

University–Kindergarten Collaboration and the Development of Dual-Qualified Preschool Teachers: Evidence from a Mixed-Methods Study in Hebei Province, China

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Abstract: Preparing preschool teachers who can effectively integrate theoretical knowledge with classroom practice remains a major challenge in early childhood teacher education worldwide. In China, university–kindergarten collaboration has emerged as a key strategy for strengthening theory–practice integration through structured practicum experiences, mentorship systems, and institutional partnerships. However, empirical evidence on the effectiveness of such collaboration models remains limited at the regional level. This study investigates the role of university–kindergarten collaboration in developing dual-qualified preschool teachers in Hebei Province, China. A mixed-methods research design was employed, combining survey data from university faculty members, kindergarten teachers, administrators, and preschool teacher trainees (n = 210) with semi-structured interviews and classroom observations. Quantitative results revealed a strong positive relationship between collaboration mechanisms and dual-qualified teacher competency development ($r = 0.62$, $p < 0.001$), while practical training exposure significantly enhanced teaching effectiveness. Qualitative findings further highlighted the importance of mentorship support, curriculum alignment, and sustained practicum engagement in strengthening professional identity formation among trainees. Despite these positive outcomes, institutional coordination challenges and regional resource disparities affected collaboration consistency. The study provides empirical evidence supporting collaboration-based teacher-training models and offers policy-relevant implications for strengthening preschool teacher education in China and comparable contexts.

Keywords: Dual-qualified preschool teachers, university–kindergarten collaboration, teacher education reform, early childhood education, Hebei Province, theory–practice integration, mixed-methods research

1. Introduction

Improving the quality of early childhood education (ECE) has become a strategic priority across education systems worldwide due to its long-term influence on children's cognitive, social, and emotional development (Friedman, 2016; Barnett & Frede, 2017). A growing body of research indicates that teacher competence is one of the most significant factors affecting learning outcomes in early childhood settings (Darling-Hammond, 2006; Avalos, 2011). Consequently, strengthening preschool teacher preparation has become central to education reform initiatives internationally (Darling-Hammond, 2017). One persistent challenge in preschool teacher education concerns the gap between theoretical coursework provided by universities and the practical competencies required for effective classroom teaching. Traditional training models often emphasise academic knowledge while providing limited opportunities for sustained teaching practice in authentic learning environments. As a result, newly qualified teachers may experience difficulties translating pedagogical theory into instructional practice (Korthagen, 2010). Addressing this theory–practice divide has led to increasing attention to the preparation of dual-qualified preschool teachers, defined as educators who possess both strong theoretical understanding and well-developed practical teaching. University–kindergarten collaboration has emerged as an important institutional mechanism for supporting the development of such teachers. Through practicum placements, mentorship arrangements, joint supervision systems, and coordinated curriculum implementation, collaborative partnerships enable student teachers to engage in structured experiential learning opportunities that strengthen professional competence and classroom readiness (Gao & Xu, 2021; Chen & Xu, 2022). These collaboration models reflect broader international shifts toward partnership-based teacher-education systems designed to integrate theory and practice more effectively (Cochran-Smith & Lytle, 2009; Darling-Hammond, 2017).

In China, preschool education reform has accelerated significantly in recent decades in response to national efforts to improve early childhood education access and quality. Policy initiatives emphasise strengthening teacher-education systems through institutional cooperation between universities and kindergartens, particularly by expanding practicum opportunities and improving mentorship-based training arrangements (Zhu & Zhang, 2022; Chen et al., 2023). Within this policy environment, university-affiliated training kindergartens and collaborative practicum programs have become key components of preschool teacher preparation.

Despite these developments, empirical research examining the effectiveness of university–kindergarten collaboration in developing dual-qualified preschool teachers remains limited at the provincial level. Differences in institutional capacity, mentorship availability, and resource distribution between urban and rural educational settings

continue to influence collaboration outcomes across regions (Zhang & Liu, 2020; Chen et al., 2023). Hebei Province provides an important case for examining how collaborative training models operate within diverse educational contexts characterised by variations in infrastructure support and institutional coordination. To address this gap, the present study investigates how university–kindergarten collaboration contributes to the development of dual-qualified preschool teachers in Hebei Province using a mixed-methods research design integrating quantitative and qualitative evidence (Creswell, 2014; Creswell & Plano Clark, 2017). Quantitative findings demonstrate strong positive perceptions of collaboration effectiveness and reveal a statistically significant relationship between collaboration mechanisms and teacher competency development ($r = 0.62$, $p < 0.001$). Qualitative findings further explain how practicum exposure, mentorship engagement, and curriculum alignment support professional identity formation and teaching effectiveness among preschool teacher trainees (Lave & Wenger, 1991; Vygotsky, 1978). By providing empirical evidence on collaboration mechanisms and training outcomes, this study contributes to ongoing discussions on strengthening partnership-based teacher-education systems and offers practical implications for improving preschool teacher preparation in China.

1.1 Conceptual Framework

The conceptual framework of this study explains how university–kindergarten collaboration supports the development of dual-qualified preschool teachers and improves teacher-training outcomes through the integration of theoretical preparation and practicum-based experiential learning. Drawing on Experiential Learning Theory (Kolb, 1984) and Collaborative Learning Theory (Vygotsky, 1978), the framework emphasises that teacher competence develops through structured interaction between universities, which provide research-based pedagogical knowledge, and kindergartens, which offer authentic classroom environments for practice-based professional learning. This interaction reflects principles of situated learning and communities of practice, which highlight the importance of participation in real professional environments for developing teaching competence and identity (Lave & Wenger, 1991; Wenger, 1991; Daniels, 2001). Within this collaborative system, dual-qualified teachers play a mediating role by facilitating the translation of theory into practice and strengthening reflective teaching and instructional effectiveness, consistent with research emphasising the importance of practice-based teacher education and professional learning communities in strengthening instructional competence (Darling-Hammond, 2017; Avalos, 2011). The framework further highlights that sustained institutional partnerships enhance professional identity formation, instructional competence, and student-centred teaching approaches, ultimately improving early childhood education outcomes through structured collaboration between teacher-education institutions and practice settings (Cochran-Smith & Lytle, 2009). The relationships among collaboration mechanisms,

competency development, and teacher-training outcomes are illustrated in Figure 1, which presents the study's integrated conceptual model guiding the research design and analysis.

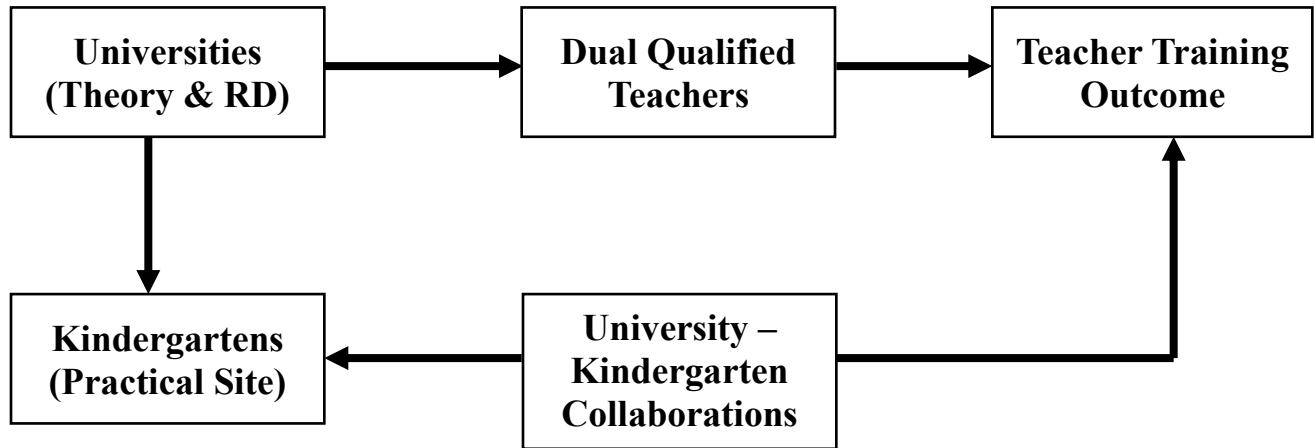


Figure 1. Conceptual Framework

2. Literature Background

2.1 Dual-Qualified Preschool Teachers and the Theory–Practice Integration Challenge

The preparation of preschool teachers capable of integrating theoretical understanding with effective classroom practice has become a central concern in early childhood teacher education internationally. Research consistently demonstrates that teacher quality is strongly associated with children's developmental outcomes, making the design of effective teacher-training systems a strategic priority for education policymakers and institutions (Darling-Hammond, 2006; Barnett & Frede, 2017). Within this context, the concept of dual-qualified preschool teachers has emerged as an important framework for strengthening teacher preparation.

Dual-qualified teachers are typically characterised by their ability to combine pedagogical theory with practical instructional competence developed through structured classroom experience. Such teachers are better positioned to translate theoretical knowledge into developmentally appropriate teaching strategies and responsive classroom practice. Studies further suggest that dual-qualified teachers contribute not only to improved curriculum delivery but also to the development of reflective practice and professional learning communities within early childhood education settings (Avalos, 2011). These competencies are particularly important in preschool contexts, where teaching effectiveness depends heavily on the integration of child development theory with flexible pedagogical implementation.

Despite recognition of the importance of dual-qualified teachers, many teacher-education programs continue to struggle with balancing academic coursework and practicum experience. Traditional university-centred preparation models often emphasise theoretical instruction while providing limited opportunities for sustained classroom engagement. As a result, graduates may enter the profession with insufficient confidence in applying pedagogical knowledge in authentic teaching environments (Korthagen, 2010; Darling-Hammond, 2017). Addressing this imbalance requires institutional collaboration between teacher-education providers and early childhood education centres capable of supporting structured experiential learning opportunities that strengthen practice-based competence and professional identity formation (Cochran-Smith & Lytle, 2009; Gao & Xu, 2021).

2.2 University–Kindergarten Collaboration in Teacher Preparation

University–kindergarten collaboration represents an increasingly important mechanism for improving preschool teacher preparation by strengthening the connection between theoretical instruction and professional practice. Such collaboration typically involves practicum placements, mentorship arrangements, joint supervision systems, and curriculum coordination between higher-education institutions and early childhood education centres (Chen & Xu, 2022; Gao et al., 2022).

Collaborative teacher-training partnerships allow student teachers to apply theoretical knowledge in real classroom settings while receiving guidance from both university instructors and experienced kindergarten mentors. This dual support structure enhances opportunities for reflective learning and professional skill development consistent with practice-based teacher education models and communities of professional learning (Cochran-Smith & Lytle, 2009; Lave & Wenger, 1991). Research has shown that structured collaboration between universities and practice institutions contributes positively to teacher competence development, instructional confidence, and professional identity formation (De Jong et al., 2019).

In addition, collaboration facilitates curriculum alignment between teacher-education programs and the realities of preschool teaching environments. By ensuring that academic coursework reflects classroom practice requirements, collaborative training arrangements help reduce the theory–practice gap that often characterises conventional teacher-education systems (Darling-Hammond, 2017; Korthagen, 2010). However, the effectiveness of such collaboration depends heavily on institutional coordination mechanisms, mentor availability, and administrative support structures. Differences in organisational priorities between universities and kindergartens may limit collaboration effectiveness unless supported by coherent policy frameworks and shared training objectives (Chen & Wang, 2021; Zhu & Zhang, 2022)..

2.3 Experiential Learning and Mentorship in Collaborative Training Models

Experiential learning plays a central role in collaborative teacher-training models by enabling student teachers to develop professional competencies through direct participation in classroom activities. According to Experiential Learning Theory, professional knowledge is constructed through interaction between conceptual understanding and reflective practice in authentic learning environments (Kolb, 1984; Dewey, 1931). Practicum placements supported by structured mentorship arrangements provide opportunities for student teachers to observe teaching practices, experiment with instructional strategies, and develop classroom-management skills under professional supervision.

Sustained engagement in teaching environments also contributes to the development of professional identity and confidence among teacher trainees through participation in authentic professional communities (Lave & Wenger, 1991; Wenger, 1991). Mentorship systems are particularly important in early childhood teacher education because they provide continuous feedback during practicum experiences and support reflective learning processes central to practice-based teacher development (Darling-Hammond, 2017; Avalos, 2011). Effective mentors support lesson planning, classroom interaction strategies, and reflective evaluation processes, thereby strengthening trainees' ability to integrate theoretical knowledge with practice-based learning experiences. Nevertheless, prior research indicates that mentorship effectiveness depends on workload conditions, institutional incentives, and coordination between universities and partner institutions (Chen & Wang, 2021). Where mentorship structures are weak or inconsistently implemented, collaboration outcomes may be uneven across training contexts.

2.4 University–Kindergarten Collaboration in the Chinese Policy Context

In China, strengthening preschool teacher quality has become a major priority within national education reform initiatives aimed at expanding access to high-quality early childhood education (Zhu & Zhang, 2022; Chen et al., 2023). Policy frameworks increasingly emphasise collaboration between universities and kindergartens as a mechanism for improving teacher-training outcomes and supporting the development of practice-oriented professional competencies (Chen & Xu, 2022; Gao et al., 2022). University-affiliated training kindergartens and partnership-based practicum systems have been widely promoted as institutional platforms for integrating theoretical coursework with classroom experience, reflecting broader national efforts to strengthen practice-based teacher preparation and address shortages of well-prepared preschool teachers (Zhu & Zhang, 2022). Despite these policy developments, empirical research examining collaboration effectiveness remains uneven across regions. In particular, provincial-level implementation differences may influence the availability of practicum opportunities, mentorship quality, and institutional coordination mechanisms supporting collaborative training models (Zhang & Liu, 2020; Chen et al., 2023). Hebei

Province represents an important regional context for examining these dynamics due to its combination of expanding preschool education provision and variations in institutional resources between urban and rural areas. Investigating collaboration practices within this context provides insight into how partnership-based teacher-training systems operate under diverse educational conditions and contributes evidence supporting the development of context-sensitive collaboration frameworks (Gao & Xu, 2021; Chen & Wang, 2021).

3. Research Questions

This study investigates the role of university–kindergarten collaboration in developing dual-qualified preschool teachers in Hebei Province, China. The research is guided by four research questions derived directly from the study objectives:

RQ1: What are the existing models of university–kindergarten collaboration in Hebei Province, and how do they integrate theoretical and practical training for preschool teachers?

RQ2: What are the key challenges universities and kindergartens face in developing dual-qualified preschool teachers?

RQ3: How effective are these collaborative models in enhancing teacher capacity and improving student learning outcomes?

RQ4: What framework can be developed to strengthen university–kindergarten collaboration and improve teacher training outcomes in Hebei Province?

Together, these research questions structure the investigation of collaboration mechanisms, implementation challenges, training effectiveness, and framework development for strengthening partnership-based preschool teacher education in the regional context of Hebei Province.

4. Research Methodology

4.1 Research Design

This study adopted a mixed-methods research design to investigate the role of university–kindergarten collaboration in developing dual-qualified preschool teachers in Hebei Province, China. The integration of quantitative and qualitative approaches enabled a comprehensive examination of collaboration mechanisms, training effectiveness, and institutional challenges (Creswell, 2014; Creswell & Plano Clark, 2017). The quantitative component provided statistical evidence regarding the relationships between collaboration practices, practical training exposure, and the development of dual-qualified teacher competencies. The qualitative component complemented these findings by exploring how collaboration operates in practice and how participants experience partnership-based teacher-training processes. Combining both approaches

strengthened the explanatory power of the study by allowing triangulation between numerical trends and contextual interpretations, thereby improving the robustness and credibility of the findings (Greene, 2007; Denzin & Lincoln, 2011; Creswell & Creswell, 2018).

4.2 Participants and Sampling

The study was conducted in Hebei Province, a region characterized by rapid expansion in preschool education and variation in institutional resources between urban and rural settings, making it an appropriate context for examining collaboration mechanisms between universities and kindergartens under diverse educational conditions (Zhang & Liu, 2020; Zhu & Zhang, 2022). Quantitative data were collected through structured questionnaires administered to three key participant groups involved in preschool teacher preparation: university faculty members, kindergarten teachers and administrators, and preschool teacher trainees. A total of 210 valid responses were obtained and included in the statistical analysis. These participant groups were selected because they represent the primary stakeholders responsible for implementing collaboration-based teacher-training models, allowing the study to capture multiple institutional perspectives on collaboration effectiveness and training outcomes (Cohen, Manion, & Morrison, 2018; Fowler, 2014). Qualitative data were collected through semi-structured interviews and observational evidence from practicum environments. These sources provided deeper insight into mentorship practices, curriculum alignment processes, and institutional coordination mechanisms supporting collaborative teacher training, thereby strengthening interpretive depth through methodological triangulation (Creswell & Poth, 2018; Angrosino, 2007; Bowen, 2009).

4.3 Data Collection Instruments

This study employed a mixed-methods research design using multiple complementary instruments to examine the effectiveness of university–kindergarten collaboration in preschool teacher preparation (Creswell, 2014; Creswell & Plano Clark, 2017). Quantitative data were collected through a structured questionnaire measuring participants’ perceptions of collaboration mechanisms, practical training exposure, dual-qualified teacher competency development, teaching effectiveness, and institutional support conditions. Survey-based data collection is widely recognised as appropriate for examining perceptions and relationships among educational variables across multiple stakeholder groups (De Vaus, 2014; Fowler, 2014). Qualitative data were obtained through semi-structured interviews and classroom observations, which provided deeper insights into mentorship experiences, institutional coordination processes, theory–practice integration, and professional identity development among trainees (Creswell & Poth, 2018; Angrosino, 2007). Reliability testing confirmed the internal consistency of the questionnaire, while methodological triangulation across surveys, interviews, and

observations strengthened construct validity and enhanced the credibility of the findings (Denzin & Lincoln, 2011; Creswell & Creswell, 2018). Quantitative data were analysed using descriptive statistics, Pearson correlation, and simple linear regression to examine relationships between collaboration variables and teacher-training outcomes, consistent with established statistical procedures in educational research (Field, 2013; Field, 2018). Qualitative data were analysed using thematic analysis to identify recurring patterns related to collaboration effectiveness (Braun & Clarke, 2006; Corbin & Strauss, 2015). Ethical procedures were followed throughout the study to ensure voluntary participation, confidentiality, anonymity, and informed consent in accordance with established research ethics standards in educational research (Cohen, Manion, & Morrison, 2018).

5. Data Analysis and Discussion

The empirical findings of the study examining the effectiveness of university–kindergarten collaboration in supporting the preparation of dual-qualified preschool teachers in Hebei Province, China. The work integrates quantitative survey results with qualitative evidence derived from interviews and classroom observations to provide a comprehensive interpretation of collaboration mechanisms within preschool teacher-training systems. Through this mixed-methods analytical approach, the study evaluates how institutional collaboration contributes to competency development, teaching effectiveness, and professional identity formation among teacher trainees.

5.1 Quantitative Data Analysis

5.1.1 Quantitative Findings on Collaboration and Dual-Qualified Teacher Development

The quantitative analysis first examined the relationship between university–kindergarten collaboration and the development of dual-qualified preschool teachers. Pearson correlation analysis revealed a strong positive relationship between these variables ($r = 0.62$, $p < 0.001$), indicating that higher levels of institutional collaboration are associated with stronger integration of theoretical knowledge and practical teaching competencies among trainees (see Table 1). This result demonstrates that collaboration mechanisms function as a central component of competency-based teacher preparation rather than as a supplementary training activity.

Table 1. Correlation between University–Kindergarten Collaboration and Dual-Qualified Teacher Development (n = 210)

| Variables | r | p-value | Interpretation |
|-----------|---|---------|----------------|
|-----------|---|---------|----------------|

| | | | |
|--|------|-------|------------------------------------|
| University–Kindergarten Collaboration ↔ Dual- Qualified Teacher Development | 0.62 | 0.000 | Strong positive relationship |
|--|------|-------|------------------------------------|

To further examine the predictive strength of collaboration mechanisms, a simple linear regression analysis was conducted. The results confirmed that university–kindergarten collaboration significantly predicts the development of dual-qualified preschool teachers ($\beta = 0.58$, $p < 0.001$), explaining approximately 38% of the variance in competency development ($R^2 = 0.38$) (see Table 2).

Table 2. Regression Analysis Predicting Dual-Qualified Teacher Development

| Predictor | β | t-value | p-value |
|---------------------------------------|---------|---------|---------|
| University–Kindergarten Collaboration | 0.58 | 10.94 | 0.000 |

| Model Statistics | Value |
|------------------|-------|
| R ² | 0.38 |
| F | 119.7 |
| Sig. | 0.000 |

This represents a substantial explanatory contribution within educational research contexts and provides strong empirical support for Hypothesis H1, confirming that structured institutional collaboration plays a critical role in strengthening teacher preparedness through integrated theory–practice learning environments.

5.1.2 Quantitative Findings on Practical Training Exposure and Teaching Effectiveness

The study also examined the influence of practical training exposure on teaching effectiveness among preschool teacher trainees. Pearson correlation analysis demonstrated a statistically significant moderate-to-strong positive relationship between practicum exposure and teaching effectiveness ($r = 0.59$, $p < 0.001$), suggesting that increased classroom engagement, mentorship interaction, and practicum participation significantly enhance instructional performance during training (see Table 3). These findings highlight the importance of structured practicum experiences as a key mechanism through which teacher trainees translate pedagogical knowledge into classroom practice.

Table 3. Correlation between Practical Training Exposure and Teaching Effectiveness (n = 210)

| Variables | r | p-value | Interpretation |
|--|------|---------|--|
| Practical Training Exposure ↔ Teaching Effectiveness | 0.59 | 0.000 | Moderate to strong positive relationship |

Regression analysis further confirmed that practical training exposure significantly predicts teaching effectiveness ($\beta = 0.55$, $p < 0.001$), explaining approximately 35% of the variance in instructional performance outcomes ($R^2 = 0.35$) (see Table 4).

Table 4. Regression Analysis Predicting Teaching Effectiveness

| Predictor | β | t-value | p-value |
|-----------------------------|---------|---------|---------|
| Practical Training Exposure | 0.55 | 9.87 | 0.000 |

| Model Statistics | Value |
|------------------|-------|
| R^2 | 0.35 |
| F | 97.4 |
| Sig. | 0.000 |

This result provides strong empirical support for Hypothesis H2 and demonstrates that practicum-based training experiences represent a major determinant of effective preschool teacher preparation within collaboration-based training systems.

5.1.3 Summary of Hypothesis Testing Results

Taken together, the hypothesis testing results provide strong quantitative evidence supporting the conceptual framework guiding the study. The statistically significant relationships among university–kindergarten collaboration, practical training exposure, dual-qualified teacher development, and teaching effectiveness are summarised in Figure 2.

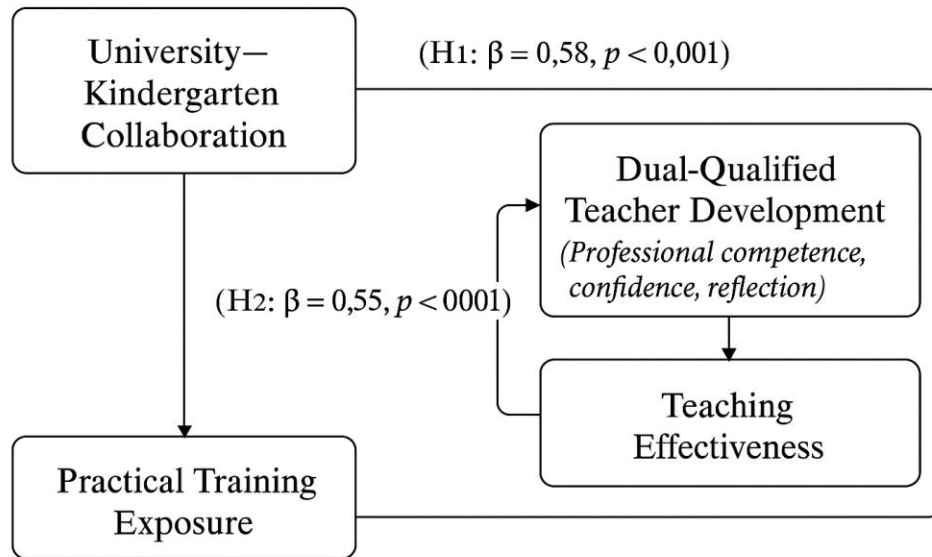


Figure 2. Conceptual Relationships Tested in the Study

The figure, illustrates the empirically tested relationships between university–kindergarten collaboration, practical training exposure, dual-qualified teacher development, and teaching effectiveness. The arrows represent statistically significant relationships identified through regression analysis, corresponding to Hypotheses H1 and H2.

5.2 Qualitative Findings

5.2.1 Qualitative Findings on Collaboration Mechanisms in Practice

Beyond the statistical findings, qualitative evidence obtained from interviews and classroom observations provided important explanatory insight into how collaboration mechanisms operate across institutional contexts. Participants reported that collaboration between universities and kindergartens is primarily implemented through structured practicum placements, joint supervision arrangements, mentorship-supported classroom engagement, and curriculum alignment between academic coursework and field-based teaching experiences. These collaborative mechanisms enable teacher trainees to apply theoretical knowledge within authentic classroom environments, thereby strengthening their pedagogical skills, classroom management capacity, and instructional confidence.

The qualitative findings further indicated that mentorship plays a particularly important role in facilitating theory–practice integration during practicum placements. Guidance from experienced kindergarten teachers supported trainees in developing instructional strategies, reflecting on teaching decisions, and adapting pedagogical approaches to real classroom conditions. This mentorship support contributed not only to skill development

but also to the strengthening of trainees' professional identity as emerging preschool educators.

5.2.2 Institutional Challenges Affecting Collaboration Effectiveness

Although the findings confirmed the overall effectiveness of collaboration-based teacher preparation, the study also identified several institutional and organisational challenges influencing the consistency of collaboration implementation. Participants reported that time constraints faced by mentor teachers, workload pressures within kindergarten settings, and limited institutional incentives sometimes reduced the effectiveness of supervision during practicum placements. Differences in resource availability between urban and rural kindergarten environments were also identified as factors affecting the quality and consistency of training experiences across placement contexts. In addition, misalignment between university academic schedules and kindergarten operational routines occasionally created coordination difficulties that affected practicum implementation efficiency. These findings suggest that collaboration effectiveness depends not only on pedagogical design but also on administrative coordination and policy-level support structures.

5.2.3 Professional Identity Development Among Preschool Teacher Trainees

Another important contribution of the findings concerns the role of collaboration in supporting professional identity formation among preschool teacher trainees. Sustained participation in classroom-based practicum environments enabled trainees to transition gradually from student learners to professional educators by strengthening their confidence, reflective capacity, and sense of responsibility for instructional practice. This process demonstrates that collaboration mechanisms contribute not only to competency acquisition but also to the development of professional commitment and teaching identity within early childhood education contexts.

5.3 Integrated Interpretation of Quantitative and Qualitative Findings

Overall, the findings presented in work demonstrate that university–kindergarten collaboration represents an empirically supported and pedagogically meaningful training model for preparing dual-qualified preschool teachers in Hebei Province. The integration of quantitative and qualitative evidence confirms that collaboration mechanisms strengthen theory–practice integration, enhance teaching effectiveness, and support professional identity development among trainees, while also revealing institutional coordination challenges that should be addressed to further improve collaboration effectiveness across diverse training environments. To illustrate how the quantitative relationships identified through correlation and regression analyses align with the qualitative themes emerging from interviews and classroom observations, an integrated mixed-methods findings model is presented in Figure 3, summarising the

interaction between collaboration mechanisms, practicum exposure, competency development, and teaching effectiveness.

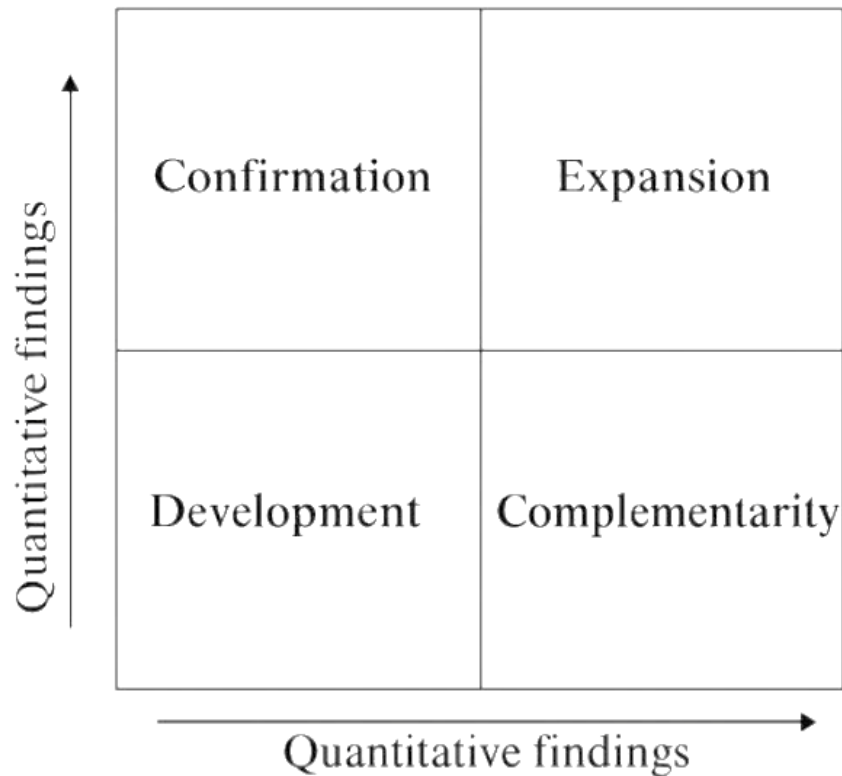


Figure 3. Integrated Mixed-Methods Findings Model

5.4 Discussion of Findings in Relation to the Research Questions

This section interprets the study's findings in relation to the research questions guiding the investigation and integrates both quantitative and qualitative evidence to explain how university–kindergarten collaboration contributes to the preparation of dual-qualified preschool teachers in Hebei Province. The discussion situates the empirical results within the broader literature on experiential learning, collaboration-based teacher preparation, and theory–practice integration in early childhood teacher education. With respect to Research Question 1, which examined the existing models of university–kindergarten collaboration and their role in integrating theoretical and practical training, the findings indicate that collaboration in Hebei Province is primarily structured around practicum-based and mentorship-supported partnership models aligned with the nationally promoted “3+1” teacher-training framework. Quantitative results demonstrated strong levels of curriculum alignment, joint supervision arrangements, and communication between universities and kindergartens, while qualitative findings confirmed that coordinated practicum placements and shared mentoring responsibilities

enabled trainees to apply theoretical knowledge within authentic classroom environments. These results support experiential learning perspectives emphasising the importance of structured institutional partnerships in bridging theory and practice. At the same time, the study identified differences in implementation quality between urban and rural kindergarten settings, reflecting variations in mentoring capacity and institutional resources. These contextual differences highlight the need for more balanced collaboration structures across training environments. The integrated relationships among collaboration mechanisms, practicum engagement, and competency development identified through the mixed-methods analysis are illustrated in Figure 4, which summarises how institutional coordination supports theory–practice integration within collaboration-based teacher preparation. More broadly, the findings demonstrate that collaboration between universities and kindergartens functions not only as an organisational arrangement for practicum placement but also as a pedagogical mechanism supporting competency development, teaching effectiveness, and professional identity formation among preschool teacher trainees. The combined quantitative and qualitative evidence confirms that structured collaboration strengthens experiential learning opportunities and enhances the development of dual-qualified teachers, while also revealing institutional coordination challenges that influence collaboration consistency across training contexts.

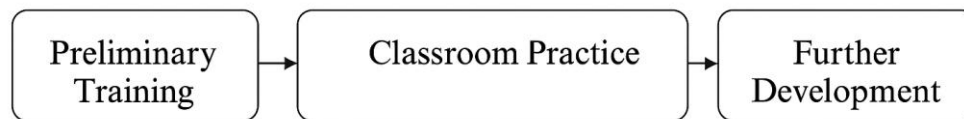


Figure 4. Teacher Development Process Flow

5.5 Discussion in Relation to the Theoretical Framework

The study's findings strongly support the theoretical framework underpinning the research, particularly Experiential Learning Theory, Sociocultural Theory, and the Theory–Practice Integration Model. The results demonstrate that university–kindergarten collaboration facilitates the development of dual-qualified preschool teachers through structured practicum experiences, mentorship-supported learning, and coordinated institutional partnerships.

Consistent with Experiential Learning Theory, trainees developed professional competence through direct classroom engagement, reflection, and the application of theoretical knowledge in authentic teaching contexts. The findings also align with Sociocultural Theory, highlighting the importance of mentorship, guided participation, and collaborative learning environments in supporting teacher development within

institutional partnerships. In addition, the study confirms the relevance of the Theory–Practice Integration Model, showing that curriculum alignment, coordinated supervision, and structured practicum placements effectively reduce the gap between university coursework and classroom practice. Taken together, these perspectives provide a coherent theoretical explanation of how collaboration-based training models support competency development and professional identity formation among preschool teachers, reinforcing the conceptual foundation of the study.

6. Conceptual Contribution

This study makes several important conceptual contributions to the field of early childhood teacher education by providing empirical evidence on how university–kindergarten collaboration supports the development of dual-qualified preschool teachers within a regional Chinese context. The findings extend existing research by demonstrating that dual qualification is not only an individual professional attribute but also an outcome shaped by institutional collaboration structures, mentorship systems, and practicum-based experiential learning opportunities. The study further contributes to collaboration-based teacher education literature by confirming that structured partnerships between universities and kindergartens function as pedagogically meaningful learning environments that strengthen theory–practice integration. In particular, the results highlight the central role of mentorship-supported practicum experiences and coordinated supervision in facilitating competency development through guided participation in authentic teaching contexts.

Another important contribution lies in the study’s regional focus on Hebei Province, which provides context-sensitive empirical evidence on how collaboration mechanisms operate within diverse institutional environments characterised by differences in resource availability between urban and rural settings. This regional perspective enhances the international relevance of the findings by demonstrating how collaboration-based training models can be adapted to varying educational conditions rather than implemented as uniform policy structures. The study also strengthens theoretical understanding of theory–practice integration in early childhood teacher education by showing how experiential learning and sociocultural interaction jointly support professional competence development through structured practicum engagement and mentorship relationships. Finally, by identifying enabling conditions such as curriculum alignment, mentorship quality, and sustained practicum exposure, as well as implementation challenges related to institutional coordination and resource disparities, the study provides a practical framework for improving collaboration-based teacher-training systems. Together, these contributions extend current knowledge on partnership-based teacher education and support the development of more effective models for preparing dual-qualified preschool teachers.

7. Conclusion

This study investigated the role of university–kindergarten collaboration in supporting the development of dual-qualified preschool teachers in Hebei Province, China, using a mixed-methods approach integrating quantitative and qualitative evidence. The findings provide strong empirical support for collaboration-based teacher-training models as effective mechanisms for strengthening theory–practice integration in early childhood teacher education. Statistical results confirmed a significant positive relationship between institutional collaboration and teacher competency development ($r = 0.62$, $p < 0.001$), while practicum exposure was shown to substantially improve teaching effectiveness. Qualitative evidence further highlighted the importance of mentorship-supported training, curriculum alignment, and sustained classroom engagement in shaping trainees' professional identity. At the same time, institutional coordination challenges and regional disparities in resources were identified as factors affecting collaboration consistency. Overall, the study contributes regionally grounded empirical evidence to international teacher-education research and offers policy-relevant insights for strengthening collaboration frameworks through improved mentorship systems, institutional coordination, and equitable practicum opportunities across training contexts.

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Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

- Angrosino, M. (2007). *Doing ethnographic and observational research*. SAGE Publications.
- Avalos, B. (2011). Teacher professional development in teaching and teacher education over ten years. *Teaching and Teacher Education*, 27(1), 10-20.
- Barnett, W. S., & Frede, E. (2017). Early childhood teacher education accreditation and its impact on classroom management and pedagogy. *Journal of Early Childhood Research*, 19(3), 234–256.
- Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2), 27-40.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Bryman, A. (2012). *Social research methods* (4th ed.). Oxford University Press.
- Bryman, A. (2016). *Social research methods* (5th ed.). Oxford University Press.

- Chen, J. (2019). Enhancing professional development through collaboration. *Journal of Teacher Education*, 42(1), 12–34.
- Chen, J., et al. (2023). Challenges in implementing hands-on training models in early childhood education. *Chinese Journal of Educational Research*, 25(6), 876–899.
- Chen, J., & Wang, L. (2021). Enhancing teacher training through collaborative efforts. *Journal of Educational Policy and Practice*, 54(2), 432–456.
- Chen, J., & Xu, Y. (2022). Collaborative teacher training models in early childhood education. *Journal of Educational Collaboration*, 28(3), 321-344.
- Cochran-Smith, M., & Lytle, S. L. (2009). *Inquiry as stance: Practitioner research for the next generation*. Teachers College Press.
- Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge.
- Corbin, J., & Strauss, A. (2015). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (4th ed.). SAGE Publications.
- Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). SAGE Publications.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
- Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications.
- Daniels, H. (2001). *Vygotsky and pedagogy*. Routledge.
- Darling-Hammond, L. (2006). Constructing 21st-century teacher education. *Journal of Teacher Education*, 57(3), 300-314.
- Darling-Hammond, L. (2017). Teacher education and the importance of practice-based learning. *Teaching and Teacher Education*, 63(1), 274–285.
- De Jong, T., et al. (2019). Collaborative teacher practices and their influence on professional growth. *Educational Policy Journal*, 50(3), 365–389.
- De Vaus, D. A. (2014). *Surveys in social research* (6th ed.). Routledge.

- Denzin, N. K., & Lincoln, Y. S. (2011). *The SAGE handbook of qualitative research* (4th ed.). SAGE Publications.
- Dewey, J. (1931). *Philosophy and civilization*. Minton, Balch & Company.
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). SAGE Publications.
- Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). SAGE Publications.
- Fowler, F. J. (2014). *Survey research methods* (5th ed.). SAGE Publications.
- Gao, S., et al. (2022). Collaborative education practices and teacher development. *International Journal of Educational Studies*, 44(3), 567–589.
- Gao, S., & Xu, Y. (2021). Bridging theory and practice in early childhood education through university-kindergarten collaboration. *Chinese Education Journal*, 33(4), 321–345.
- Greene, J. C. (2007). *Mixed methods in social inquiry*. Jossey-Bass.
- Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis*, 11(3), 255-274.
- Korthagen, F. A. J. (2010). How teacher education can make a difference. *Journal of Education for Teaching*, 36(4), 407-423.
- Kolb, M. & Jullien, (1984). Hierarchical model for chemically limited cluster-cluster aggregation. *Journal of Physics A: Mathematical and General*, 17(12), L639-L643.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
- Wenger, E. (1991). *Communities of practice: Learning, meaning, and identity*. Cambridge University Press.
- Zhang, Y., & Liu, H. (2020). Addressing educational challenges through collaboration. *Journal of Educational Change*, 48(1), 16–38.
- Zhu, J., & Zhang, H. (2022). Early childhood education reforms and teacher training models in China. *Chinese Education and Society*, 34(5), 567–589.