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Designing Structured Curricula to Enhance Teaching Competencies: Integrating Teaching Methods Course Clusters in Pre-service Teacher Education

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Abstract

Objective: This study addresses the fragmentation and compartmentalization in the pedagogical training of pre-service teachers, particularly primary education majors, in the context of contemporary educational reform. By adopting a structured framework to holistically redesign pedagogy course clusters, the research systematically enhances teaching competencies among teacher candidates, offering actionable references for educators in normal universities. **Methods:** The instructing faculty constructs a "four-pronged pedagogical framework" to address prevalent issues in curriculum design, including ambiguous teaching objectives, fragmented content delivery, conventional instructional methods, and overly simplistic assessment practices. This systematic approach encompasses: Objective-driven instruction to clarify student misconceptions, integrated curricular content for systematic knowledge delivery, Value-embedded pedagogy through diversified teaching modalities, Comprehensive evaluation mechanisms to monitor pedagogical effectiveness. **Results:** Empirical findings from a five-year teaching practice demonstrate that systematically delivering pedagogy courses through a structured framework significantly enhances pre-service teachers' instructional competencies, deepens their subject matter knowledge and pedagogical understanding, and facilitates the effective application of these skills in authentic classroom contexts. **Conclusion:** The structured framework-driven approach utilizing pedagogy course clusters has demonstrated efficacy in enhancing pre-service teachers' instructional competencies, though its implementation pathways require sustained collaborative exploration and iterative refinement by normal universities and faculty members.

Keywords: structured perspective; pedagogical course; pre-service teachers; pedagogical skills; Learning outcomes

1. Introduction

In August 2024, the Guidelines on Promoting the Ethos of Educator Excellence and Strengthening the Development of a High-Quality Professional Teaching Workforce in the New Era (State Council of China, 2024) emphasized the imperative to "strengthen advanced teacher training, prioritizing bachelor and higher degrees for kindergarten and primary school educators." Alongside the revised Compulsory Education Curriculum Framework (2022 Edition) and its subject-specific standards (Ministry of Education of China, 2022), these national policies reflect a strategic emphasis on improving the quality of foundational education. Consequently, pre-service teacher education is facing increasing demands to cultivate stronger pedagogical foundations and more adaptable, practice-oriented teaching skills aligned with 21st-century educational priorities.

Despite these policy advances, many current teacher training programs remain fragmented and surface-level. They are often characterized by disjointed curricular structures, overreliance on didactic teaching methods, and outcome-oriented assessments that overlook the learning process. Such deficiencies compromise the holistic development of student-teachers and diminish the formative, disciplinary function of education.

To respond to these systemic shortcomings, this study proposes a structured curriculum model that reconfigures pedagogical training for primary education majors. Central to this design is a cluster-based approach that integrates six interrelated course categories: (1) curriculum standards and textbook analysis; (2) discipline-specific teaching methodologies; (3) instructional design and evaluation; (4) analysis of exemplary teaching practices; (5) micro-teaching and practicum; and (6) supervised field internships. This cohesive framework supports the progressive development of teaching competencies from the sophomore to senior year, aiming to bridge the gap between theory and practice and to better prepare pre-service teachers for the evolving educational landscape.

2. Practical Challenges

Pedagogical course clusters, as integral components of teacher education programs, are designed to cultivate pre-service teachers' instructional competencies by integrating disciplinary curriculum standards, textbook analysis, instructional design, teaching

demonstrations, and practicum experiences. These clusters constitute a core element of teacher training frameworks, reflecting both the pedagogical proficiency fostered by normal universities and the comprehensive literacy required of future educators. This phased and hierarchical training model offers dual advantages: Horizontally, it bridges disciplinary knowledge coherence with the development of instructional design, implementation, and evaluation skills, aligning with the practical demands and societal missions under the "Double New" reform (the 2022 Compulsory Education Curriculum Framework and updated subject-specific standards). Vertically, it facilitates progressive skill advancement — from foundational to integrated and advanced competencies—ensuring the symbiotic integration of theory and practice. Such a model not only holistically cultivates pedagogical expertise but also fosters sustainable development and lifelong learning habits. However, current pedagogical course clusters predominantly adhere to traditional lecture-based instruction, manifesting persistent issues such as: fragmented curriculum design, disconnect between theoretical knowledge and classroom realities, overemphasis on rote content delivery over critical pedagogical reflection, insufficient alignment with evolving educational policies and front-line teaching needs.

2.1 Ambiguity in Teaching Objectives

Current talent development programs and course syllabi frequently employ overly broad descriptors such as “cultivate students’ teaching competence” or “enhance pedagogical literacy,” lacking clearly defined dimensions or measurable criteria. For instance, the term “teaching competence” often fails to specify expected proficiency levels in instructional design, implementation, and evaluation for pre-service teachers across different academic years and learning stages. As a result, students find it difficult to identify and prioritize the specific skills they need to develop at each stage of their training. Furthermore, despite the growing integration of emerging technologies—such as AI-assisted instruction and virtual reality (VR)-enhanced teaching—into foundational education, many higher education institutions have yet to update their teaching objectives accordingly. This lag results in insufficient training for pre-service teachers in these critical areas, undermining their preparedness for technology-driven pedagogical environments.

2.2 Fragmentation of Teaching Content

Pedagogical course clusters, which emphasize the integration of theory and practice, require instructors to holistically plan the curriculum across three to four years for systematic delivery.

However, due to the multiplicity of courses involved and insufficient coordination among faculty members, these clusters often suffer from unclear internal hierarchies, fragmented or overlapping content, and weak inter-course logical coherence. Consequently, critical pedagogical skills are delivered in a disjointed manner, hindering structured skill development.

Additionally, excessive reliance on theoretical instruction—coupled with insufficient integration of practical applications—limits students' opportunities to apply theories in authentic teaching contexts. For example, during micro-teaching sessions, the focus often centers on superficial skills such as teaching demeanor, verbal expression, and blackboard design, while neglecting the educational philosophies, instructional logic, and primary students' learning contexts underlying lesson design. Consequently, pre-service teachers struggle to bridge theory and practice, often uncertain about how to assess student responses, justify instructional sequences, or adapt to dynamic classroom situations. This overemphasis on procedural compliance perpetuates a self-centered focus on scripted teaching routines, marginalizing the developmental needs and generative potential of young learners.

2.3 Conventionalization of Instructional Methods

Divergent educational philosophies and uneven instructional competencies among faculty members contribute to underdeveloped pedagogical course clusters, where traditional lecture-dominated approaches prioritize knowledge transmission over interactive engagement. In higher teacher education institutions, large-class lecturing remains prevalent. For instance, primary education cohorts typically comprise between 20 and 50 students post-specialization, with limited weekly faculty-student interactions. Without adequate understanding of learners' needs or dynamic classroom engagement, such settings fail to address pre-service teachers' individualized learning requirements.

Compounding this issue, many instructors lack front-line teaching experience, perpetuating unidirectional knowledge dissemination while neglecting heuristic or inquiry-based pedagogies. This fosters stagnant classroom dynamics and diminished student motivation. Even when case studies are introduced, pre-service teachers often remain unaware of how front-line educators holistically integrate teaching objectives, instructional design, and assessment practices into cohesive pedagogical processes. Consequently, they struggle to conceptualize the symbiotic relationship between theory and practice, undermining their

ability to design context-responsive, learner-centered instruction.

2.4 Simplification of Teaching Evaluation

Upon graduation, pre-service teachers directly engage with primary school students and parents, undertaking multifaceted responsibilities that extend beyond classroom instruction to include classroom management, emergency response, and parent-teacher communication. Owing to the fact that the current evaluation system fails to encompass relevant assessments, normal students tend to be entrapped in predicaments as a consequence of improper coping strategies when faced with unexpected emergencies in classroom teaching, class management, and home-school communication. Such circumstances may subsequently give rise to their physical and mental exhaustion.

Furthermore, the pedagogical course clusters encompass diverse subjects with varying emphases and interconnections, necessitating multifaceted and systematic evaluation approaches. Over-reliance on standardized metrics risks reducing evaluation content and processes to superficial checklists, while narrow evaluation criteria prioritize isolated skills over holistic pedagogical growth. A comprehensive assessment framework must therefore balance qualitative and quantitative measures, aligning with the integrated and adaptive demands of modern educational practice.

3. Theoretical Foundations

"Structuring", a key concept in educational psychology, refers to the process of organizing and systematizing accumulated knowledge into coherent and structured frameworks for enhanced clarity and applicability (Mo, 2007). Scholars posit that structured thinking embodies a holistic, systemic cognitive mode, enabling problem-solving through the application of existing cognitive frameworks, thereby refining those frameworks iteratively.

From a structured perspective, instructors must align pedagogical course clusters with both pre-service teachers' learning trajectories and front-line classroom realities. This approach entails: structured interpretation of teaching materials, structured instructional design, structured implementation of teaching practices, structured evaluation of pedagogical outcomes (Figure 1). By embedding these dimensions, the framework facilitates holistic, systematic, and comprehensive assimilation of knowledge, bridging theoretical mastery with

practical agility.

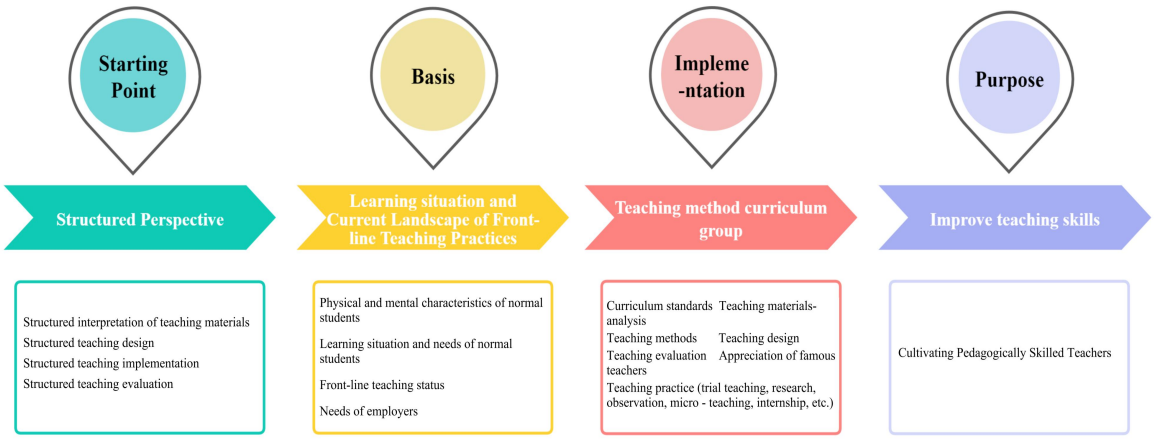

Fig. 1. Teaching model for enhancing teacher trainees' teaching skills with a cluster of pedagogy courses in a structured perspective

3.1 Taxonomy of Educational Objectives: Clarifying the Logic of a "Hierarchical and Multidimensional" Teaching Objective System

Rooted in Bloom’s Taxonomy of Educational Objectives and aligned with outcome-oriented teaching goals in talent development programs and pedagogical course clusters, this study employs structured thinking to categorize pre-service teachers’ pedagogical skill objectives into three interconnected tiers:

Cognitive Level: Mastery of foundational knowledge

Skill Level: Proficiency in instructional design and implementation

Literacy Level: Cultivation of holistic educational dispositions.

This framework establishes a spiral progression system that transitions from knowledge transmission to skill acquisition and ultimately to literacy internalization, as illustrated in Tables 1 and 2.

Table 1. "Hierarchical and three-dimensional" teaching goal system guided by the theory of taxonomy of educational goals

training level	Graduation requirements		teaching goal
A Cognitive layer	Aa Subject Literacy	Aa1 Humanities	A broad understanding of general knowledge in the sciences, humanities, social sciences, arts, and other disciplines to develop a sound knowledge base and disciplinary perspective.
		Aa2 Educational knowledge	Systematically master the basic theories and principles of education and psychology, and update the knowledge of the frontiers of the education discipline.
		Aa3 Subject knowledge	Mastery of the basic knowledge, systems, ideas and methods of the discipline.
		Aa4 Knowledge integration	Understand the value of subject integration in primary education, be able to integrate subject knowledge and transfer subject knowledge to social practice, primary school students' life practice, and form a comprehensive knowledge structure and interdisciplinary way of thinking.
	Ab Integrated Parenting	Ab1 Parenting Knowledge	To understand the physical and mental development of primary school students and the rules of education, to recognize the importance of integrated parenting, and to have the basic knowledge and skills of integrated parenting.
		Ab2 Discipline Parenting	Understand the value of discipline-based education in educating people, form the basic concepts of five education, three education, synergistic education, and ecological education, and be able to organically combine discipline-based teaching with educating people.
		Ab3 Collaborative Education	Coordinating all types of educational entities, integrating and utilizing local resources, forming a synergy of efforts to educate people, participating in the organization of thematic education, Young Pioneers' activities and club activities, educating

			and guiding students, and promoting the comprehensive and healthy development of students.
B Practice Layer	Ba Teaching Competence	Ba1 vocational skills	Proficiency in key professional skills such as Mandarin, writing skills, multimedia information technology, classroom management, and student development guidance.
		Ba2 teaching practice	To be able to plan and design teaching well according to the developmental characteristics of elementary school students and the content of the curriculum standards and teaching materials of the subjects they teach, to create teaching situations suitable for children's learning, and to have a positive teaching experience in the organization and implementation of teaching activities and the teaching process, as well as in the evaluation and continuous improvement of the teaching process.
		Ba3 Educational Technology	Good IT literacy and ability to integrate and apply modern educational technology to teaching and learning.
		Ba4 pedagogical research	A sense of research and the ability to conduct research on elementary school teaching practices to continually improve teaching skills.
	Bb class instruction	Bb1 Moral education first	To establish the concept of moral education as the first priority, to be able to recognize the importance of moral education in elementary school, and to master the contents and methods of moral education in elementary school.
		Bb2 Management Experience	To understand the duties and status of classroom teachers, to master the working rules and basic methods of classroom organization and construction, and to be able to effectively organize classroom team activities according to the characteristics of the students in the classroom.
		Bb3 class group activities	Being able to organize educational thematic activities both inside and outside the school, and being active in mental health education, and being

			able to have corresponding positive experiences.
	Bc Communication and cooperation	Bc1 Capacity for cooperation	Knowledge of teamwork, a sense of learning community and good teamwork.
		Bc2 Communication skills	Master the ways and means of communication and cooperation such as group study, thematic seminar, network sharing, etc., and have group mutual aid and cooperative learning experience.
C literacy level	Ca Code of Ethics for Teachers	Ca1 Political beliefs	Adhere to the correct political direction and consciously take on the mission of "educating people for the Party and educating talents for the country".
		Ca2 Teacher ethics awareness	They are able to carry out the Party's education policy, take moral education as their responsibility, are familiar with the policies and regulations of the Party and the State concerning basic education, have a good sense of teaching according to the law, and abide by the norms of teaching according to the law.
		Ca3 Code of ethics for teachers	To abide by the Code of Ethics for Teachers, to serve as a model for others, to aspire to be a good teacher with the "four virtues", and to be a guide for the healthy growth of students.
	Cb Educational Sentiments	Cb1 Professional identity	Be able to correctly understand the characteristics and significance of the teaching profession and primary education, love the teaching profession and the cause of primary education, and have good educational sentiments.
		Cb2 Caring for Students	To understand the laws of physical and mental development of primary school students, to respect, love and trust students in educational and teaching activities, and to create conditions and opportunities for students to grow and develop.
		Cb3 Career	Be able to comprehensively understand the meaning and significance of establishing moral education, love children, be a teacher, have humanistic and scientific background, and be a

		guide for students.
Cc Learning to Reflect	Cc1 Diligent Reflection	Possess the concept of lifelong learning and self-awareness of teachers' professional development, develop good reflective habits and reflection patterns, and clarify the direction of professional development.
	Cc2 Planned Development	To understand the dynamics of the reform and development of basic and primary education at home and abroad, and to make preliminary plans for one's own learning activities and career.
	Cc3 Reflective Improvement	Adhere to the methods of reflection and learning, reflection and action, reflection and research, reflection and development, have a certain sense of innovation, be able to use critical thinking, and learn to analyze and solve problems in education and teaching practice.

Table 2. Arrangement of pedagogical course clusters with elementary education as an example

Course Name	**Time of instruction**	**training goal**
Research on curriculum standards and teaching materials	3rd semester	Aa3 Ab2 Cc2 Ba2
course pedagogy	4th semester	Aa3 Aa4 Ab2 Ba2 Ba3 Ba4 Cc1
Instructional Design and Evaluation	5th semester	Ab2 Ba2 Cc2 Cc3
The Art of Teaching by Master Teachers	5th semester	Ba2 Ba4
educational attachment	3rd-5th semesters (4 weeks total)	Aa4 Cb1 Cc3
educational research and study	6th semester (4 weeks total)	Aa4 Ab2 Ab3 Ba4 Bb2 Bc1 Ca3 Cb2 Cc3
Educational internships	6th semester (12 weeks total)	Aa4 Ab3 Ba2 Bb1 Bb2 Ca2 Cb2 Cc1 Cc3
Comprehensive training for teachers on teaching skills	5th semester	Ba2 Cc1

3.2 The theory of "learning by doing": Establishing the Practical Logic of Enhancing Pre-Service Teachers' Pedagogical Skills through Course Clusters

Dewey's "Learning by Doing" theory underscores the critical role of experiential learning and exploration in advancing pre-service teachers' pedagogical competencies. Unlike traditional teacher training models that prioritize theoretical knowledge transmission, this theory advocates a practice-oriented paradigm, urging higher education institutions to engage students in hands-on teaching activities where they actively reflect on and synthesize practical experiences. Such an approach centers on student agency, enabling pre-service teachers to: design appropriate teaching sequences aligned with curriculum standards, select differentiated instructional strategies responsive to primary students' learning contexts, develop tiered assignments tailored to diverse learner needs. From the perspective of learning psychology and educational practice, knowledge acquired through direct participation in teaching activities exerts a more profound influence on behavioral adaptation and professional growth than passive theoretical absorption.

Guided by this theory, instructors are encouraged to adopt a facilitative role, mentoring pre-service teachers in employing scientific methods—such as observational analysis, experimental iteration, and reflective refinement—to investigate the underlying principles of effective pedagogy. This practice-based inquiry reinforces mastery of instructional techniques and fosters innovative thinking, preparing future educators to navigate complex and dynamic classroom environments with confidence and adaptability. Ultimately, this aligns with the heightened demands of the new era for teachers' comprehensive, adaptive competencies.

4. Practical Strategies

Building on Bloom's Taxonomy of Educational Objectives and Dewey's "Learning by Doing" theory, this study integrates the openness, generativity, contextualization, and plurality inherent in pedagogical course clusters (Chen & Chen, 2024). By synthesizing the theoretical and practical interconnections of these courses, we propose a "four-pronged teaching framework" to enhance pre-service teachers' pedagogical skills. Using the Primary Education program at Neijiang Normal University as a case study, this framework involves: curriculum Resource Integration, consolidating fragmented course materials into cohesive pedagogical tools; content Modernization, aligning instruction with contemporary educational

policies and front-line teaching demands; methodological Innovation, shifting from lecture-based to interactive, inquiry-driven pedagogies; diversified Assessment, implementing multi-dimensional evaluation systems to capture holistic skill development.

4.1 Goal-Oriented Instruction: Addressing Student Confusion

To systematically enhance pre-service teachers' pedagogical skills, the instructional team adopts a goal-oriented cyclical framework:

Pre-Class Needs Assessment
Conduct baseline surveys (e.g., student background questionnaires distributed via class representatives) to map prior knowledge, skill gaps, and learning needs.

In-Class Structured Engagement
Implement interactive lectures, collaborative activities, micro-teaching simulations, and formative assessments to achieve predefined objectives.

Post-Class Resource Extension
Provide curated digital resources (e.g., scholarly articles, exemplary lesson videos) for self-directed skill reinforcement.

Iterative Feedback Integration
Collect multi-source feedback through post-class interviews, structured surveys, and representative debriefs to refine instructional content, methods, and evaluation systems.

This closed-loop system ensures alignment between teaching inputs and competency outcomes while fostering adaptive pedagogical responsiveness.

4.2 Integrating Teaching Content for Systematic Instruction

Guided by the theory-practice integration inherent in pedagogical courses, instructors align with subject-specific curriculum standards, graduation competency benchmarks, and the hierarchical-multidimensional objective system to systematically consolidate core knowledge across six course categories. By thematically organizing content according to instructional timelines and implementing coordinated teaching protocols, the faculty team ensures: unified pacing through collaborative syllabus design, interdisciplinary coherence via regular

consultations and role-specific module assignments, continuous efficacy enhancement through iterative feedback loops and adaptive pedagogical refinements.

A coordinated instructional workflow is implemented as follows: In the early stage, students complete compulsory general education courses, subject foundation courses, and professional development modules. They then gain initial familiarity with subject-specific curriculum standards and textbook analysis through teacher education courses. This is followed by in-depth study of subject teaching methodologies, instructional design, and evaluation systems. Subsequently, they critically analyze the teaching artistry of front-line master educators and validate their competencies through comprehensive pedagogical training (e.g., micro-teaching simulations, skills competitions, teaching demonstrations). Finally, reflective refinement during educational internships and practicums ensures the seamless application of acquired skills in professional settings.

4.3 Infusing Ideological-Political Education and Enriching Instructional Methods

Leveraging the unique characteristics of primary school teaching and the student demographic, instructors integrate ideological-political education into daily pedagogy. For example, in Instructional Design and Evaluation for Primary School Chinese Language Education, foundational modules introduce students to the disciplinary nature of Chinese language education. Literacy and writing design activities cultivate cultural confidence and professional ethos, while embedding socialist core values to shape ethical dispositions. By fostering professional identity and social responsibility, this approach strengthens pre-service teachers' educational convictions and commitment to China's educational modernization, aligning with the national emphasis on educator excellence.

To transcend traditional lecture-dominated methods, instructors adopt two innovative models: First, School-Community Collaborative Teaching (Figure 2): Bridges classroom instruction with real-world educational contexts through partnerships with local schools. Second, Blended Online-Offline Pedagogy (Figure 3): Combines synchronous virtual seminars with asynchronous multimedia resources to enhance engagement and flexibility.

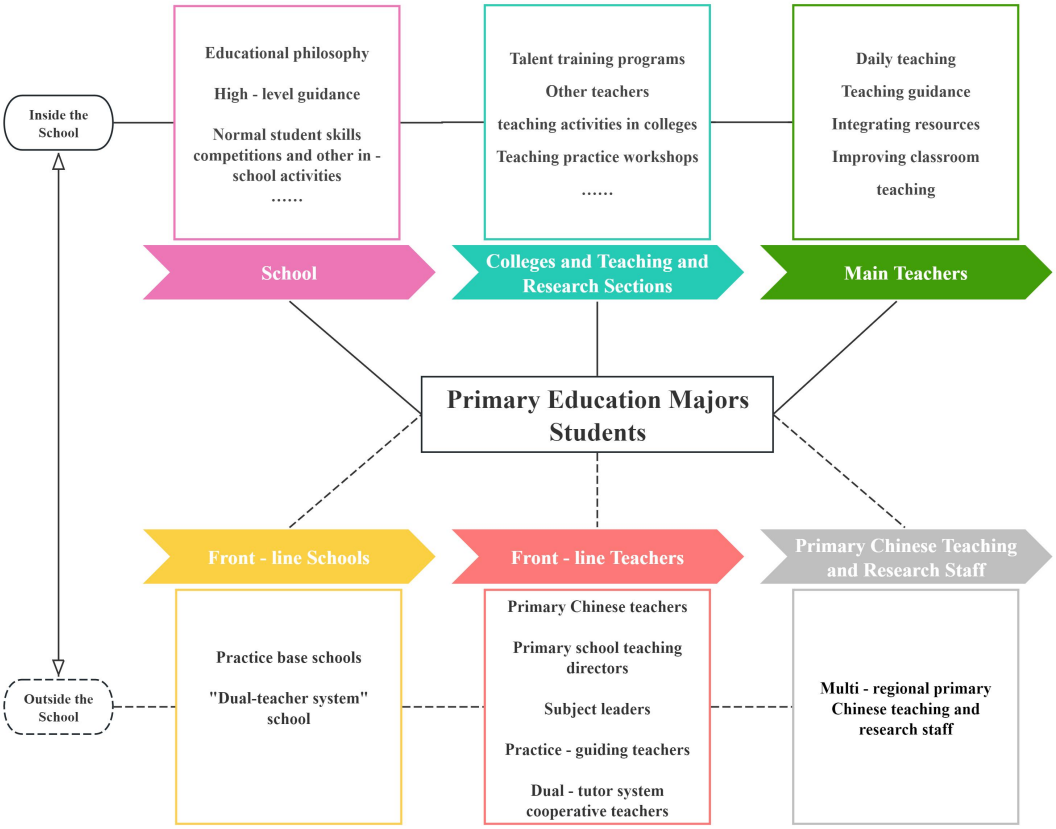

Figure 2. School-Community Collaborative Teaching Model

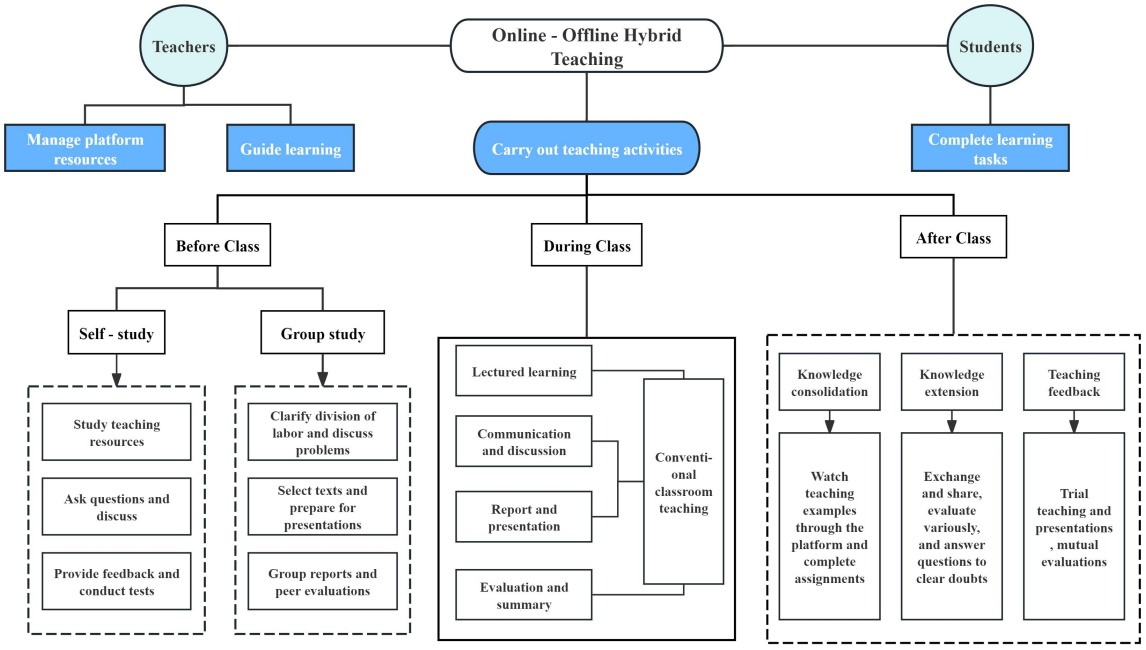

Figure 3. Blended Online-Offline Teaching Model

4.4 Implementing Comprehensive Evaluation to Assess Pedagogical Effectiveness

Drawing on CIPP model (Context, Input, Process, Product), a multi-dimensional evaluation system tailored to primary education pre-service teachers is established:

Context Evaluation:

Aligns program objectives with societal needs by analyzing employer expectations and front-line teaching demands in the new era.

Input Evaluation:

Assesses institutional readiness, including faculty expertise in pedagogical course clusters, availability of academic resources, and partnerships with educational platforms.

Process Evaluation:

Monitors skill development across domains: foundational literacy, innovative practice, and interdisciplinary integration during training.

Product Evaluation:

Measures outcomes through summative assessments, formative performance tracking, and teaching simulations (e.g., micro-lessons, practicum evaluations).

5. Conclusion

In conclusion, adopting a structured, perspective-driven approach to developing pre-service teachers' pedagogical competencies through course clusters requires ongoing innovation from teacher education institutions and faculty members alike. This approach must be accompanied by sustained scholarly inquiry into how best to prepare future educators capable of responding to the shifting expectations of the "Double New" reform—namely, the 2022 *Compulsory Education Curriculum Framework* and updated subject standards—and advancing China's broader educational modernization goals.

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