

Research Article

Principle Leadership Strategies Improving Primary School Quality in Manggarai, Indonesia

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ABSTRACT

This study aimed to analyze principal leadership strategies for improving the quality of primary education in Manggarai Regency, East Nusa Tenggara, Indonesia, identify supporting and inhibiting factors, and examine teachers' evaluations and expectations of principal leadership. A qualitative phenomenological approach was employed involving two principals and two teachers from SDI Wae Ri'i and SDI Jaya Sama. Data were collected through semi-structured interviews, participant observation, and document analysis and were analyzed using the Miles and Huberman interactive model. The findings revealed that principals implemented multiple leadership strategies, including local collaboration, academic supervision, teacher professional development, participatory leadership, motivation and appreciation, and visionary leadership. Local collaboration emerged as the most dominant strategy, reflecting the importance of community participation in supporting educational improvement. Supporting factors included community involvement, professional learning opportunities, adequate facilities, financial support, and consistent supervision, while limited infrastructure, geographical barriers, diverse student needs, and socioeconomic constraints inhibited implementation. Teachers perceived principal leadership positively, particularly in strengthening teaching quality, school culture, and professional development, although they highlighted the need for improved digital infrastructure and support for holistic student development. The study concludes that contextual, collaborative, and transformational leadership is essential for sustaining educational quality and equity in resource-constrained 3T regions.

Keywords: Principal leadership; educational quality; primary education; contextual leadership; 3T areas; Manggarai

1. INTRODUCTION

Primary education serves as the foundation of human resource development because it plays a crucial role in shaping students' literacy, character, social competencies, and critical thinking skills. At this stage, learners not only acquire essential academic competencies such as reading, writing, and numeracy but also develop values, character traits, and social identities that influence their future educational and personal development (Umeji, 2024). According to Boissiere (2004) primary education makes a significant contribution to character formation, which serves as a fundamental determinant of a nation's human resource quality.

The importance of primary education has become increasingly prominent within the framework of the Sustainable Development Goals (SDGs), particularly in achieving quality education, inclusivity, and equitable access to learning opportunities for all members of society (Abera, 2023; UNESCO, 2015). Thus, education is not merely regarded as a public service but also as a strategic instrument for reducing poverty, enhancing social mobility, and promoting economic development, especially in developing countries such as Indonesia.

Over the past decades, the Indonesian government has implemented various educational reforms, including curriculum development, teacher professional development, learning digitalization, and the expansion of educational access. However, primary education continues to face persistent challenges. Evidence of these challenges can be observed in the PISA 2022 results, where Indonesian students scored 359 in reading, 366 in mathematics, and 383 in science, all of which were below the OECD average. These results highlight ongoing challenges in improving educational quality and student achievement in Indonesia (Solihin et al., 2024). This finding indicates that the Indonesian education system still faces substantial difficulties in improving students' literacy and critical thinking skills. Furthermore, the relatively low learning outcomes suggest that existing educational policies have not yet fully addressed the root causes of educational problems, particularly those affecting the quality of learning at the primary education level.

The challenges facing Indonesia's education system are also reflected in regional disparities in educational quality. Significant differences persist between urban and rural areas, as well as between western and eastern regions of Indonesia

(Nugraha & Prayitno, 2020). Despite various government efforts, these inequalities have not been fully addressed. Schools located in 3T (disadvantaged, frontier, and outermost regions often face numerous obstacles, including inadequate educational facilities, unequal teacher distribution, limited access to technology, and insufficient socioeconomic support from local communities (Marmoah et al., 2021). Consequently, students in these areas frequently encounter fewer learning opportunities compared to their counterparts in more developed regions. In this context, educational quality is strongly influenced by geographical conditions and the level of regional development, resulting in substantial disparities in educational outcomes across Indonesia.

The Province of East Nusa Tenggara (NTT) is one of the regions in Indonesia that continues to face various challenges in the provision of primary education (Jones et al., 1998). The geographical characteristics of the region, which is mountainous, dispersed, and difficult to access, have contributed to unequal access to educational services. In addition, limited educational infrastructure, inadequate learning facilities, poor information technology connectivity, and the uneven distribution of teaching personnel have become persistent issues affecting the quality of education in the province. The relatively low socioeconomic conditions of local communities also influence children's educational participation, particularly in remote areas. In some cases, children remain at risk of dropping out of school due to family financial constraints, limited awareness of the importance of education, and domestic or social responsibilities within their communities.

Manggarai Regency, one of the districts in East Nusa Tenggara Province, faces a distinctive set of educational challenges (Neolaka et al., 2019). Geographically, Manggarai is characterized by hilly terrain and limited transportation access in several inland areas. These conditions affect the distribution of educational services, the availability of qualified teachers, and students' access to adequate learning facilities. Many primary schools in the region continue to experience shortages of classrooms, instructional materials, library resources, and educational technology support (Neolaka et al., 2019). Furthermore, the implementation of national education policies, such as the Merdeka Curriculum, has not yet been fully optimized due to limited teacher training opportunities, insufficient professional mentoring, and differences between local sociocultural contexts and nationally designed educational approaches.

Educational challenges in Manggarai are also closely associated with the social and cultural conditions of the community. Low levels of family literacy, limited parental support for children's learning, and household economic priorities that remain focused on meeting basic needs are factors that influence students' educational continuity (AIHSP, 2024). In many rural communities, education is not always perceived as a long-term instrument for social mobility, resulting in relatively limited family involvement in supporting children's learning. Data from the Indonesian Child Protection Commission (KPAI) indicate that several areas in East Nusa Tenggara, including Manggarai, continue to experience relatively high school dropout rates. These conditions suggest that educational challenges in the region cannot be understood solely from the perspective of school administration but must also be examined within broader social, cultural, economic, and geographical contexts.

To address these challenges, schools require leadership that extends beyond administrative functions and embraces transformational and contextual approaches. School principals occupy a strategic position as instructional leaders and change agents responsible for mobilizing educational resources at the school level (Shaked & Schechter, 2017). Leithwood & Jantzi (2005) argue that school leadership is among the most influential factors affecting educational quality, second only to classroom instruction. Principals are responsible not only for managing school administration but also for fostering school culture, enhancing teacher competence, strengthening collaboration with communities, and creating conducive learning environments (Lijun & Te, 2024).

In schools with limited resources, particularly Manggarai which located in disadvantaged, frontier, and outermost (3T) regions, the role of the principal becomes increasingly complex. School leaders are required to manage various constraints while maintaining the quality of teaching and learning. They must develop educational innovations despite limited resources, sustain teacher motivation under challenging working conditions, and encourage community participation in education. Consequently, efforts to improve educational quality in remote areas often depend heavily on the leadership capacity of school principals to adapt their leadership strategies to local contexts (Pratiwi et al., 2025).

Previous studies have consistently demonstrated that school leadership contributes significantly to educational improvement (Hallinger & Heck, 2010; Tonich, 2021). Hallinger & Murphy (1985), Gading (2024) argue that instructional leadership emphasizing academic supervision, curriculum development, and learning enhancement can improve both teaching quality and student achievement. Similarly, Leithwood & Jantzi (2005) highlight the importance of transformational leadership in fostering teacher commitment, collaborative cultures, and school innovation. Eden et al. (2024) further emphasizes that educational success is strongly influenced by partnerships among schools, families, and communities. These findings suggest that effective school leadership depends not only on managerial competence but also on the ability to build social relationships and collaborative networks with diverse stakeholders.

Although research on educational leadership has expanded considerably, studies examining principal leadership strategies in disadvantaged, frontier, and outermost (3T) areas remain limited, particularly within the context of primary education in eastern Indonesia. Most previous studies have focused on schools located in urban settings or regions with relatively adequate educational access. However, schools in remote areas face distinct geographical, cultural, and resource-

related challenges. Leadership models that are effective in urban schools may not necessarily be suitable for rural and underdeveloped regions. Therefore, more contextualized research is needed to understand how school principals develop leadership strategies in response to complex social and geographical realities.

Manggarai, as one of Indonesia's disadvantaged, frontier, and outermost (3T) regions, presents a unique educational landscape in which school leadership is closely intertwined with local cultural values. The social life of the Manggarai community is strongly influenced by traditions that emphasize deliberation, social solidarity, mutual cooperation, and kinship relationships (Semiu et al., 2025). These cultural characteristics have the potential to shape decision-making processes and school management practices. The principle of *go'et*, for example, embodies values of collective deliberation, consensus-building, and togetherness that can serve as a foundation for participatory leadership within schools (Putra et al., 2025). School principals in Manggarai interact not only with teachers and students but also with traditional leaders, religious leaders, and local communities that exert significant influence on social life. Consequently, leadership strategies in this region should be understood as forms of contextual leadership shaped by the dynamic interaction between national education policies and local cultural values.

The study of educational leadership grounded in local contexts is important because it offers new perspectives for the development of educational leadership theory, particularly in marginalized and underdeveloped regions. Most educational leadership theories continue to be dominated by Western perspectives developed within modern school environments supported by adequate resources. In contrast, leadership practices in rural and disadvantaged regions often involve different dynamics and challenges. Therefore, research on school leadership strategies in Manggarai can make a theoretical contribution to expanding the understanding of contextual educational leadership within developing-country settings.

Based on the issues outlined above, this study aims to analyze the leadership strategies employed by school principals to improve the quality of primary education in Manggarai Regency, identify the supporting and inhibiting factors affecting their implementation, and examine the impact of these leadership strategies on educational quality improvement. The study is expected to contribute to the advancement of contextual educational leadership scholarship, particularly in disadvantaged, frontier, and outermost (3T) regions, while also providing valuable insights for educational policymakers and principal capacity-building programs that are more responsive to the social, cultural, and geographical characteristics of local communities.

2. RESEARCH METHOD

This study employed a qualitative approach with a phenomenological design to explore in depth the experiences, meanings, and leadership strategies of school principals in improving educational quality in disadvantaged, frontier, and outermost (3T) regions. A phenomenological approach was selected because it enables the exploration of participants' subjective experiences regarding educational leadership practices within specific social, cultural, and geographical contexts. Through this approach, the study examined how principals interpret challenges, make decisions, and develop strategies for managing education in areas characterized by limited access and resources. Qualitative research emphasizes understanding meanings, social interactions, and naturally occurring phenomena, thereby facilitating rich and contextualized data collection (Creswell & Creswell, 2018; Moleong, 2019).

The study was conducted at two primary schools in Manggarai Regency, East Nusa Tenggara Province, Indonesia: SDI Wae Ri'i and SDI Jaya Sama. The research sites were selected purposively because they represent the educational challenges commonly found in 3T areas, including limited educational facilities, restricted technological access, and the influence of local cultural values on school management (Creswell & Poth, 2016). Data collection was conducted from October 2025 to February 2026. The preliminary phase included initial observations, coordination with school stakeholders, and the development of research instruments. The main phase focused on data collection through interviews, observations, and document analysis.

2.1 Participants and Data Collection

Participants were selected using purposive sampling based on their direct involvement in the phenomenon under investigation. The primary participants were the principals of SDI Wae Ri'i and SDI Jaya Sama, who played central roles in formulating and implementing strategies for improving educational quality. Supporting participants consisted of six permanent teachers from both schools who were directly involved in implementing school policies and instructional activities.

Participant selection followed the principles of phenomenological research, emphasizing individuals who possessed direct experience, contextual understanding, and the ability to reflect upon their experiences. Data collection continued until data saturation was achieved, indicated by the recurrence of information and the absence of emerging themes.

Data were collected through three techniques. First, semi-structured interviews were conducted to explore principals' experiences, leadership strategies, challenges, and practices in improving educational quality. Second, participant observation was employed to examine school activities, interactions among school members, and leadership practices within

their natural settings. Third, document analysis was used to complement and verify interview and observation findings. Documents reviewed included school vision and mission statements, school development plans, evaluation reports, meeting minutes, and other relevant institutional records. To support data collection, interview guides, observation protocols, and documentation checklists were developed based on the research objectives to ensure a systematic and focused process.

Table 1. Research Participants

Participants	Inclusion Criteria	Purpose	n
Principals	Experienced school leaders in the selected schools	To explore leadership strategies and school management practices	2
Teachers	Directly involved in implementing school policies	To provide perspectives on leadership implementation and its effects	2
Total			4

Participants were selected purposively in accordance with the principles of phenomenological research, focusing on individuals who possessed direct experience, contextual understanding, and the ability to reflect on their experiences. The number of participants remained flexible and followed the principle of data saturation, whereby data collection was terminated when no new themes emerged and the information obtained became repetitive.

Data were collected through in-depth interviews, participant observation, and document analysis.

1. Semi-structured interviews were conducted to explore principals' experiences, strategies, challenges, and leadership practices in improving educational quality. This technique enabled the researchers to obtain rich and flexible information relevant to the research context.
2. Participant observation was employed to directly observe school activities, interaction patterns among school members, and leadership practices within the natural setting of the schools.
3. Document analysis was used to complement and verify data obtained from interviews and observations. The documents reviewed included school vision and mission statements, school development plans, evaluation reports, meeting minutes, and other records relevant to the research focus.

To support the data collection process, interview guides, observation protocols, and document analysis checklists were developed based on the research objectives to ensure a systematic and focused data collection process.

2.2 Data Analysis and Trustworthiness

To ensure data trustworthiness, source triangulation and methodological triangulation were employed. Source triangulation involved comparing information obtained from principals and teachers, while methodological triangulation involved comparing findings derived from interviews, observations, and document analysis. In addition, member checking was conducted to verify the accuracy of the researchers' interpretations of participants' responses and to enhance the credibility of the findings.

Data were analyzed using the interactive model proposed by Miles and Huberman (1994), which consists of data reduction, data display, and conclusion drawing. The collected data were first organized and classified according to the research objectives. Subsequently, coding procedures were applied to identify major themes related to principals' leadership strategies, supporting and inhibiting factors, and their impacts on educational quality. These themes were then interpreted to develop a comprehensive understanding of contextual leadership practices in disadvantaged, frontier, and outermost (3T) regions.

3. RESULTS AND DISCUSSION

The findings reveal that principals in primary schools in Manggarai employ multiple and interconnected leadership strategies to address the challenges associated with limited resources, geographical constraints, and diverse sociocultural contexts. Analysis of interview, observation, and document data using NVivo identified a hierarchy of leadership strategies that shape school improvement efforts and educational quality. These strategies reflect principals' efforts to balance instructional leadership, community engagement, teacher empowerment, and organizational development within the context of primary education in 3T (frontier, outermost, and disadvantaged) areas.

Figure 1 presents the hierarchy of leadership strategies identified in this study. Local collaboration emerged as the most dominant theme, indicating the central role of community participation in supporting school development. Other major themes included teacher development, evaluation and supervision, and collaborative and participatory leadership. Several supporting strategies, namely motivation and appreciation, visionary leadership, digital innovation, and holistic student development, were also evident in the data. Together, these findings suggest that effective school leadership in Manggarai is not based on a single leadership model but on the integration of contextual, transformational, instructional, and collaborative leadership practices. The following sections discuss each theme in detail.



Figure 1. Hierarchical Coding Structure of Principal Leadership Strategies

3.1 Principal Leadership Strategies

3.1.1 Local Collaboration as a Contextual Leadership Strategy

The findings revealed that local collaboration was the most prominent leadership strategy adopted by principals in primary schools in Manggarai. Interview and observation data showed that principals actively involved parents, community leaders, and local stakeholders in school programs through initiatives such as “parents in the classroom” and the use of community-owned land as school gardens. These practices enabled community members to participate directly in educational activities rather than serving solely as external supporters. Teachers and parents reported that such involvement strengthened the connection between classroom learning and students’ everyday experiences, making learning more relevant to local culture and community life.

The findings further suggest that local collaboration functioned as an important resource for schools operating under conditions of limited infrastructure and educational resources. Through strong relationships with parents and community members, principals were able to mobilize additional support for school programs and create a shared sense of responsibility for educational improvement. This pattern reflects the principles of social capital, where trust, participation, and cooperation facilitate collective action (Six et al., 2015). Furthermore, the integration of local values and community traditions into school activities demonstrates a contextual leadership approach that adapts educational practices to local needs and sociocultural realities (Hallinger, 2018). These findings indicate that educational improvement in Manggarai depends not only on formal school management but also on the effective mobilization of community resources and local knowledge.

3.1.2 Evaluation and Supervision for Continuous Quality Improvement

The findings revealed that principals regularly conducted evaluation and supervision activities through classroom observations, teacher performance reviews, school program evaluations, and reflective feedback sessions. Interview data indicated that evaluation was used not only to monitor school performance but also to identify challenges and inform improvement strategies. Rather than emphasizing inspection and administrative control, principals used supervision as a developmental process aimed at improving teaching quality and supporting teachers’ professional growth.

Teachers reported that regular feedback and reflective discussions helped them identify weaknesses in their instructional practices, adapt learning strategies, and respond more effectively to students’ needs. Observation data also showed that principals encouraged collaborative reflection through meetings and professional discussions, creating opportunities for teachers to share experiences and solve instructional problems collectively. These findings reflect the principles of instructional leadership, in which school leaders actively support teaching and learning improvement through continuous monitoring, guidance, and professional assistance (Hallinger, 2011). In the context of Manggarai, where schools often face limitations in infrastructure and professional development opportunities, evaluation and supervision served not only as quality assurance mechanisms but also as important strategies for teacher empowerment and school improvement.

3.1.3 Teacher Development and Professional Capacity Building

The findings revealed that principals actively promoted teacher professional development through various school-based initiatives. Interview data showed that teachers regularly participated in educational technology training, Merdeka Curriculum workshops, reflective coaching, and digital literacy programs using platforms such as Canva, Quizizz, Google Forms, and Gemini AI. Principals encouraged teachers to apply newly acquired knowledge and digital tools in classroom instruction and provided opportunities for innovation in teaching practices. Teachers reported that these activities improved their lesson planning, classroom engagement strategies, and ability to integrate technology into learning.

These findings indicate that principals played an important role in strengthening teachers' professional and digital competencies. In the context of Manggarai, where opportunities to participate in external training programs remain limited, school-based professional development became a primary mechanism for continuous learning and capacity building. This leadership practice reflects transformational leadership principles, whereby leaders motivate and empower teachers to improve their professional performance (Ermita & Baysa, 2025). The findings also support the TPACK framework, which emphasizes the integration of pedagogical, content, and technological knowledge to improve teaching effectiveness (Kustiawan et al., 2021). Therefore, teacher development emerged as a strategic effort to strengthen instructional quality and support sustainable school improvement.

3.1.4 Collaborative and Participatory Leadership Practices

The findings indicated that principals adopted a participatory leadership approach by actively involving teachers in planning, decision-making, and school evaluation processes. Teachers reported having opportunities to contribute ideas during staff meetings, participate in school program planning, and engage in discussions regarding instructional improvement. This suggests that leadership was not concentrated solely in the principal but was distributed through collaboration and shared responsibility among school members.

The study also found that participatory leadership contributed to the development of a more open and collaborative school culture. Teachers were encouraged to express opinions, share innovative ideas, and engage in collective problem-solving without rigid hierarchical barriers. Such collaboration was particularly important in Manggarai schools, where limited resources and external support required strong internal cooperation among staff members. Through shared reflection and collective decision-making, principals strengthened trust, ownership, and organizational resilience. These findings reflect the principles of distributed leadership, which view leadership as a collective process that emerges through collaboration and social interaction (Printy & Liu, 2021). Therefore, collaborative and participatory leadership played a significant role in sustaining school improvement and strengthening educational quality.

3.1.5 Motivation and Appreciation for Strengthening Teacher Commitment

The findings revealed that principals strengthened teacher motivation through recognition, emotional support, and the creation of a positive work environment. Teachers reported that principals frequently acknowledged their efforts during meetings, provided encouragement when challenges arose, and offered constructive feedback on instructional practices. As a result, teachers felt valued and supported in carrying out their professional responsibilities. In this study, appreciation was expressed primarily through interpersonal recognition and emotional support rather than financial incentives.

The findings further suggest that motivation and appreciation contributed to a positive school culture characterized by trust, openness, and mutual respect. This leadership approach was particularly important in Manggarai schools, where teachers often worked under conditions of limited facilities and resources. Consistent with Herzberg's (1966) motivation theory, recognition and achievement functioned as important factors that enhanced job satisfaction and professional commitment. Therefore, motivation and appreciation emerged as supporting leadership strategies that strengthened teacher engagement and sustained a collaborative work culture.

3.1.6 Visionary Leadership and Innovation for Future-Ready Schools

The findings revealed that principals demonstrated visionary leadership through efforts to promote digital transformation, improve resource management, and prepare schools for future educational challenges. Interview data showed that school operational funds were allocated to support internet access, digital devices, and educational technology training. Principals encouraged the integration of technology into teaching and learning processes as part of broader efforts to improve educational quality and school readiness for the demands of the digital era (Furqon & Nurdin, 2025).

The study also found that principals supported holistic student development through character education programs, environmental initiatives, student leadership activities, and anti-bullying campaigns. These programs aimed to develop not only students' academic abilities but also their moral, social, and emotional competencies. Such practices reflect a long-term vision of education that balances technological innovation with character formation. Therefore, visionary leadership in

Manggarai schools combined digital innovation, strategic resource management, and holistic student development to create adaptive and future-oriented learning environments.

3.2 Supporting and Inhibiting Factors

3.2.1 Supporting Factors

The findings revealed that the successful implementation of principal leadership strategies in Manggarai was supported by several interconnected factors, including community participation, teacher professional development, adequate facilities and infrastructure, financial support, and consistent academic supervision. Interview data indicated that parents, traditional leaders, and community members actively participated in school programs and educational activities, providing both moral and practical support for school development. Such involvement strengthened school–community relationships and fostered a shared commitment to improving educational quality. This finding aligns with recent studies emphasizing that parental and community involvement contributes significantly to strengthening school climate, inclusiveness, and educational effectiveness (Alinsunurin, 2020).

The study also found that teacher training programs, professional learning communities, and reflective supervision played a significant role in strengthening teachers' professional capacities. Teachers reported that these initiatives enhanced their pedagogical, technological, and classroom management skills while encouraging continuous learning and collaboration. These findings support recent research highlighting that professional learning communities function as effective mechanisms for teacher professional growth, collaborative learning, and school improvement (Antinluoma et al., 2021; Prenger et al., 2021). Furthermore, collaborative professional learning environments encourage knowledge sharing, reflective practice, and the development of instructional innovation among teachers (Huijboom et al., 2021).

The availability of learning facilities, digital resources, and financial support through the BOS program enabled schools to implement educational innovations and maintain school operations more effectively. Adequate infrastructure and access to educational technology are increasingly recognized as important factors supporting teaching effectiveness, digital learning, and overall school performance. Regular academic supervision further contributed to instructional improvement by providing guidance, constructive feedback, and opportunities for professional reflection. Together, these findings suggest that effective school leadership in Manggarai is supported not only by principals' leadership competencies but also by strong social, professional, and institutional support systems that facilitate continuous educational improvement.

3.2.2 Inhibiting Factors

Despite these supporting conditions, the findings identified several challenges that constrained the implementation of leadership strategies in Manggarai schools. One of the most frequently reported barriers was limited infrastructure, particularly inadequate internet connectivity, unstable electricity supply, and insufficient access to digital devices. These conditions restricted the integration of technology into teaching, learning, and school administration. Interview data also revealed that geographical challenges, including remote school locations and difficult transportation access, limited teachers' participation in professional development activities and affected the delivery of educational services. Similar challenges have been reported in rural and remote educational contexts, where inadequate infrastructure and geographical isolation continue to hinder educational access, technology integration, and school improvement efforts (Pokhrel & Chhetri, 2021; Whalen, 2020).

The findings further indicated that student-related factors posed additional challenges. Teachers reported considerable variation in students' academic abilities, learning readiness, and motivation, requiring differentiated instructional approaches that demanded additional time, resources, and pedagogical expertise. These challenges were often compounded by socioeconomic conditions, as some families had limited access to learning resources, parental support, and educational opportunities outside school. Recent studies have shown that socioeconomic disparities significantly influence students' learning engagement, academic achievement, and access to educational resources, particularly in disadvantaged communities (Engzell et al., 2021; Hammerstein et al., 2021). As a result, principals were required to adopt adaptive and context-responsive leadership strategies to address diverse student needs while simultaneously responding to structural and environmental constraints. These findings indicate that the effectiveness of school leadership in Manggarai is shaped not only by internal school capacity but also by broader geographical, infrastructural, and socioeconomic conditions. Consequently, efforts to improve educational quality in 3T areas require both effective school leadership and sustained policy support to address persistent inequalities in educational access and resources.

3.3 Teacher Evaluation and Expectations of Principal Leadership

The findings revealed that teachers generally perceived principal leadership as having a positive impact on educational quality. Teachers reported improvements in teaching and learning practices, school culture, and professional development.

Interview data showed that principals created a supportive and collaborative working environment through reflective supervision, professional development activities, and teacher involvement in school decision-making. These practices strengthened teachers' sense of responsibility, collaboration, and commitment to school improvement. This finding is consistent with studies showing that collaborative leadership and teacher participation contribute to school effectiveness and teacher commitment (Leithwood et al., 2021; Liu & Hallinger, 2018).

Despite these positive perceptions, teachers identified several areas that require further improvement. The most common concern was the limited availability of infrastructure and technological resources. Teachers emphasized the need for better internet access, stable electricity, and additional digital learning facilities to support technology-based instruction. These challenges are common in remote and rural areas, where limited infrastructure often restricts the effective use of educational technology (Whalen, 2020; Zhao et al., 2021). The findings suggest that strengthening educational infrastructure is essential for supporting innovation and improving learning quality.

The study also found that teachers expected greater support for student talent development, particularly through the provision of specialized teachers in arts, sports, and extracurricular activities. Teachers reported that the limited number of staff reduced opportunities to develop students' non-academic potential. This finding highlights the importance of holistic education, which promotes students' intellectual, social, emotional, and creative development alongside academic achievement (Darling-Hammond et al., 2020).

Furthermore, teachers expected principals to maintain a visionary, adaptive, and collaborative leadership approach. They valued leaders who involved teachers in school development, fostered positive relationships, and encouraged continuous improvement. Teachers viewed principals not only as administrators but also as role models, motivators, and agents of change. This finding supports transformational leadership perspectives that emphasize leaders' ability to inspire and empower school communities (Harris & Jones, 2020). Overall, the findings suggest that effective leadership in 3T areas requires a contextual, collaborative, and transformational approach. Educational improvement depends not only on administrative competence but also on principals' ability to empower teachers, mobilize community support, and respond to local challenges. In this context, principals play a strategic role as change agents in promoting educational quality and equity in resource-constrained schools.

4. CONCLUSION

This study concludes that principals in primary schools in Manggarai employ contextual, collaborative, instructional, transformational, and visionary leadership strategies to improve educational quality in disadvantaged, frontier, and outermost (3T) areas. Local collaboration emerged as the most dominant strategy, supported by teacher professional development, academic supervision, participatory decision-making, motivation and appreciation, and innovation-oriented leadership. The successful implementation of these strategies was strengthened by community participation, professional learning opportunities, adequate facilities, financial support, and consistent supervision, while limited infrastructure, geographical barriers, diverse student needs, and socioeconomic constraints remained significant challenges. The findings further indicate that principal leadership positively influences teaching and learning quality, teacher professionalism, school culture, and student development. Teachers generally viewed principals as effective leaders but emphasized the need for improved educational infrastructure and greater support for holistic student development. Overall, effective leadership in 3T areas requires principals to act not only as administrators but also as change agents who mobilize community resources, empower teachers, and adapt educational practices to local social, cultural, and geographical contexts in order to achieve sustainable educational improvement.

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