

Program to Enhance Leadership Literacy of Rural Kindergarten Principals in Guangxi

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ABSTRACT

This study examines the leadership literacy of rural kindergarten principals in Guangxi, China, focusing on their administrative, pedagogical, and strategic planning competencies. Despite national initiatives to modernize early childhood education, rural school leaders face challenges in school administration, instructional leadership, and resource management. Using a three-phase research methodology, this study identifies key leadership literacy components, assesses existing and desired literacy levels, and develops a structured intervention program. A survey was conducted with 384 rural kindergarten principals, selected using Yamane's (1973) sampling formula, to evaluate their leadership literacy levels. Data analysis was performed using SPSS, with a Modified Priority Needs Index (PNI modified) used to identify gaps. The study found significant discrepancies between existing and desired literacy levels, particularly in strategic planning and fostering student-centered learning. Expert validation confirmed the relevance and feasibility of the proposed leadership literacy program, incorporating the 70:20:10 learning model, which balances experiential learning, peer coaching, and formal training. The findings suggest that enhancing leadership literacy is essential for improving early childhood education administration in rural areas. This research contributes to educational policy by proposing a scalable leadership development framework. Future research should explore long-term program impacts and the potential of digital learning platforms to bridge rural-urban disparities in leadership training.

Key words: Leadership Literacy, Educational Literacy, Kindergarten Principals, Rural Education, Administrative Literacy

INTRODUCTION

The concept of leadership literacy in early childhood education has gained increasing attention as an essential factor in improving school administration, teacher development, and student learning outcomes (Daniëls et al., 2019; Rodd, 2020). In rural areas, kindergarten principals must cultivate administrative literacy to manage school operations, pedagogical literacy to support effective teaching strategies, and leadership literacy to foster a vision for educational development. While existing studies emphasize the critical role of school leaders in shaping early childhood education, there remains a need for a more comprehensive synthesis of literature that connects leadership literacy with effective school governance and student learning outcomes. As early childhood education plays a fundamental role in children's cognitive and social development, leadership literacy among school administrators is crucial in shaping the quality of early learning environments (Bloom & Bella, 2005; Brown, 2024; Jillian & Rodd, 2006). Recognizing this, China has prioritized the modernization of education and the strengthening of educational leadership at all levels (Li, 2017; Huang et al., 2015; Wei, 2017). Efforts to

align educational policies with leadership capacity-building initiatives have led to nationwide reforms, particularly focusing on narrowing the urban-rural divide in leadership quality and literacy standards.

Despite national initiatives, rural kindergarten principals in China continue to experience challenges related to leadership literacy (He & Ho, 2017; Hong & Tao, 2022). Many rural school leaders struggle with insufficient administrative literacy, limiting their ability to handle budgeting, infrastructure planning, and resource allocation (Duke, 2015; Kaplan & Uğurlu, 2025; Somdet & Laoakka, 2025). Additionally, gaps in pedagogical literacy prevent effective instructional leadership, hindering the development of child-centered teaching strategies and professional teacher training. Furthermore, unequal access to educational resources between rural and urban areas exacerbates these challenges, restricting opportunities for rural principals to participate in professional development programs (Aguliera & Nightengale-Lee, 2020; Blanchard et al., 2016; Neat, 2023). These disparities not only affect school operations but also impact teacher performance and student engagement, contributing to broader systemic

inequalities in early childhood education. Thus, the role of leadership literacy in rural education demands greater scholarly attention to inform targeted interventions and policy strategies.

This study addresses the existing gaps in leadership literacy among rural kindergarten principals by investigating the current literacy levels in administrative, pedagogical, and strategic planning competencies and designing an intervention program to enhance their leadership skills. The research focuses on developing a structured leadership literacy program tailored to the needs of rural kindergarten principals in Guangxi, China, integrating experiential learning, peer coaching, and formal training. By examining the relationship between leadership literacy and school effectiveness, this study aims to provide empirical evidence on how structured professional development programs can enhance educational leadership in under-resourced settings. This inquiry seeks to uncover practical strategies for improving leadership literacy while identifying key areas for professional development.

The significance of this research lies in its potential to contribute to both educational policy and practice. By developing a targeted program to enhance leadership literacy, the study provides a framework for policymakers, educational institutions, and professional development organizations to strengthen early childhood education leadership in rural China. Moreover, the findings may serve as a model for leadership literacy development in similar educational contexts, particularly in regions facing disparities in educational access and administrative capacity (Clarke & O'donoghue, 2017; Guo et al., 2019; Yoshikawa et al., 2018). A well-structured leadership literacy framework not only bridges existing gaps but also serves as a replicable model for fostering sustainable improvements in educational governance and instructional leadership. Ultimately, this research supports broader efforts to bridge the literacy gap in educational leadership, fostering more equitable and effective early childhood education systems.

Research Question

- How can a structured leadership literacy program enhance the administrative, pedagogical, and strategic planning competencies of rural kindergarten principals in Guangxi, China?

SCOPE OF THE RESEARCH

Given the critical role of leadership literacy in early childhood education, the research aims to analyze existing competencies, identify gaps, and develop a structured intervention program that enhances leadership capacity. By investigating key components of leadership literacy, the study provides insights into how rural principals can be better equipped to manage their institutions effectively. The study is framed by three key dimensions: the components of leadership literacy, the methods for leadership literacy development, and the population and sample selection process.

Scope of Content

Components of leadership literacy

The study identifies six fundamental components that define leadership literacy for rural kindergarten principals. These components encompass both strategic and operational competencies essential for effective school administration. Literacy in planning rural kindergarten development focuses on a principal's ability to design strategic policies and long-term educational plans tailored to rural contexts. Literacy in creating a culture fostering student development emphasizes the ability to cultivate a student-centered learning environment that nurtures holistic growth. Literacy in leading pre-school care and education ensures that principals understand and implement best practices in early childhood education. Literacy in guiding and facilitating teacher development pertains to mentoring and training teachers to enhance professional growth and instructional effectiveness. Literacy in optimizing internal management refers to the administrative skills necessary for managing financial, human, and material resources, ensuring operational efficiency. Finally, literacy in adapting to the external environment highlights the ability to engage with communities, stakeholders, and government policies, promoting sustainable early childhood education initiatives.

Methods of leadership literacy development

To develop a structured leadership literacy program, this study employs the 70:20:10 learning model, which provides a balanced approach to leadership training. Experiential learning (70%) forms the foundation of the program, allowing principals to engage in problem-solving activities, real-world leadership challenges, and strategic decision-making exercises. Social learning (20%) focuses on peer coaching, professional communities of practice, and mentorship programs, fostering a collaborative leadership development environment. Lastly, formal training (10%) consists of structured workshops, educational seminars, and instructional sessions, ensuring that principals receive theoretical knowledge and guidance from experts in early childhood education leadership. This blended approach ensures that principals acquire leadership literacy through direct experience, social interaction, and formal instruction, making the learning process more practical and sustainable.

Population and sample

The study targets rural kindergarten principals in Guangxi, a region characterized by educational disparities between urban and rural areas. The total population of rural kindergarten principals in Guangxi is 8,674, from which a sample of 384 participants was selected using Yamane's (1973) sampling formula. The sample ensures statistical representation, capturing a diverse range of leadership literacy levels across different kindergarten settings. By using a quantitative survey approach, the study gathers comprehensive data on the existing leadership literacy levels of rural principals,

allowing for an accurate assessment of their competencies, challenges, and developmental needs.

METHODOLOGY

The study was conducted systematically, incorporating content analysis, expert validation, statistical evaluation, surveys, and program development to ensure a data-driven approach to leadership literacy enhancement (Andino-González et al., 2025; Bowers, 2017; Marsh & Farrell, 2015). The study was divided into three phases:

Phase 1: Identifying Components of Leadership Literacy

The first phase aimed to define the core components of leadership literacy necessary for rural kindergarten principals. This was achieved through literature review, expert validation, and statistical evaluation. The study followed a structured approach to ensure that the identified components were relevant, practical, and aligned with educational leadership standards, as shown in Table 1.

Phase 2: Assessing Existing and Desired Leadership Literacy Levels

The second phase aimed to assess the current leadership literacy levels of rural kindergarten principals and determine priority areas for development. A quantitative survey was conducted, focusing on self-assessed leadership literacy levels and comparing them with desired competency levels, as shown in Table 2.

Phase 3: Developing and Evaluating the Leadership Literacy Program

The third phase involved the design, implementation, and evaluation of a structured intervention program aimed at enhancing leadership literacy among rural kindergarten

Table 1. Steps in identifying components of leadership literacy

Step	Description
Content analysis	Conducted a review of academic literature and policy documents on leadership literacy in early childhood education
Component identification	Identified key competencies in administrative, pedagogical, and strategic planning literacy for rural kindergarten principals
Expert validation	Selected five experts in early childhood education and educational leadership to evaluate the identified components
Research instruments	Designed an evaluation form for expert review, using a 5-point Likert scale
Statistical evaluation	Collected expert feedback and analyzed it using mean and standard deviation to determine the suitability and reliability of leadership literacy components.

principals. The program was developed based on the findings from Phases 1 and 2, ensuring that it addressed the highest-priority leadership literacy needs, as shown in Table 3.

This three-phase methodology provided a systematic and data-driven approach to enhancing leadership literacy among rural kindergarten principals in Guangxi. By combining expert validation, survey analysis, and structured program evaluation, the study ensured that the leadership

Table 2. Steps in assessing existing and desired leadership literacy levels

Step	Description
Population and sampling	Targeted 8,674 rural kindergarten principals in Guangxi. Used Yamane's (1973) formula to determine a sample size of 384
Survey development	Designed a structured questionnaire measuring existing and desired literacy levels across six components
Likert scale assessment	Used a 5-point Likert scale (1=very low, 5=very high) to rate literacy levels
Data collection	Distributed the survey to 384 rural kindergarten principals and collected responses
Data analysis	Used SPSS statistical software to analyze survey responses, calculating mean scores for existing and desired literacy levels
Priority needs index	Used the Modified Priority Needs Index (PNI modified) to determine the most critical leadership literacy gaps

Table 3. Developing and Evaluating the Leadership Literacy Program

Step	Description
Expert consultation for program development	Conducted interviews with five leadership experts to collect insights on effective leadership training strategies
Program design	Developed a structured leadership literacy program with six modules: <ol style="list-style-type: none"> 1. Planning rural kindergarten development 2. Creating a culture fostering student development 3. Leading preschool care and education 4. Guiding and facilitating teacher development 5. Optimizing internal management 6. Adapting to the external environment
Implementation	Integrated the 70:20:10 learning model
Program evaluation	Conducted an expert assessment of program suitability and feasibility, incorporating qualitative and quantitative feedback
Program refinement	Adjusted program content based on expert feedback to ensure effectiveness and practical applicability

literacy program was evidence-based, practical, and tailored to the needs of rural education leaders. The findings from this methodology contributed to the development of a sustainable leadership literacy model, helping bridge competency gaps and improve early childhood education administration in rural areas.

RESULTS

The results of the study are presented in three phases, corresponding to the research methodology. Each phase provides insights into the identification, assessment, and development of a leadership literacy program for rural kindergarten principals in Guangxi, China.

Phase 1: Identification of Leadership Literacy Components

The first phase aimed to define the core leadership literacy components required for rural kindergarten principals. This was achieved through a content analysis, expert validation, and statistical evaluation to ensure the relevance and applicability of the identified components.

Step 1: identification of leadership literacy components

The study identified six key components of leadership literacy based on a systematic analysis and synthesis of educational leadership models, early childhood administration literature, and rural kindergarten management practices. The six components are:

1. Planning rural kindergarten development.
2. Creating a culture fostering student development.
3. Leading preschool care and education.
4. Guiding and facilitating teacher development.
5. Optimizing internal management.
6. Adapting to the external environment.

These components represent a comprehensive framework for leadership literacy, aligning with international best practices and China's national educational priorities.

Step 2: expert validation of leadership literacy components

To assess the suitability and applicability of these components, five experts in early childhood education and school leadership were selected to evaluate the framework. The

expert panel assessed each component using a 5-point Likert scale, where 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = medium, 3.51-4.50 = high, and 4.51-5.00 = very high. The results of the expert evaluation are presented in Table 4.

The results indicate that all six components of leadership literacy received a "very high" rating, with mean scores ranging between 4.51 and 4.65. This suggests that the expert panel strongly agreed on the relevance and importance of these components for rural kindergarten principals. The low standard deviations (ranging from 0.42 to 0.49) further confirm the consistency of expert opinions, reinforcing the reliability of the evaluation.

The validation of these components provides a strong foundation for the next phases of the research, ensuring that the identified leadership literacy areas are practical, evidence-based, and aligned with the needs of rural kindergarten education in Guangxi. This framework will guide the assessment of existing and desired leadership literacy levels in Phase 2 and the development of an intervention program in Phase 3.

Phase 2: Assessment of Existing and Desired Leadership Literacy Levels

This phase aimed to assess the current leadership literacy levels among rural kindergarten principals in Guangxi and determine the priority areas for development. The findings were based on self-assessment surveys, where principals rated their existing leadership literacy levels and their desired levels across six key components. The Modified Priority Needs Index (PNI modified) was used to identify and rank the most critical areas for leadership literacy enhancement. The detailed results of the existing and desired leadership literacy levels, along with the Modified Priority Needs Index (PNI modified) rankings, as shown in Table 5.

To determine which areas, require urgent intervention, the Modified Priority Needs Index (PNI modified) was calculated. The PNI modified represents the discrepancy between the desired and existing literacy levels, highlighting priority areas for development.

The results indicate that planning rural kindergarten development (PNI = 0.651) and creating a culture fostering student development (PNI = 0.649) ranked as the top two priority needs, suggesting that rural principals urgently require training in these areas. These components are crucial for ensuring strategic planning, sustainable school

Table 4. Leadership literacy component suitability

Component	Mean	SD	Level
Planning rural kindergarten development	4.51	0.49	Very High
Creating a culture fostering student development	4.53	0.42	Very High
Leading preschool care and education	4.57	0.48	Very High
Guiding and facilitating teacher development	4.62	0.48	Very High
Optimizing internal management	4.65	0.45	Very High
Adapting to the external environment	4.64	0.45	Very High
Overall Suitability	4.60	0.46	Very High

Table 5. Existing and desired leadership literacy levels

Components	Existing level (Mean)	Desired level (Mean)	PNI modified	Priority rank
Planning rural kindergarten development	2.95	4.87	0.651	1
Creating a culture fostering student development	2.96	4.88	0.649	2
Leading preschool care and education	2.98	4.87	0.639	3
Guiding and facilitating teacher development	2.99	4.88	0.632	4
Optimizing internal management	3.20	4.89	0.528	6
Adapting to the external environment	3.10	4.87	0.553	5

Table 6. Suitability and feasibility of the leadership literacy enhancement program

Program component	Suitability (Mean)	SD	Feasibility (Mean)	SD	Level
Principles	4.75	0.30	4.74	0.30	Very High
Objectives	4.69	0.34	4.68	0.34	Very High
Content	4.72	0.32	4.73	0.32	Very High
Development Process	4.71	0.32	4.73	0.32	Very High
Evaluation	4.65	0.33	4.67	0.35	Very High
Overall	4.71	0.32	4.70	0.32	Very High

development, and the creation of an effective learning environment for students.

Additionally, Leading preschool care and education (PNI = 0.639) and guiding and facilitating teacher development (PNI = 0.632) were also identified as high-priority areas, indicating the need for stronger pedagogical leadership and teacher mentorship programs.

Conversely, optimizing internal management (PNI = 0.528) had the lowest priority need, as it already had the highest existing condition rating ($\bar{x} = 3.20$). This suggests that, while improvements are still needed, rural kindergarten principals feel relatively more confident in managing school resources compared to other leadership areas.

The findings from Phase 2 highlight a significant gap between existing and desired leadership literacy levels, demonstrating the need for targeted training programs for rural kindergarten principals. The results emphasize the urgent need for structured leadership literacy development, particularly in strategic planning, fostering student development, and pedagogical leadership. These insights provide a clear direction for Phase 3, which focuses on designing and evaluating an intervention program to enhance leadership literacy in rural early childhood education.

Phase 3: Development and Evaluation of the Leadership Literacy Program

The third phase of this study focused on designing and evaluating a structured intervention program aimed at enhancing the leadership literacy of rural kindergarten principals in Guangxi. The program was developed based on the findings from Phases 1 and 2, ensuring that it addressed the most critical areas of leadership literacy, including administrative, pedagogical, and strategic planning competencies. To ensure its effectiveness and practicality, the program was evaluated for suitability and feasibility by a panel of experts in

educational leadership and early childhood education. The evaluation was based on key program components, including its principles, objectives, content, development process, and overall implementation strategy. The expert panel assessed the suitability and feasibility of the program using a 5-point Likert scale, as shown in Table 6.

The results from Phase 3 confirm that the structured leadership literacy enhancement program is both highly suitable and feasible for implementation in rural kindergartens in Guangxi. The expert evaluations indicate that the program effectively addresses the priority areas for leadership literacy development, as identified in Phase 2. These findings validate the importance of a structured leadership literacy intervention, incorporating problem-solving, coaching, and formal training to enhance administrative, pedagogical, and strategic planning competencies of kindergarten principals. The next steps will involve pilot implementation and continuous assessment, ensuring that the program can sustainably improve leadership literacy in rural early childhood education settings.

DISCUSSION AND CONCLUSION

The findings of this study provide significant insights into the leadership literacy of rural kindergarten principals in Guangxi, China. The results indicate that while principals recognize the importance of leadership literacy in school administration and teacher development, there are substantial gaps between their existing competencies and the desired proficiency levels. These findings are consistent with prior research suggesting that rural school leaders often struggle with limited access to professional development and training opportunities (Aguliera & Nightengale-Lee, 2020; He & Ho, 2017). The study highlights that deficiencies in strategic planning, student-centered leadership, and pedagogical literacy remain pressing concerns for rural early childhood

education administrators, which align with previous studies emphasizing the disparity between urban and rural educational leadership (Hong & Tao, 2022; Yoshikawa et al., 2018). These challenges suggest that leadership literacy enhancement requires a systemic approach that includes continuous professional development and the integration of policy-driven solutions.

The leadership literacy model proposed in this research aligns with established theories on educational leadership and professional development, particularly the 70:20:10 learning framework. This model has been widely recognized for its effectiveness in leadership training, as it balances experiential learning, peer mentorship, and formal instruction (Marsh & Farrell, 2015). The study's emphasis on experiential learning as the primary mode of skill development aligns with findings from Clarke and O'Donoghue (2017), who argue that hands-on, context-based learning is crucial for educational leaders in complex environments. However, while the structured program designed in this study was found to be highly suitable and feasible, its long-term sustainability and scalability remain critical considerations, particularly in rural settings with limited financial and institutional support (Blanchard et al., 2016; Rodd, 2020). This highlights the need for ongoing policy support and investment in professional development initiatives tailored to rural education administrators.

A notable finding from the Modified Priority Needs Index (PNI modified) analysis is that strategic planning and creating a student-centered learning culture ranked as the most critical areas for leadership literacy enhancement. These findings suggest that rural kindergarten principals face challenges in aligning their leadership strategies with contemporary educational policies and pedagogical best practices (Brown, 2024; Kaplan & Uğurlu, 2025). This is consistent with previous research indicating that leadership training programs for early childhood education should prioritize strategic visioning and the development of inclusive learning environments (Daniëls et al., 2019). However, the relatively lower priority ranking of internal management skills suggests that while principals recognize the importance of resource and personnel management, their immediate developmental needs lie in areas directly impacting teaching and learning outcomes (Duke, 2015; Wei, 2017). This underscores the need for a leadership literacy curriculum that balances core managerial competencies with instructional and visionary leadership components.

The expert validation of the leadership literacy framework further strengthens the reliability of the study's findings. The high mean scores and low standard deviations reported in the expert evaluations suggest strong agreement on the relevance of the six leadership literacy components. This is in line with research by Andino-González et al. (2025), which emphasizes the importance of empirical validation when developing competency-based educational leadership models. Additionally, the structured evaluation of the leadership literacy program demonstrated that the proposed intervention is both highly suitable and feasible for implementation. The high ratings for program principles, objectives, content, and

evaluation process suggest that such a program could serve as a scalable model for other rural regions facing similar educational leadership challenges (Guo et al., 2019; Yoshikawa et al., 2018). However, for such scalability to be effective, the program should incorporate adaptable training modules that cater to diverse rural educational contexts, ensuring that leadership literacy improvements remain sustainable beyond the initial implementation phase.

Despite these positive findings, some limitations must be acknowledged. First, the study primarily relied on self-assessment surveys to measure leadership literacy levels, which may introduce response bias. Future research could incorporate observational studies or interviews with teachers and other stakeholders to triangulate findings and provide a more comprehensive understanding of leadership literacy challenges. Second, while the study focused on Guangxi province, regional differences in rural education across China suggest that findings may not be fully generalizable. Comparative studies across different provinces could provide further insights into how contextual factors influence leadership literacy needs (Neat, 2023; Somdet & Laoakka, 2025). Furthermore, an analysis of the impact of cultural and socioeconomic factors on leadership literacy could offer a deeper understanding of how rural principals navigate their professional roles within varied local conditions.

The study underscores the critical role of leadership literacy in improving early childhood education outcomes in rural China. The leadership literacy framework developed in this study provides a structured approach to enhancing the administrative, pedagogical, and strategic competencies of rural kindergarten principals. The findings highlight significant gaps in leadership literacy, particularly in strategic planning and fostering student-centered learning, which must be prioritized in professional development programs. The structured intervention program developed in this research was found to be highly suitable and feasible, demonstrating its potential as a model for leadership literacy enhancement in rural education.

To ensure the long-term impact of leadership literacy programs, further research is needed to explore the implementation and effectiveness of the proposed training model in real-world settings. Longitudinal studies tracking the progress of rural kindergarten principals after participating in such programs could provide valuable insights into their long-term benefits and potential areas for refinement. Additionally, further research should examine the role of digital learning platforms in bridging the rural-urban training gap, as online professional development programs could offer cost-effective solutions for rural school leaders with limited access to in-person training opportunities (Blanchard et al., 2016; Li, 2017). Integrating digital training resources with localized in-person mentorship could further enhance the accessibility and effectiveness of leadership literacy development initiatives.

Moreover, policymakers should consider integrating leadership literacy training into national early childhood education policies, ensuring that all kindergarten principals—regardless of their geographic location—receive the necessary

support to develop their leadership capacities. Ensuring institutional collaboration between educational ministries, local governments, and teacher training institutions could provide the structural foundation needed for large-scale leadership literacy development. Partnerships between educational institutions, government agencies, and international organizations could further enhance the sustainability and scalability of leadership development initiatives for rural early childhood education leaders. By addressing these gaps, future research and policy interventions can contribute to more equitable and effective early childhood education systems across rural China.

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