, and fosters self-development as a vocational instinct—ultimately forming a virtuous cycle of "input–transformation–output–iteration" at the individual teacher level. This offers sustained intellectual momentum and practical pathways for enhancing research-based teaching capacities among early-career faculty at non-elite undergraduate institutions.

Conclusion

An analysis of the current state of research-based teaching competence among early-career faculty at non-elite undergraduate institutions reveals notable deficiencies in teaching design, instructional implementation, and assessment capabilities. To address these shortcomings, this study proposes a three-tiered pathway for enhancing the research-based teaching capacity of young faculty members. The macro-level strategies include optimizing the research ecosystem, innovating the teaching environment, and establishing a robust funding support system. At the institutional level, key areas include policy development, cultural ecology, and incentive mechanisms. At the individual level, improvement pathways emphasize the integration of teaching and research, the reshaping of academic beliefs, the advancement of reflective abilities, and the construction of systematic routes for autonomous development.

Funded Project

2023 Henan Provincial Research-Based Teaching Reform and Practice Project for Undergraduate Institutions.

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