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Teacher Competency Challenges in Resource-Constrained Rural Schools: Professional Development Needs in Communities with Left-Behind Children

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Abstract. Rural teachers in China frequently work in resource-constrained schools while supporting large numbers of left-behind children, requiring competencies that extend beyond conventional instructional practice. Although previous studies have examined teacher competence, professional development, and the educational needs of left-behind children, these areas have often been investigated separately, resulting in a limited understanding of how rural teachers perceive their competence and the contextual factors that shape their professional practice. This study explored (1) rural primary school teachers' perceived competencies in contextualized instruction, support for left-behind children, and adaptation to limited resources, (2) their professional development needs, and (3) the contextual conditions influencing the enactment of these competencies. An exploratory qualitative design was employed, using semi-structured interviews with 10 teachers from five public primary schools in an agricultural community in eastern China. Data were analyzed through reflexive thematic analysis. The findings indicate that teachers demonstrated strong adaptive competencies by contextualizing instruction, utilizing locally available resources, and providing instructional and socio-emotional support to left-behind children. However, competencies requiring sustained collaboration with families, community partners, and institutional support were more difficult to enact. Teachers further identified context-responsive professional development, including mentoring, demonstration teaching, collaborative learning communities, child psychology, and family engagement, as essential for strengthening practice. Hence, the study proposes a context-shaped competencies perspective, suggesting that teacher competence emerges through the interaction between professional capability and the social, cultural, and material conditions of rural schooling. The findings provide evidence for designing professional

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development and educational policies that are responsive to the realities of resource-constrained rural schools.

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1. Introduction

Teacher competence is widely recognized as a fundamental aspect of educational quality because it influences instructional effectiveness, student engagement, and learning outcomes (Darling-Hammond et al., 2017). In rural schools, however, teachers frequently work under conditions characterized by limited instructional resources, restricted access to professional learning opportunities, and greater responsibility for addressing students' academic, emotional, and social needs. These conditions require teachers to demonstrate not only sound pedagogical knowledge but also further adaptability, contextual responsiveness, and the capacity to sustain learning despite environmental constraints.

These challenges are particularly evident in rural areas of China, where large-scale labor migration has resulted in substantial numbers of left-behind children who remain in their communities under the care of grandparents or other relatives. The absence of parents often increases teachers' responsibilities beyond classroom instruction, requiring them to provide emotional support, promote student well-being, and maintain communication with caregivers while continuing to meet curriculum expectations (Mo et al., 2023; Pi et al., 2024).

Recent studies further revealed that rural teachers increasingly rely on contextualized instruction and adaptive teaching practices to maintain learning in resource-constrained environments (Li et al., 2022; Mdoana-Zide, 2023). Rather than depending exclusively on prescribed instructional approaches, they frequently connect learning to students' everyday experiences, utilize locally available resources, and modify instructional strategies to accommodate contextual limitations. This study also examined the contextual factors that affected how these competencies were applied.

Despite growing interest in rural education, current literature often treats teacher competence, resource constraints, and the needs of left-behind children (LBC) as isolated lines of inquiry. Most research emphasizes quantitative measurement or student outcomes, leaving a gap in qualitative understanding of how these factors interact from the perspective of teachers themselves. Moving beyond standardized competency frameworks is essential, as they often overlook the contextual realities of rural schooling.

By exploring teachers' lived experiences, the researchers could identify the specific conditions that enabled or constrained practice, ultimately informing professional development (PD) that is truly responsive to resource-constrained environments. Accordingly, this study explored how rural primary teachers in an agricultural community in eastern China perceived their competencies and PD

needs while explaining the contextual influences on their work. The research addressed three specific questions:

1. How do these teachers describe their competencies regarding contextualized instruction, LBC support, and resource adaptation?
2. What essential PD needs do they identify to strengthen their competencies?
3. How do contextual features of rural schooling shape teachers' competency patterns and professional development priorities?

2. Literature Review

2.1 Teacher Competence as Context-Dependent Professional Practice

Teacher competence is widely recognized as a multidimensional construct that extends beyond subject knowledge and instructional skills to include pedagogical decision-making, classroom management, assessment, reflective practice, and continuous professional learning (Darling-Hammond et al., 2017). Recent studies further highlight the interdependence of these competencies and their development through professional practice. For example, the Multidimensional Adapted Process (MAP) model proposed by Metsäpelto et al. (2021) conceptualizes teacher competence as the interaction among teachers' knowledge, beliefs, instructional practices, and contextual conditions, while Zhang and Tian (2024) similarly argue that cognitive, pedagogical, interpersonal, and affective competencies evolve as integrated dimensions of effective teaching.

This context-dependent perspective is particularly relevant in rural education, where teachers routinely negotiate limited instructional resources, diverse learner needs, multigrade classrooms, and strong community relationships. Rather than implementing standardized pedagogical approaches, effective rural teachers continually adapt instruction to local realities. Brühwiler and Vogt (2021) provide evidence that adaptive teaching competence improves instructional quality by allowing educators to address learners' needs with flexibility. Additionally, Li et al. (2022), applying the Teaching Competency of Rural Science Teachers (TCRST) framework, delineate pedagogical design, instructional implementation, assessment, and teacher inquiry as essential competencies. Access to professional support, instructional resources, and institutional environments largely influences the effective enactment of these competencies.

Recent research findings further suggest that contextual responsiveness extends beyond classroom instruction to include meaningful engagement with learners' communities. Rural teachers strengthen learning by connecting instruction with student's lived experiences, local culture, and community knowledge (Silseth & Erstad, 2018; Fitrianto & Farisi, 2025). Similarly, Bhattarai and Belbase (2025) and Paradise et al. (2022) suggest that community resources are educational assets when teachers collaborate with schools, families, and local organizations to create authentic learning experiences.

At the same time, studies from resource-constrained settings indicate that teachers frequently sustain instructional quality by modifying curricula, improvising learning resources, and drawing upon locally available assets despite material limitations (Nurteteng et al., 2024; Katniyon et al., 2025). However, Liu (2025)

emphasizes that higher-order competencies such as instructional innovation and community partnership require sustained professional learning and institutional support rather than individual effort alone.

Synthesizing these perspectives, teacher competence can be understood as a multifaceted and dynamic construct, influenced by knowledge, practical experience, community engagement, ongoing professional development, and access to resources. Competence develops in particular contexts and through social engagement, rather than independently. While its importance in rural education is widely acknowledged, there remains a lack of qualitative studies investigating how rural educators perceive and apply these competencies when supporting left-behind children. Addressing this gap constituted the basis for the current research.

2.2 Teacher Competence in Supporting Left-Behind Children

One of the most significant professional responsibilities of rural teachers in China is to support left-behind children, building on the context-dependent nature of teacher competence. Research consistently identifies teacher support as a critical protective factor for these learners. Across multiple studies, supportive teacher-student relationships have been associated with improved resilience, self-esteem, emotional well-being, and school adjustment, indicating that relational competence is integral to effective rural teaching (Zhang et al., 2020; Yang et al., 2021; Mo et al., 2023). Complementing these findings, Pi et al. (2024) revealed that rural teachers combine instructional guidance with emotional support, differentiated instruction, after-school assistance, and continuous monitoring of learners' progress.

Literature further emphasizes that teacher competence extends beyond classroom interaction to include effective collaboration with families and caregivers. However, parental migration and the reliance on elderly grandparents or relatives as primary caregivers often complicate communication. Chen and Zhou (2025), Liu (2024), and Li et al. (2024) collectively demonstrate that limited family involvement and weak home-school communication constrain teachers' efforts to provide coordinated educational support, despite the continued importance of caregiver engagement in children's academic development.

Collectively, literature describes teacher competence for left-behind children as involving instructional, relational, and collaborative skills. While teacher support improves students' academic and socio-emotional outcomes, most research has focused on child development, not teachers' perspectives. There is limited understanding of how rural teachers perceive their roles and competencies in supporting left-behind children in resource-limited schools. This study aims to address these gaps.

2.3 Adaptive Competence in Resource-Constrained Rural Schools

Research consistently demonstrates that adaptive competence is characterized by teachers' ability to modify instruction according to available resources, learners' characteristics, and local educational contexts. Teachers working in resource-constrained schools frequently contextualize lessons, improvise instructional

materials, and utilize locally available resources to sustain meaningful learning despite material limitations (Ramaila, 2022; Yeboah et al., 2019). Similarly, Mdodana-Zide (2023) argues that adaptive teaching reflects teachers' professional capacity to make informed instructional decisions under challenging circumstances rather than merely compensating for resource shortages. These findings collectively suggest that adaptability represents a professional competency that supports instructional effectiveness in rural schools.

Recent studies further indicate that teachers strengthen their adaptive competence by drawing upon community knowledge and culturally relevant learning experiences. Candrawati and Purbani (2025) established that contextualized instruction enables teachers to transform local environments into meaningful learning resources, while Ancheta and Gallego (2025) demonstrated that culturally responsive teaching improves learner engagement by connecting instruction with students' lived experiences and local realities. Similarly, Nurteteng et al. (2024) emphasized that teachers who creatively integrate locally available materials and community resources are better able to sustain learner participation despite limited instructional facilities. Collectively, these studies suggest that adaptation is not simply a response to scarcity but a professional capability that enables teachers to create authentic and contextually meaningful learning experiences.

Nevertheless, literature further indicates that adaptive competence has important limitations when broader institutional support is absent. Although teachers may successfully modify lessons and improvise instructional resources, sustained instructional innovation requires ongoing professional learning, access to quality teaching materials, and supportive school leadership (Liu, 2025). Without these enabling conditions, adaptive practice may allow teachers to maintain instruction but may not be sufficient to achieve continuous instructional improvement or long-term educational innovation.

Overall, literature portrays adaptive competence as a context-responsive capability that enables rural teachers to negotiate the opportunities and constraints of resource-constrained schools. While previous studies have documented how teachers adapt instruction under challenging conditions, less attention has been given to how rural teachers themselves perceive these adaptive competencies and explain the contextual factors that facilitate or constrain their enactment. Examining these viewpoints establishes a crucial basis for comprehending teacher competence in the context of rural education.

2.4 Context-Responsive Professional Development for Rural Teachers

Studies consistently show that rural teachers benefit most from professional learning opportunities that are closely connected to authentic classroom practice. Demonstration teaching, lesson study, peer mentoring, collaborative inquiry, and school-based professional learning communities enable teachers to refine instructional strategies while responding to shared contextual challenges (Arifin et al., 2025; Paradise et al., 2022). Similarly, Liu (2025) argued that sustained professional learning encourages instructional innovation by providing

opportunities for reflection, experimentation, and collaborative problem-solving rather than one-time participation in external workshops. Collectively, these studies suggest that teacher competence develops through continuous professional engagement embedded within everyday teaching practice.

Literature further indicates that effective professional development in rural schools should extend beyond pedagogical knowledge to include competencies required for community-responsive teaching. Bhattarai and Belbase (2025) emphasized that teachers strengthen their professional practice when learning opportunities incorporate local culture, community resources, and partnerships with families and community organizations. Similarly, Fitrianto and Farisi (2025) argued that contextualized professional learning enhances teachers' ability to design instruction that reflects learners' lived experiences and local realities. These findings suggest that professional development should strengthen teachers' capacity not only to improve classroom instruction but further to respond effectively to the broader social and cultural contexts influencing rural education.

While prior research consistently endorses collaborative and context-responsive professional learning, there is a paucity of information regarding how rural educators discern the competencies they deem most critical or the types of professional development they regard as most advantageous. Most studies have evaluated professional development programs or instructional outcomes rather than exploring teachers' own experiences and perspectives. Addressing this gap is important for designing professional learning initiatives that respond to teachers' identified needs while strengthening the competencies required for effective teaching in resource-constrained rural schools. Consequently, the present study examined not only teachers' perceived competencies but also the professional learning they considered necessary to support those competencies in their local educational contexts.

3. Methodology

3.1 Research Design

An exploratory qualitative design was employed because the study sought to understand how rural primary school teachers interpret, negotiate, and construct professional competence within the complex realities of resource-constrained schools serving left-behind children. Rather than measuring predetermined competency indicators, the study aimed to capture teachers' practice-based understandings and meaning-making processes, making qualitative inquiry particularly appropriate.

3.2 Research Setting

The research was carried out in Huangkou Town, an agricultural community in Anhui Province, eastern China. The town was selected through purposive site selection because it reflected key characteristics of rural migrant-sending communities where large numbers of left-behind children were enrolled in public primary schools. Five public primary schools participated in the study, serving students from Grades 1 to 6 under conditions frequently encountered in rural educational environments. School administrators reported that approximately

sixty per cent of the student population comprises left-behind children. Since the study aimed to investigate teacher competencies within a context where the interaction among resource constraints, family migration, and professional practice was particularly evident, this setting therefore provided an information-rich context for exploring teachers' experiences and interpretations of competence in rural education.

3.3 Participants and Sampling

Participants were selected using purposive sampling to ensure that those included could provide detailed and relevant information related to the research questions. Ten full-time teachers were recruited from the five participating schools, with two teachers from each school. To capture a variation in experience, the sample included both novice teachers, defined as those with five years of teaching experience or less, and experienced teachers with more than five years of teaching experience.

The participants further represented different genders, grade levels, and class assignments, reflecting the multi-subject teaching responsibilities typical of rural schools. To be eligible, teachers had to be currently employed full-time in one of the participating schools, have at least one year of teaching experience in Huangkou Town, and have experience teaching classes that included left-behind children. Further, participation was voluntary, and all teachers provided written informed consent before the interviews were conducted. Table 1 shows the profile of the participants.

Table 1: Profile of the Participants

Teacher	School	Gender	Grade level	Years of Experience	Class Assignment
T1	A	Male	3 and 4	Novice	Chinese
T2	A	Female	3, 4, and 5	Experienced	Science
T3	B	Female	1 and 2	Novice	Math
T4	B	Female	3, 4 and 5	Experienced	Chinese
T5	C	Female	1, 2 and 3	Novice	Science
T6	C	Male	3, 4 and 5	Experienced	Math
T7	D	Male	3 and 4	Novice	Music
T8	D	Male	1, 2 and 3	Experienced	Morality and rule of law
T9	E	Female	3 and 4	Novice	Art
T10	E	Male	3, 4 and 5	Experienced	Science

3.4 Data Collection

Data were collected through semi-structured interviews conducted in December 2025. An interview guide was developed based on the research questions and theoretical framework, focusing on teachers' descriptions of their teaching competencies, their experiences with professional development, the challenges they encountered while teaching left-behind children, and the contextual factors influencing their instructional practice. Questions were open-ended to encourage detailed responses, and follow-up probes were used to clarify meanings and explore emerging ideas. The interview guide was reviewed by two researchers with experience in qualitative research and rural education to ensure clarity and alignment with the objectives of the study. Further, a pilot interview was conducted with one teacher who was not included in the final sample, and minor revisions were made to improve the wording and sequence of questions.

Interviews were conducted in private rooms within the participants' schools to ensure confidentiality and minimize interruptions. Each interview lasted approximately 45 to 60 minutes. All interviews were conducted in Mandarin Chinese to allow participants to express their ideas naturally. With participants' permission, interviews were audio-recorded and later transcribed verbatim. Data collection continued until thematic saturation was reached. This means that additional interviews no longer produced new themes or insights (Guest et al., 2005). After eight interviews, similar patterns began to repeat, and two additional interviews confirmed that saturation had been achieved.

Because the study relied on teachers' self-reported experiences, several strategies were adopted to enhance the credibility of the data. Semi-structured interviews encouraged participants to provide concrete examples from their classroom practice rather than general opinions, while follow-up probing questions were used to clarify meanings and reduce ambiguity. Throughout the interviews, the researcher also maintained field notes documenting contextual observations and reflective memos to support subsequent interpretation. Nevertheless, the findings should be understood as participants' accounts of their professional experiences rather than direct observations of classroom practice.

3.5 Reflexive Thematic Analysis

Braun and Clarke's (2021) reflexive thematic analysis was employed, with themes generated through interpretive engagement rather than objective categorization. Inductive coding produced initial themes, which were subsequently refined through comparative analysis and memo writing to document decision-making and evolving interpretations. The research team engaged in critical reflection during discussions, rather than seeking confirmation. The context-shaped competencies perspective was formulated as a conceptual framework illustrating the relationships among themes.

Trustworthiness was addressed using qualitative methodological strategies: credibility was promoted through semi-structured interviews, probing questions, and comprehensive memos; dependability was ensured by maintaining an audit trail; confirmability was supported via reflexive journals and collaborative team discussions; and transferability was achieved by providing rich descriptions of

the setting, participants, and context, facilitating applicability to comparable rural educational environments.

3.6 Ethical Considerations

The University of Baguio Research Ethics Committee gave the study its ethical approval. The local education bureau and the principals of the participating schools also granted permission to conduct the research. All participants were informed about the purpose of the study, the voluntary nature of participation, and their right to withdraw at any time. Confidentiality was ensured by assigning codes to participants and removing identifying information from transcripts. Further, audio recordings and transcripts were stored in password-protected files accessible only to the researcher. The study involved minimal risk because the interviews focused on professional experiences rather than personal or sensitive topics.

3.7 Researcher Reflexivity

One of the researchers had prior professional experience in Chinese education, which facilitated access to participants and supported meaningful engagement during the interviews. In addition, awareness of this positionality required continual reflexivity to minimize the influence of prior assumptions on data interpretation. Reflexive journals and analytic memos were maintained throughout data collection and analysis to document emerging insights, methodological decisions, and potential biases. Rather than attempting to eliminate subjectivity, reflexivity was used to promote transparency regarding how interpretations were developed throughout the research process.

4. Findings

4.1 Teacher Competencies in Resource-Constrained Rural Classrooms

The first objective was to examine teachers' competencies in integrating local resources, supporting left-behind children, and adapting teaching to limited instructional materials. Across all three domains, a consistent pattern emerged: teachers expressed greater confidence in competencies that could be enacted independently within the classroom than in those requiring sustained collaboration with families, community members, or institutional support.

4.1.1 Stronger Competence in Classroom Contextualization than Community-Based Integration

Participants consistently contextualize instruction by connecting lessons with students' everyday experiences, local culture, and familiar community practices. Across subject areas, teachers used farming activities, household experiences, and locally available materials to make abstract concepts more meaningful. As a mathematics teacher (T6) explained, lessons became easier for students because they were "*connected to their life*." Likewise, another mathematics teacher noted that "*when they use what they already know, they learn faster and are more active*" (T3).

However, participants distinguished classroom contextualization from broader community-based learning. Participants shared that organizing field-based learning, engaging community resource individuals, or systematically integrating local knowledge into curriculum standards was considerably more difficult

because these activities required additional planning, administrative approval, and coordination with external stakeholders. A science teacher (T2) explained that *"taking students outside or inviting people from the village needs permission and planning, and sometimes there is not enough time."* Similarly, a Chinese teacher (T4) noted that although *"local examples are useful,"* teachers must still prepare students for textbook-based examinations.

Participants also acknowledged uncertainty about aligning local knowledge with curriculum objectives. As a Chinese teacher (T1) admitted, *"I am not sure how to make them match the lesson goals."* Because of this uncertainty, teachers often use local examples informally rather than as part of a systematic teaching plan.

4.1.2 Stronger Competence in Classroom Support than Family-School Collaboration

Participants consistently described supporting left-behind children as an integral part of their professional role. Across subject areas, teachers expressed confidence in providing emotional encouragement, peer support, and inclusive classroom activities that helped students participate more actively in learning. A music teacher (T7) explained,

"Left-behind children in my class often lack confidence in music learning and are reluctant to sing or play musical instruments in front of classmates... I need to spend more time encouraging and guiding them in class."

Similarly, a mathematics teacher (T6) reflected that *"I try to notice when they feel sad, because occasionally they only need someone to care about them."* These accounts suggest that socio-emotional support had become an established component of teachers' everyday classroom practice.

In contrast, participants consistently identified family-school collaboration as more difficult to sustain. Teachers explained that many left-behind children were cared for by grandparents who had limited educational backgrounds and found it difficult to support learning at home. A Chinese teacher (T1) explained,

"The biggest challenge is communication... guardians are grandparents who have a limited understanding of learning... As a young teacher, I also lack experience in dealing with children's emotional problems."

Teachers also observed that some caregivers prioritized children's safety over academic achievement. As one participant noted, *"some grandparents only want the child to be safe, and they think school results are not very important"* (T4). Consequently, teachers often assumed responsibilities extending beyond classroom instruction. A science teacher (T2) summarized this challenge by stating, *"We do our best in class, but after school, there is no one to follow up."*

Participants further acknowledged that supporting left-behind children required competencies for which they had received limited formal preparation. As an art teacher (T9) observed, *"they need encouragement all the time, but we have many students, so it is difficult to give enough attention."* Several participants similarly expressed uncertainty about responding to learners' emotional needs because they had not received formal training in child psychology.

4.1.3 Stronger Competence in Instructional Adaptation than Resource-Dependent Innovation

Participants consistently described adapting instruction to resource constraints as an established aspect of their professional practice. Across subject areas, teachers expressed confidence in sustaining classroom learning by improvising instructional materials, modifying learning activities, and drawing upon readily available local resources. However, they distinguished these adaptive practices from instructional innovation, explaining that limited teaching materials, laboratory equipment, and multimedia resources constrained opportunities to provide richer and more comprehensive learning experiences.

A science teacher (T2) described adapting laboratory activities by replacing unavailable equipment with common household materials:

"When there is a shortage of experimental equipment, I use materials around us as substitutes, such as using bottles and water to conduct simple buoyancy experiments. Students can intuitively see the results, and their learning interest is high. However, these alternative experiments are not systematic enough to cover all knowledge points."

Similarly, a mathematics teacher (T3) explained how familiar local materials enabled students to understand abstract concepts despite the absence of instructional aids: *"I ask students to use corn kernels to practice grouping and counting. This helps them intuitively understand concepts and makes the class more interesting. However, these methods are relatively temporary and difficult to cover all knowledge points."* These accounts indicate that participants regarded instructional adaptation as a routine competency that enabled them to maintain student engagement despite material shortages.

Nevertheless, participants emphasized that sustaining instruction differed from enhancing instructional quality. Teachers explained that improvised materials often required considerable preparation and could not fully replace standard instructional resources. A mathematics teacher (T6) reflected that although locally available materials supported learning, effective instruction required substantial planning because *"these methods require me to design activities in advance to align with teaching objectives."*

Likewise, a science teacher (T10) explained that while simplified activities preserved the inquiry process, resource limitations reduced opportunities for authentic experimentation because *"even without complete experimental equipment, students can still go through the entire process of 'proposing hypotheses – verification – summary.'"* Participants, therefore, viewed professional development as essential for improving instructional quality under low-resource conditions. As one science teacher (T10) explained: *"I hope to learn inquiry-based teaching design methods... even without complete experimental conditions."*

Across the three competency domains, teachers consistently demonstrated stronger confidence in practices largely within their direct professional control, whereas competencies requiring sustained collaboration with families,

communities, or institutional support were perceived as more challenging. This recurring pattern informed the succeeding analysis of teachers' professional development needs and the contextual factors influencing competency enactment.

4.2 Professional Development Needs of Rural Teachers

The second objective examined the professional development support teachers considered necessary to improve their competencies in integrating local resources, supporting left-behind children, and adapting instruction to resource-constrained environments. Across participants, there was strong agreement that existing training programs did not fully address the realities of rural teaching, and that more practical and context-specific forms of professional development are needed.

4.2.1 Preference for Context-Responsive Professional Learning

Participants consistently emphasized that conventional lecture-based training alone was not sufficient for improving classroom practice. Participants explained that training often introduced general teaching principles but does not demonstrate how these principles could be applied in schools with limited resources and large numbers of left-behind children. One participant (T3) noted that *"seeing real examples is more helpful than only listening to lectures, because we need to know what to do in situations like ours"*. Another teacher explained that training sessions sometimes assumed the availability of equipment or support that rural schools did not have, making it difficult to apply what was learned. Similarly, teacher T5 observed that, *"Some training shows very good methods, but they need materials or conditions that we do not have here"*.

4.2.2 Strengthening Relational Competencies

Participants also identified socio-emotional support and communication with caregivers as priority areas for professional development. Teachers explained that many students showed low confidence, lack of motivation, or emotional sensitivity, and that responding to these situations required skills that were not fully developed during their initial teacher preparation. One teacher stated that *"we need to know how to help students emotionally, not only academically, because many of them have problems that come from their family situation"* (T2). Another participant explained that teachers often relied on personal experience when dealing with students' emotional difficulties, saying that *"we try to encourage them, but sometimes we are not sure if we are doing the right thing"* (T8). These findings suggest that participants viewed relational and communication competencies as essential components of effective rural teaching.

4.2.3 Collaborative and School-Based Professional Learning

Participants consistently emphasized mentoring, peer collaboration, and school-based learning as the most meaningful forms of professional development. Teachers believed that experienced colleagues could provide practical guidance grounded in similar teaching contexts, while collaborative lesson planning created opportunities to develop solutions suited to local classrooms. One participant remarked, *"Young teachers need guidance, and experienced teachers can share what works in this kind of school"* (T6). Teachers also preferred professional

development conducted within local schools or communities because it allowed immediate discussion and application of authentic classroom challenges. As one participant explained, *“Training in big cities is not always useful, because the situation there is different from here”* (T3).

Overall, the findings indicate that participants viewed effective professional development as context-responsive rather than standardized. Across all themes, teachers consistently emphasized that professional learning should strengthen not only instructional knowledge but also the collaborative and relational competencies required to respond effectively to the realities of rural education.

4.3 Contextual Factors Influencing Teacher Competencies

The third objective examined how contextual conditions shaped teachers' competencies in rural schools. Across participants' accounts, a consistent pattern emerged: teachers perceived their professional competencies as being influenced not only by their own knowledge and skills but also by family circumstances, school resources, and community expectations. These contextual conditions affected how teachers enacted their competencies and the extent to which they could support students effectively.

4.3.1 Family Circumstances and Learner Needs

The large number of left-behind children was identified as one of the most important influences on teaching. Teachers explained that many students live with grandparents or other relatives because their parents work in distant cities. As a result, students often lack academic supervision and emotional guidance at home. One participant stated that *“most children live with grandparents, and they cannot help much with schoolwork, so the teacher must do more in class”* (T1). Another teacher explained that some students have difficulty concentrating or completing assignments because there was no one at home to review their work. Teachers, therefore, felt responsible not only for academic instruction but further for motivating students and helping them develop confidence.

Limited family support further affected communication between school and home. Participants reported that some guardians were unfamiliar with school requirements and might ignore messages from teachers. One teacher noted that *“sometimes we explain the problem, but the guardian does not know what to do, so the situation does not change”* (T3). This makes it difficult for teachers to provide consistent guidance for students, especially when behavioral or emotional problems would occur. These findings suggest that changing family structures shaped teachers' competencies, leading to increased expectations for schools to address both academic and socio-emotional needs.

4.3.2 Resource and Institutional Conditions

Resource limitations were another major factor influencing teaching practice. Participants explained that the lack of equipment, teaching aids, and supplementary materials restricts the types of activities they could use in class. One teacher stated that *“we do not always have the materials we need, so we must change our teaching plans or use simpler methods”* (T7). Although teachers adapted by using local examples or discussion-based activities, they reported that these

methods did not always allow for more profound learning. Some participants further noted that preparing alternative materials required extra time, which was difficult with heavy teaching loads. These responses suggest that resource constraints influenced not only instructional strategies but also the scope of competencies teachers were able to enact in practice.

4.3.3 Community Culture and Classroom Practice

Community culture further shaped classroom interaction. Teachers described the community as respectful and cooperative, but they further noted that students were sometimes hesitant to speak or express their opinions. One participant explained that "*students are polite and listen carefully, but they are not always confident speaking in class*" (T6). Teachers, therefore, needed to encourage participation while further maintaining the discipline expected by parents and community members. Participants further explained that professional development programs are often designed for schools with better facilities and stronger family involvement. As one teacher stated, "*Some training is designed for big schools, not for places like ours, so it is hard to use what we learn*" (T3). Because of this mismatch, teachers often rely on personal experience rather than formal training to solve classroom problems.

Overall, participants consistently described teacher competence as being influenced by conditions extending beyond the classroom. Family circumstances, resource availability, and community expectations interacted to shape how teachers applied their professional knowledge and responded to the complex demands of rural education.

5. Discussion

5.1 Competency Patterns in Rural Teaching Contexts

The results indicated a consistent trend of adaptive yet contextually limited competence among rural primary school teachers. Within all three competency areas, teachers exhibited confidence in methodologies applicable within their classrooms but encountered greater challenges when instruction required engagement with families, communities, or institutional resources. These findings imply that teacher competence in rural settings arises from the interplay between individual professional skills and contextual factors, rather than solely from personal expertise.

Teachers revealed the greatest confidence in contextualizing instruction by connecting lessons with students' everyday experiences, local culture, and community knowledge. Similar practices were reported across rural education settings, where contextualized teaching enhanced learner engagement by making instruction relevant to students' lived experiences (Fitrianto & Farisi, 2025; Hatton & Jajalla, 2025; Silseth & Erstad, 2018). However, the participants revealed it was more challenging to organize community-based learning, field experiences, or sustained partnerships with local organizations. Bhattarai (2025) and Paradise et al. (2022) similarly argue that while community resources offer rich learning opportunities, their effective integration depends on collaborative planning and institutional support rather than teachers' individual initiative. Collectively, these

findings indicate that contextualized teaching extends beyond classroom adaptation to include broader community engagement.

A similar pattern emerged in supporting left-behind children. Participants described providing emotional encouragement, individualized guidance, peer support, and close monitoring of students' learning, highlighting the importance of relational competence in rural teaching. Previous studies similarly demonstrate that teacher support promotes left-behind children's resilience, self-esteem, and school adjustment (Mo et al., 2023; Yang et al., 2021; Zhang et al., 2020), while Pi et al. (2024) revealed that rural teachers increasingly combine instructional and emotional support to address learners' diverse needs. Nevertheless, communication with caregivers remained a persistent challenge. Studies by Chen and Zhou (2025), Liu (2024), and Li et al. (2024) similarly report that parental migration and limited caregiver involvement constrain teachers' efforts to provide coordinated educational support. These findings indicate that teachers' interpersonal skills and family structures beyond their direct control shape relational competence.

Teachers similarly demonstrated considerable adaptive competence in responding to limited instructional resources by modifying lessons, utilizing locally available materials, and adjusting teaching strategies to sustain learning. Comparable practices have been documented in other resource-constrained settings, where instructional flexibility and contextualized pedagogy enable teachers to maintain effective teaching despite material shortages (Candrawati & Purbani, 2025; Mdodana-Zide, 2023; Yeboah et al., 2019). However, participants expressed less confidence in designing innovative instructional materials and implementing more advanced pedagogical approaches. Consistent with Ramaila (2022) and Liu (2025), these findings suggest that while adaptation enables teachers to cope with challenging conditions, sustained instructional innovation requires continuous professional learning and institutional support.

The results indicate that teacher competence in rural schools should be viewed as context-dependent rather than context-independent. Competencies centered on teachers' classroom decision-making were generally well established, whereas those involving ongoing collaboration with families, communities, and institutional systems proved more challenging to implement.

5.2 Professional Development Needs in Rural Schools

The findings suggest that rural teachers conceptualize professional development as a process of solving authentic classroom problems rather than acquiring additional theoretical knowledge. Participants consistently preferred demonstration teaching, mentoring, collaborative lesson planning, and school-based learning because these approaches reflected the realities of teaching in resource-constrained schools. This reinforces previous research demonstrating that professional learning is most effective when embedded within teachers' everyday professional contexts (Arifin et al., 2025; Liu, 2025; Paradise et al., 2022).

An important contribution of the present study is that participants viewed professional development as extending beyond instructional competence. Teachers consistently identified child psychology, socio-emotional support, communication with caregivers, and family engagement as equally important learning priorities. These findings support earlier studies emphasizing that rural teachers increasingly assume relational responsibilities associated with supporting left-behind children (Fu & Zhu, 2020; Jia et al., 2025; Liu, 2024). Rather than separating pedagogical and relational competencies, participants viewed both as essential components of effective rural teaching.

The findings further suggest that teachers should actively participate in designing professional development rather than being passive recipients. Participants favored school-based mentoring and collaborative learning due to their grounding in authentic classroom experiences and local educational conditions. This supports recent calls for teacher-friendly professional development that values teachers' experiences, encourages collaborative inquiry, and allows practitioners to shape learning priorities according to local needs (Bhattarai & Belbase, 2025; Liu, 2025). Consequently, context-responsive professional development should move beyond standardized training models toward teacher-informed programs that strengthen instructional, relational, and collaborative competencies simultaneously.

5.3 Influence of Context on Teacher Competencies

The educational and social contexts of rural schools shape the competencies of teachers, rather than fixed professional attributes. Participants adapted their teaching to the realities of limited instructional resources, large numbers of left-behind children, varying levels of family involvement, and local community expectations. These findings support the notion that teacher competence arises from the interplay between professional capability and contextual conditions.

The educational needs of left-behind children emerged as one of the strongest contextual influences on teacher competence. Participants described responsibilities extending beyond classroom instruction to include emotional support, learner motivation, and monitoring students' well-being. These findings are consistent with studies showing that parental migration increases children's educational and psychosocial vulnerabilities, thereby expanding teachers' professional roles (Bai et al., 2016). Similarly, Li et al. (2024) emphasized that family educational expectations and caregiver involvement continue to influence children's academic development despite parental migration. Collectively, these studies suggest that teachers' relational competencies evolve in response to changing family structures as much as instructional demands.

Participants further identified limited family engagement as a persistent challenge. Communication with caregivers was often constrained because many students were cared for by elderly grandparents or relatives with limited capacity to support learning. Similar concerns were reported by Liu (2024) and Chen and Zhou (2025), who revealed that weak family-school partnerships restrict teachers' ability to provide coordinated academic and emotional support. These findings indicate that effective family engagement depends not only on teachers'

communication skills but also on families' capacity to participate in children's education.

Resource availability similarly influenced how teachers demonstrated their competencies. Participants demonstrated considerable flexibility by adapting lessons, utilizing locally available materials, and modifying instruction despite limited resources. Comparable adaptive practices have been documented in resource-constrained schools, where improvisation and contextualized teaching enable teachers to sustain learning under challenging conditions (Yeboah et al., 2019; Mdogana-Zide, 2023). However, the participants further recognized that limited resources constrained instructional innovation, suggesting that institutional support and individual creativity strengthen adaptive competence.

Community culture further shaped teachers' instructional decisions. Participants balanced curriculum delivery with efforts to develop students' confidence, communication skills, and character because learners were often respectful but hesitant to participate actively in discussions. Similar observations by Hatton and Jajalla (2025) and Silseth and Erstad (2018) highlight that effective rural teaching requires aligning instruction with students' cultural experiences and everyday realities.

The results suggest that teacher competence is best conceptualized as a context-dependent skill. Teachers reported higher levels of confidence in skills directly within their control, such as tailoring instruction and providing classroom support to learners. Conversely, competencies involving ongoing collaboration with families, communities, and institutional systems presented greater challenges. These insights build upon current research by advocating for a dual approach: investing in educators' professional development while simultaneously enhancing the conditions within families, schools, and communities, thereby facilitating effective enactment of teacher competencies.

5.4 Context-Shaped Competencies as an Interpretive Framework

The findings support a context-shaped competencies perspective as an interpretive framework for understanding teacher competence in rural schools. Rather than viewing competence as a fixed set of individual attributes, the findings indicate that teachers enact their competencies through continuous interaction with the social, institutional, and material conditions of their work. Across the three competency domains, participants consistently demonstrated stronger performance in practices that could be managed within the classroom, whereas competencies requiring sustained collaboration with families, communities, and broader institutional systems were more difficult to enact. This pattern suggests that teacher competence is shaped not only by professional capability but further by the contexts in which that capability is exercised.

This interpretation aligns with recent scholarship that conceptualizes teacher competence as multidimensional and context-dependent. Zhang and Tian (2024) describe teacher competence as an integrated construct whose cognitive, instructional, and affective dimensions develop interactively rather than

independently, while Li et al. (2022) demonstrate that rural teachers' competencies in instructional design, implementation, assessment, and teacher inquiry are strongly influenced by access to resources, professional support, and development opportunities. Similarly, Tang et al. (2019) argue that professional competence evolves through the interaction between teachers' knowledge and the environments in which they practice rather than through individual expertise alone.

The present findings further caution against interpreting the competency gaps observed among rural teachers. Teachers displayed considerable adaptive capability in contextualizing instruction, supporting learners, and responding to resource limitations, yet they encountered greater difficulty when effective practice depended on family participation, institutional resources, or community partnerships. Similar patterns were reported in rural education, where professional practice is constrained by teacher shortages, limited professional development opportunities, resource scarcity, and geographic isolation rather than by teachers' commitment or capability alone (Li et al., 2019; Weiss et al., 2023). Similarly, Leach and Bradbury (2024) emphasize that successful rural teaching depends not only on classroom expertise but further on teachers' ability to work within the professional and community ecology of rural schools. These findings indicate that competence should be understood as the product of interactions between teachers and their educational environments rather than solely as an individual professional characteristic.

Accordingly, the context-shaped competencies perspective should be viewed as an interpretive lens for explaining how rural teachers enact professional competence under varying contextual conditions. It suggests that strengthening teacher competence requires more than enhancing individual knowledge and skills; it further requires supportive professional learning, adequate instructional resources, productive family-school partnerships, and community engagement that enable teachers to apply and further develop their competencies. This perspective provides a useful framework for future research and policy aimed at improving teacher development in rural and other resource-constrained educational settings.

6. Conclusion

This study investigated rural primary school teachers' perceptions regarding their competencies and professional development requirements within resource-constrained environments. The findings indicate that teacher competence in rural settings encompasses not only pedagogical expertise but also adaptability, interpersonal skills, and contextual understanding. Although teachers demonstrated proficiency in customizing instruction and supporting disadvantaged students, collaboration with families and communities proved difficult, highlighting the significant impact of local contexts.

The research presents a context-shaped competencies framework, positioning teacher competence as influenced by both professional knowledge and the social, cultural, and material conditions of rural schools. Structural challenges, such as limited resources and weak community partnerships, were identified as primary

obstacles, rather than individual shortcomings, highlighting the critical role of context in evaluating teacher effectiveness.

The findings further have important implications for teacher education and educational policy. Professional development for rural teachers should move beyond standardized training programs toward context-responsive approaches that emphasize mentoring, collaborative learning communities, demonstration teaching, child psychology, family engagement, and the effective integration of local resources into classroom instruction. Similarly, educational leaders and policymakers should strengthen school-community partnerships and provide sustained institutional support that enables teachers to apply and further develop their competencies within the realities of rural education.

This study was conducted in a single rural community in eastern China and involved a relatively small group of participants. Consequently, the findings are intended to provide analytical rather than statistical generalization to similar rural contexts. Hence, future research may examine the applicability of the context-shaped competencies perspective across different rural regions, educational systems, and school settings, or evaluate professional development models designed to strengthen teachers' adaptive, relational, and contextual competencies. Such investigations would further advance understanding of how teacher competence develops within diverse and resource-constrained educational environments.

Conflict of Interest

No potential conflict of interest was reported by the authors.

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