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The Role of Female Principals in Early Childhood Education on Children's Social-Emotional Development in Supporting SDG 4

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Abstract

This study investigates the role of female principals in early childhood education (ECE) in fostering children's social-emotional development toward achieving Sustainable Development Goal 4 (SDG 4). A convergent mixed-method survey was conducted with 164 female ECE principals in Central Java, Indonesia. Quantitative data were analyzed using descriptive statistics, while qualitative responses were examined through thematic analysis to explain contextual challenges. The findings reveal that democratic leadership is the most dominant style (78% "always"), followed by delegative (70%), transformational (68%), and authoritarian leadership (42%). The relatively high use of authoritarian leadership indicates that principals often combine participatory and directive approaches in response to contextual challenges, including limited teacher competence and institutional constraints. The novelty of this study lies in three aspects. First, unlike previous Indonesian studies that mainly focused on teacher performance and administrative effectiveness, this study directly links female leadership styles with children's social-emotional development outcomes. Second, this study integrates gender-based leadership analysis with the Socio-Ecological Model, emphasizing that children's development is influenced not only by school leadership but also by collaboration among schools, families, and communities. Third, this study proposes a categorized framework of structural, human resource, and socio-cultural barriers that mediate leadership effectiveness in ECE institutions. The findings demonstrate that leadership effectiveness in ECE cannot be measured solely through managerial success, but through its contribution to holistic child development. This study also challenges the assumption that democratic leadership alone guarantees educational quality, showing that systemic support, teacher readiness, and parental involvement significantly shape leadership outcomes. The study repositions female leadership in ECE as outcome-oriented leadership that prioritizes children's developmental well-being in line with SDG 4.

Keywords: female principals; early childhood education; social-emotional development; leadership styles; SDG 4; child-friendly schools

INTRODUCTION

Sustainable development ensures opportunities and resources for the current generation while preserving access for future generations (Gaur, Gupta, & Pal, 2024). Education plays a central role in achieving the Sustainable Development Goals (SDGs) (Avelar, Silva-Oliveira, & Pereira, 2019; Sarker & Ullah, 2023). Quality education significantly contributes to economic and social development and is essential for improving public knowledge and human capital (Paz, Teixeira, & Lima, 2022). Therefore, ensuring inclusive and equitable quality education is a primary target of SDG 4 (Friedman et al., 2020; Müller et al., 2022; Saini et al., 2023).

SDG 4, particularly target 4.2, emphasizes that by 2030 all children should have access to quality early childhood development, care, and pre-primary education to ensure readiness for primary education (Rad et al., 2022; UNESCO, 2025). This highlights the critical importance of early childhood education (ECE) in building a sustainable and equitable future (Borg et al., 2025). Consequently, improving the quality of ECE has become a global priority to support children's holistic development and reduce educational inequalities (Rad et al., 2022).

Previous studies demonstrate a strong long-term association between high-quality ECE and children's future academic and life outcomes (Bustamante et al., 2023; McCoy et al., 2017; Vandell et al., 2016). Children who experience high-quality early education are more likely to achieve better academic performance, progress through school successfully, and develop positive life trajectories. Importantly, these outcomes are not solely influenced by cognitive development, but also by other developmental domains, particularly social-emotional development, which plays a fundamental role in children's school readiness and overall well-being.

Social-emotional development in early childhood refers to children's ability to understand and manage their emotions, establish positive relationships, and interact effectively with others. This domain is essential because it forms the foundation for children's learning processes and social functioning. Research indicates that children's development is shaped not only by cognitive factors but also by social interactions and emotional experiences within their learning environments (Pace et al., 2019). Children with well-developed social-emotional skills tend to demonstrate better self-regulation, adaptability, cooperation, and prosocial behavior, all of which are crucial for lifelong learning.

In the context of early childhood education, supportive learning environments play a vital role in fostering children's social-emotional development. The concept of child-friendly schools emphasizes safe, inclusive, and nurturing environments that prioritize children's well-being and active participation (Gong et al., 2024; Nyatuka, 2023; Shen, 2025). Such environments enable children to develop emotional regulation, empathy, and social competence. Therefore, strengthening social-emotional development is an integral part of improving the quality of education, as mandated by SDG 4.

The successful implementation of programs that support children's holistic development is strongly influenced by school leadership (Brown et al., 2024). School principals play a crucial role in managing early childhood institutions, shaping school culture, supporting teachers, and ensuring the effectiveness of educational programs (Müller et al., 2021; Verhelst et al., 2020; Nur Ismail et al., 2024). In this regard, female principals hold strategic positions in fostering educational environments that not only emphasize academic achievement but also support children's social-emotional development. Through effective leadership, they can promote

inclusive practices, implement child-centered programs, and create a positive school climate that aligns with the goals of SDG 4.

This study is also grounded in the Socio-Ecological Model, which emphasizes that children's development is shaped through interactions among multiple environmental systems, including schools, families, and communities. In the context of early childhood education, children's social-emotional competencies are not developed solely through classroom instruction but also through consistent support and collaboration across these interconnected environments. Therefore, school leadership plays a strategic role not only in managing educational institutions internally but also in fostering partnerships with parents and communities to create supportive and child-friendly learning ecosystems. This perspective is particularly relevant to SDG 4, which promotes inclusive and equitable quality education through collaborative and sustainable educational practices.

Despite the growing body of research on school leadership and early childhood education, several important gaps remain. Previous Indonesian studies primarily focused on leadership effectiveness in improving teacher performance, institutional management, and school quality. For example, Astuti et al. (2019) examined the influence of kindergarten principals' leadership styles on teacher discipline and performance, while Kusumawati (2023) focused on visionary leadership and teacher effectiveness in kindergarten settings. Similarly, Widyastuti et al. (2024) highlighted the contribution of transformational leadership to improving the quality of early childhood education institutions. Although these studies demonstrate the importance of leadership in ECE, they largely stop at organizational and administrative outcomes.

Limited attention has been given to how female principals' leadership styles directly influence children's social-emotional development, particularly within the Indonesian context. Existing studies rarely integrate gender perspectives in educational leadership with measurable developmental outcomes among children. Consequently, the specific contribution of female leadership toward creating emotionally supportive and child-centered learning environments remains underexplored.

This study addresses the gap by positioning leadership within the Socio-Ecological Model, which emphasizes that children's development is shaped through interactions among multiple systems, including schools, families, and communities. In this framework, principals are not merely institutional managers but key actors who influence the broader educational ecosystem through collaboration, school culture, and stakeholder engagement. This perspective is particularly relevant in early childhood education because children's social-emotional development depends on consistency between home and school environments.

Another limitation of previous research lies in the lack of contextual analysis related to regional characteristics within Indonesia. Central Java, as one of Indonesia's most populous provinces, provides a strategic setting because it reflects diverse socio-cultural backgrounds, varying educational resources, and strong collectivist traditions such as musyawarah and gotong royong. These cultural values may significantly shape leadership practices and stakeholder collaboration in ECE institutions.

Based on these considerations, the urgency of this research lies in understanding how female leadership in early childhood education can be optimized to support children's social-emotional development within the broader socio-cultural ecosystem. This study aims to analyze the leadership styles of female principals, examine the implementation of school programs, and identify supporting and inhibiting factors in achieving SDG 4. Furthermore, this study

4 Research Title

contributes to the literature by providing empirical evidence that connects leadership practices with children’s developmental outcomes and contextual realities in Indonesian ECE settings

METHODS

This study employed a mixed-method survey design to examine the efforts of female principals in early childhood education (ECE) in supporting Sustainable Development Goal 4 (SDG 4), focusing on leadership styles, school flagship programs, and the support and barriers encountered. A mixed-method approach was used to provide a comprehensive understanding by combining quantitative trends with qualitative insights (Creswell & Plano Clark, 2018).

Prior to the main study, a pilot test involving 30 respondents was conducted to evaluate the validity and reliability of the instrument. Four invalid items were removed, while the remaining items demonstrated acceptable reliability. The leadership style questionnaire was adapted from established educational leadership constructs, including transformational, democratic, delegative, and authoritarian leadership dimensions. Closed-ended items employed a four-point Likert scale (always, often, rarely, never). Reliability testing showed satisfactory internal consistency, with Cronbach’s Alpha values ranging from 0.78 to 0.86 across leadership dimensions.

The study involved 164 female ECE principals in Central Java selected through purposive sampling. The sampling strategy considered geographical diversity (urban, semi-urban, and rural areas), school status (public and private institutions), and principals’ active participation in professional networks to ensure variation in institutional contexts. Approximately 19–20 sub-districts were included in the sample.

The respondents had varied professional experience. Approximately 34% had served as principals for less than 5 years, 46% had between 5–10 years of experience, and 20% had more than 10 years of leadership experience. This variation allowed the study to capture diverse leadership practices across different career stages.

Data were collected through online questionnaires distributed via WhatsApp groups. The questionnaire consisted of closed-ended, semi-open-ended, and open-ended questions. Quantitative data were analyzed using descriptive statistics in SPSS, while qualitative responses were examined using thematic analysis following Braun and Clarke (2006). The convergent mixed-method design enabled quantitative findings to be strengthened and contextualized through qualitative explanations.

RESULTS AND DISCUSSION

The findings of this study show that democratic leadership is the most dominant style applied by female principals, followed by delegative, transformational, and authoritarian leadership. A detailed distribution of leadership styles based on frequency is presented in Table 1.

Table 1. Distribution Leadership Style Applied by Female Principals

Leadership Style	Always	Often	rarely	Never
Democratic Leadership	78%	21%	1%	0%
Authoritarian Leadership	42%	41%	11%	4%
Delegative Leadership	70%	22%	8%	0%
Transformational Leadership	68%	29%	2%	1%

To provide a clearer comparison across leadership styles, the distribution is also illustrated in Figure 1.

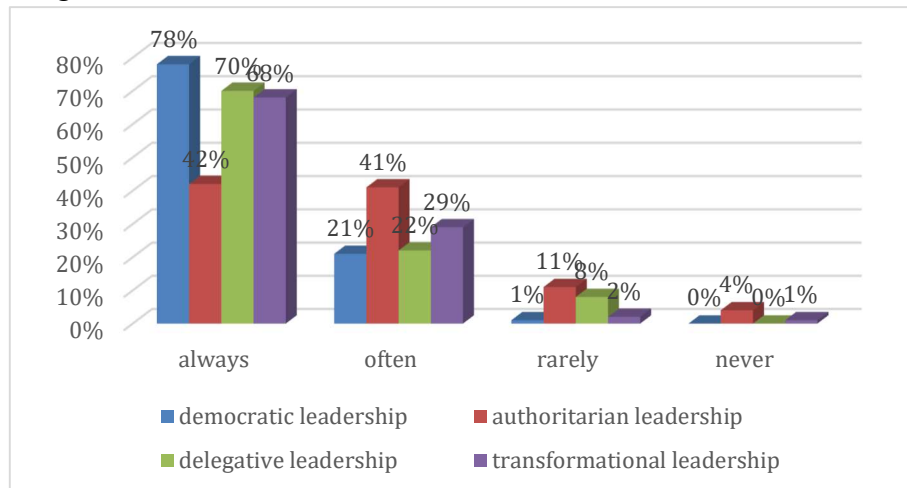


Figure 1. Leadership Style Distribution Based on Frequency

The data in Table 1 and Figure 1 indicate that democratic leadership is the most consistently applied style, with 78% of principals reporting that they “always” use this approach. This dominance reflects a strong tendency toward participatory and collaborative school management, which is highly relevant in early childhood education settings. Democratic leadership has been shown to promote open communication and shared decision-making, which enhances teacher motivation and collaboration. In turn, teachers who feel supported are more likely to create emotionally responsive classrooms that facilitate children’s ability to express feelings, build relationships, and develop self-regulation skills.

The prevalence of democratic leadership in this study can be explained by both cultural and institutional factors. From a cultural perspective, Central Java is known for its collectivist values, such as *musyawarah* (deliberation) and *gotong royong* (mutual cooperation), which naturally align with participatory leadership practices. These cultural norms encourage consensus-building and shared responsibility, making democratic leadership more acceptable and effective in school environments. From an institutional perspective, leadership training programs and policy directions from the Ministry of Education in Indonesia increasingly emphasize collaborative, inclusive, and school-based management approaches. These frameworks promote teacher involvement and participatory decision-making, which may further reinforce the adoption of democratic leadership among principals.

Delegative leadership also shows a high percentage in the “always” category (70%), indicating that many principals provide autonomy to teachers in implementing instructional practices. This is particularly important in the context of social-emotional learning, as flexible teaching approaches enable the implementation of play-based and child-centered learning strategies. Such strategies are strongly associated with the development of empathy, cooperation, and emotional regulation in young children. However, the effectiveness of delegative leadership depends on teachers’ competence and readiness. Without sufficient professional capacity, increased autonomy may not necessarily translate into improved developmental outcomes.

Transformational leadership, applied by 68% of principals, also contributes to creating a positive school culture that supports holistic child development. This leadership style emphasizes vision, motivation, and inspiration, which can encourage teachers to integrate

social-emotional values such as empathy, respect, and collaboration into daily learning. Nevertheless, the impact of transformational leadership in this study appears to be constrained by the limited implementation of school flagship programs.

Although democratic leadership emerged as the dominant leadership style, the relatively high percentage of authoritarian leadership (42% “always” and 41% “often”) represents one of the most significant findings of this study. This result suggests that female principals in ECE institutions do not exclusively rely on participatory leadership approaches but frequently combine democratic and directive practices depending on institutional conditions.

This phenomenon may be interpreted through both socio-cultural and practical perspectives. From a socio-cultural perspective, leadership practices in Indonesia are often influenced by paternalistic and maternalistic traditions, in which leaders are expected to act as protectors, decision-makers, and authority figures while simultaneously maintaining harmonious relationships. In the context of Central Java, where collectivist values strongly shape organizational culture, authoritarian leadership may not always be perceived negatively but rather as a form of responsible guidance and control.

From a practical perspective, the use of authoritarian leadership may also reflect institutional necessity. Qualitative responses indicate that several principals adopted more directive approaches due to limited teacher competence, inconsistent program implementation, and lack of institutional support. In schools where teachers require intensive supervision or where educational resources are inadequate, principals may perceive authoritarian practices as necessary to maintain organizational effectiveness and program discipline.

This finding expands previous leadership studies in Indonesian ECE contexts, which generally portray democratic and transformational leadership as entirely dominant and beneficial. The present study demonstrates that leadership practices in ECE are more dynamic and situational than previously assumed. Female principals often navigate between collaborative and directive approaches to respond to contextual pressures and institutional limitations.

To better understand how contextual barriers influence leadership implementation, the findings can be interpreted through the interaction between leadership styles and institutional constraints. Structural barriers such as limited funding and inadequate facilities tend to increase principals’ reliance on directive decision-making, particularly when schools face urgent operational needs. Similarly, limited teacher competence may reduce the effectiveness of delegative leadership because teachers require closer supervision and clearer instructional guidance.

Meanwhile, democratic and transformational leadership appear more effective when schools receive stronger parental and community support. Schools with active stakeholder involvement demonstrate better implementation of child-friendly and social-emotional learning programs because principals are able to distribute responsibilities and build collaborative partnerships more effectively.

The findings also reinforce the relevance of the Socio-Ecological Model. Children’s social-emotional development cannot be separated from interactions between school, family, and community environments. Weak parental involvement and limited SDG 4 socialization indicate that leadership effectiveness depends not only on principals’ individual capacity but also on the broader ecosystem supporting children’s development.

Furthermore, the findings reveal that key programs such as child-friendly schools, green schools, and zero-waste initiatives are still implemented at relatively low levels. This indicates a critical gap between leadership orientation and program implementation. While leadership styles reflect strong potential to support holistic development, the lack of consistent program execution reduces the overall effectiveness of these leadership practices.

Table 2. categorization of Barriers in Implemting Leadership and ECE Program

Category	Type of Barrier	Percentage	Implications for Practice
Structural and Financial	Limited funding	13%	Constraints in providing learning facilities and program sustainability
	Inadequate facilities	16%	Limits safe and stimulating learning environments
Human Resources	Limited teacher competence	15%	Reduces effectiveness of child-centered and social-emotional learning
Sosial and Community	Lack of SDG 4 socialization	26%	Low awareness and alignment with education goals
	Limited parental/community support	30%	Weak consistency between school and home environment

From a social-emotional perspective, the limited implementation of child-friendly school programs is particularly concerning. Such programs are designed to create safe, inclusive, and participatory environments that foster children’s well-being and social interaction. The low level of implementation suggests that many children may not fully benefit from environments that support emotional security and social competence. This reinforces the argument that achieving SDG 4 is not only about access to education but also about ensuring the quality of developmental experiences.

In addition, this study identifies several barriers that hinder effective leadership and program implementation. To provide clearer implications for policymakers, these barriers can be categorized into three main groups:

1. Structural and Financial Barriers
These include limited funding (13%) and inadequate facilities (16%), which restrict schools’ ability to provide safe, stimulating, and child-friendly learning environments. Insufficient infrastructure directly affects the quality of social-emotional learning experiences.
2. Human Resource Barriers
Human resource constraints (15%), including limited teacher capacity and lack of professional training, reduce the effectiveness of leadership practices, particularly in implementing innovative and child-centered learning approaches. Without adequate competence, even supportive leadership styles may not yield optimal outcomes.
3. Social and Community Barriers
The lack of SDG 4 socialization (26%) and limited parental and community involvement represent significant challenges. Social-emotional development requires consistency between school and home environments; therefore, weak collaboration with families may limit the effectiveness of school-based interventions.

These categorized barriers highlight that leadership effectiveness is not solely determined by leadership style but also by the broader ecosystem in which schools operate.

Addressing these barriers requires integrated policy interventions, including increased funding support, continuous professional development for teachers, and stronger engagement with parents and communities.

Structural barriers such as limited funding and inadequate facilities tend to increase principals' reliance on directive decision-making, particularly when schools face urgent operational demands and limited institutional resources. Under these conditions, principals may adopt more authoritarian leadership practices to ensure program implementation and organizational stability. Similarly, limited teacher competence may reduce the effectiveness of delegative leadership because teachers often require closer supervision, clearer instructional guidance, and continuous mentoring. In contrast, democratic and transformational leadership appear to function more effectively in schools with stronger parental involvement and community support, where collaborative decision-making and shared responsibility can be more successfully implemented. These findings suggest that leadership practices in early childhood education are highly contextual and influenced by the broader institutional and socio-cultural environment.

The categorized barriers presented in Table 2 and the visual matrix highlight that leadership effectiveness is shaped not only by leadership style but also by systemic and contextual factors. This finding is consistent with the perspective of educational leadership theory, which emphasizes that leadership operates within a broader organizational and environmental system (Yukl, 2022). In this sense, even highly effective leadership styles such as democratic and transformational leadership may not produce optimal outcomes without sufficient structural and social support.

From the perspective of transformational leadership theory, effective leaders are expected to inspire and motivate followers toward shared goals (Northouse, 2019). However, the findings of this study suggest that inspirational leadership alone is insufficient when schools face resource limitations and capacity constraints. This supports previous research indicating that leadership impact is mediated by organizational conditions, including resources and teacher readiness.

Furthermore, the findings align with the concept of distributed leadership, which highlights the importance of collaboration and shared responsibility among stakeholders (Traver-Martí et al., 2023). The limited parental and community involvement identified in this study indicates that leadership efforts are not yet fully supported by external stakeholders, thereby reducing the effectiveness of school-based interventions in promoting children's social-emotional development.

From a socio-ecological perspective, children's development is influenced by multiple interconnected systems, including family, school, and community environments. The lack of alignment between these systems, as reflected in weak parental involvement and limited SDG 4 socialization, may hinder the development of children's social-emotional competencies. This reinforces the argument that leadership in early childhood education should extend beyond internal school management to include active engagement with families and communities.

Overall, these theoretical perspectives strengthen the interpretation that improving children's social-emotional development requires not only effective leadership styles but also systemic alignment across institutional, human resource, and socio-cultural dimensions. Therefore, policy interventions should adopt a holistic approach that integrates leadership development, resource allocation, and stakeholder collaboration.

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This study emphasizes that leadership in early childhood education should be oriented toward holistic development, particularly social-emotional competencies. Strengthening alignment between leadership practices, program implementation, and stakeholder support is essential to maximize the contribution of early childhood education in achieving SDG 4. Without such alignment, the potential of leadership to enhance children's social-emotional development may remain underutilized.

CONCLUSION

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This study demonstrates that female principals play a strategic role in advancing SDG 4 through democratic, delegative, transformational, and situational leadership practices that support children's social-emotional development. However, the findings also reveal that leadership in Indonesian ECE settings is not purely participatory. The relatively high use of authoritarian leadership indicates that female principals often combine nurturing and directive approaches to respond to institutional limitations, teacher readiness, and socio-cultural expectations. These findings contribute to a broader understanding of gendered leadership in Indonesian educational contexts. Within Indonesian and collectivist cultural values, female leadership is not solely characterized by empathy and collaboration, but also by adaptive authority aimed at maintaining institutional harmony and educational effectiveness. This expands previous assumptions that female leadership in education is exclusively democratic or transformational.

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The study also highlights that leadership effectiveness in ECE should not be measured only through administrative performance but through its contribution to children's developmental outcomes. Leadership effectiveness is strongly mediated by systemic factors, including funding availability, teacher competence, parental involvement, and community support. Practically, the findings suggest that female principals can optimize their democratic leadership style not only for internal school management but also for community advocacy. Through collaborative decision-making and stakeholder engagement, principals can strengthen SDG 4 socialization, encourage parental participation, and build partnerships with local communities to support program sustainability and resource mobilization. This study recommends the development of structured leadership training programs for ECE principals that integrate social-emotional learning, stakeholder collaboration, and adaptive leadership strategies. Policymakers should also strengthen institutional support through continuous professional development, community-based partnerships, and improved educational resources.

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Finally, this study acknowledges several limitations. Since the research relied primarily on self-report survey data, the findings may be influenced by social desirability bias, where principals may present themselves as more democratic or transformational than their actual practices. Future studies are recommended to incorporate classroom observations, teacher perspectives, and longitudinal approaches to provide a more comprehensive understanding of leadership effectiveness in ECE settings.

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