

Coaching Principals for Inclusive School Improvement: Development and Empirical Validation of a Special Education Leadership Training Model

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ABSTRACT:

This study aimed to develop and validate a Transformative Leadership Coaching (TLC)-based training model to improve the leadership quality of public junior high school principals in Gunungsitoli City, Indonesia. The study employed a research and development design adapted from the Plomp model, covering preliminary investigation, design, realization, evaluation, revision, and implementation. All 26 public junior high school principals participated through total sampling. Data were collected using expert validation sheets, implementation checklists, pretest-posttest instruments, questionnaires, observations, and semi-structured interviews. Quantitative data were analyzed using percentage-based validity criteria, intraclass correlation coefficient, chi-square normality testing, and normalized gain analysis, while qualitative data were analyzed thematically. The TLC model met the criteria of validity, practicality, and effectiveness. Expert review confirmed strong content and construct validity, while implementation results showed high feasibility and positive participant responses. Pretest-posttest results indicated meaningful improvement in leadership competence, supported by moderate-to-high normalized gain scores. Observational and interview data further showed improvements in reflective capacity, strategic thinking, instructional leadership, and collaborative engagement. The TLC model offers a theoretically grounded and context-responsive framework for principal professional development. By integrating transformative learning and structured coaching cycles, the model provides a practical pathway for strengthening school leadership in decentralized and resource-constrained

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educational settings.

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1. Introduction

Educational leadership has become a central determinant of school effectiveness in the twenty-first century, particularly in contexts characterized by rapid technological change, policy reform, and increasing accountability demands. Contemporary research consistently affirms that school principals play a pivotal role in shaping instructional quality, teacher performance, and student outcomes (Bellibaş et al., 2020; Sliwka et al., 2024). Transformational and innovative leadership practices have been linked to improved school culture, digital transformation, and sustainable reform in diverse educational systems (Chen & Chen, 2024; Sutopo, 2024; Adeoye & Oladimeji, 2024). In addition, transformational leadership has demonstrated significant influence on teaching performance and organizational learning climates (Alzoraiki et al., 2024). The global discourse increasingly emphasizes leadership models that integrate coaching, reflective practice, and adaptive change management (Fusarelli & Fusarelli, 2024; Huber & Pruitt, 2024). These developments signal a shift from administrative compliance toward leadership that is vision-driven, collaborative, and capacity-building. Within this evolving paradigm, principal preparation and professional development programs are expected to cultivate leaders capable of navigating complexity and fostering equitable learning environments (Bilbokaite & Bilbokaite-Skiauterienė, 2024). However, despite the proliferation of leadership frameworks, many training initiatives remain largely procedural and technocratic in orientation. As a result, there is growing concern that conventional leadership development models inadequately address the deeper cognitive and reflective dimensions required for transformative school improvement. This context underscores the need to

reconceptualize principal training through more integrative and transformative approaches.

Recent empirical studies reveal persistent gaps between leadership theory and practice, particularly in the design and implementation of principal training programs. Although professional development initiatives have expanded globally, their impact on sustained leadership transformation remains uneven (Alladatin et al., 2023; Ghamrawi et al., 2024). Evidence suggests that many programs emphasize short-term competencies, certification requirements, and compliance-based standards rather than critical reflection and identity reconstruction (Huber & Pruitt, 2024). Coaching-based interventions, however, have shown promising outcomes in enhancing principals' instructional leadership behaviors and reflective capacities (Asbari, 2024; Tsarkos, 2024). Studies on transformational leadership further indicate that leaders who engage in dialogical reflection and collaborative learning demonstrate stronger influence on school improvement processes (Heenan et al., 2024). Nevertheless, systematic integration of transformative learning theory into principal training remains limited, especially in developing regions where contextual challenges are significant. In Indonesia, leadership preparation frequently adopts in-service models that prioritize knowledge transfer over reflective transformation. Such approaches often neglect adult learning principles and fail to align training content with real-world leadership complexities. Consequently, a research gap emerges regarding the development of training models that synthesize transformative learning, leadership coaching, and contextual responsiveness. Addressing this gap is essential for enhancing the quality of school leadership in under-resourced and geographically challenged areas.

The urgency of strengthening principal leadership is particularly evident in regions where school performance indicators reveal uneven quality standards. Transformational leadership has been identified as a catalyst for improving teacher professionalism, school culture, and student achievement (Ningsih & Karlimah, 2024; Asriyah, 2024). Furthermore, leadership coaching has been recognized as a strategic mechanism for fostering deeper learning and sustainable institutional change (Sliwka et al., 2024). Research demonstrates that principals who receive structured mentoring and coaching exhibit enhanced decision-making, innovation management, and collaborative competencies (Fusarelli & Fusarelli, 2024). These findings highlight the practical significance of leadership development programs that move beyond technical administration toward reflective and adaptive leadership. In the context of Gunungsitoli City, preliminary observations indicate that many public junior high school principals still operate within predominantly administrative leadership paradigms. Training opportunities remain sporadic and insufficiently aligned with contemporary leadership demands. Without structured intervention, these conditions risk perpetuating moderate school accreditation outcomes and limited instructional innovation. Therefore, developing a context-sensitive and theoretically grounded leadership training model becomes both an academic necessity and a practical imperative. Integrating Transformative Leadership Coaching (TLC) offers a promising pathway to address these challenges. Such an approach aligns leadership development with reflective transformation, collaborative dialogue, and sustained professional growth.

Accordingly, this study aims to develop and empirically validate a Transformative Leadership Coaching (TLC)-based training model for public junior high school principals in Gunungsitoli City. Specifically, the study examines the model's validity, practicality, and effectiveness in enhancing principals' leadership competence. The proposed model synthesizes transformative learning theory, which emphasizes critical

reflection and perspective transformation, with structured leadership coaching practices (Shields, 2024; Sharma & Adeoye, 2024). By positioning principals as adult learners capable of reflective reconstruction of meaning, the model seeks to facilitate shifts in leadership identity and practice.

This issue is particularly relevant in Gunungsitoli City, where public junior high school principals continue to operate largely within administrative leadership routines and where opportunities for sustained leadership development remain limited. In such a context, school improvement requires a model that does not merely transfer knowledge but also reshapes leadership thinking, reflective practice, and collaborative problem-solving. Unlike conventional training formats, TLC emphasizes cyclical reflection, dialogic engagement, contextual problem-solving, and continuous mentoring support. The research specifically investigates the characteristics, feasibility, and effectiveness of the TLC model in improving leadership competencies aligned with global professional standards. Through a research and development framework, the study seeks to produce a validated training prototype adaptable to similar educational contexts. The focus on public junior high schools ensures relevance to a critical level of compulsory education where leadership impact is particularly consequential. Moreover, the study responds to contemporary calls for leadership preparation models that integrate standards-based accountability with transformative capacity-building (Fusarelli & Fusarelli, 2024). By embedding coaching within transformative learning processes, the model aspires to cultivate adaptive, reflective, and innovation-oriented school leaders. Ultimately, this objective reflects a commitment to strengthening educational leadership as a driver of systemic school improvement. This study offers a novel contribution by translating transformative learning principles into a structured coaching-based training model for school principals and validating it through a research and development framework. Unlike conventional principal training approaches, the proposed model combines reflective dialogue,

coaching cycles, contextual leadership tasks, and empirical product validation into an integrated professional development system. The contribution of this article lies in advancing both theoretical and practical dimensions of educational leadership development. Theoretically, it extends transformative learning discourse into the domain of principal training by operationalizing reflective transformation within structured coaching cycles. Empirical studies have emphasized transformational leadership outcomes, yet limited research has translated transformative learning principles into concrete training design (Heenan et al., 2024; Huber & Pruitt, 2024). This study bridges that gap by constructing a model that integrates reflective dialogue, experiential learning, and performance feedback mechanisms. Practically, the TLC model offers education authorities a structured framework for designing sustainable and context-responsive leadership development programs. It moves beyond episodic workshops toward a reflective and cyclical professional growth system. The model also provides measurable indicators of leadership quality enhancement aligned with instructional, managerial, and relational competencies. In doing so, it contributes to policy discussions on improving principal preparation in decentralized education systems. Furthermore, the research generates empirical evidence regarding the effectiveness of coaching-infused transformative training in improving leadership practices. Although principal development programs have expanded across many education systems, their impact often remains limited because they tend to emphasize procedural compliance, short-term technical competencies, and certification requirements rather than reflective transformation and sustained leadership growth. In many cases, such programs do not sufficiently integrate adult learning principles, contextual problem-solving, and coaching-based support. As a result, a gap persists between leadership theory and the actual developmental needs of school principals, particularly in under-resourced and geographically constrained contexts. The findings are expected to inform broader reforms

in principal professional development across similar regional contexts. Thus, this article positions Transformative Leadership Coaching as a strategic innovation in strengthening school leadership quality in the contemporary educational landscape. Although substantial literature exists on transformational leadership and leadership coaching, these two bodies of knowledge have largely developed along parallel tracks without meaningful integration. Transformational leadership studies have focused on behavioral outcomes, while coaching research has emphasized process-oriented support. Meanwhile, Mezirow's transformative learning theory, which prioritizes critical reflection and perspective transformation, has rarely been operationalized systematically within structured leadership training designs. The theoretical gap, therefore, lies in the absence of a coherent model that explicitly unifies transformative learning principles with measurable coaching cycles for principal leadership development. The current study addresses this void by constructing the TLC model, which conceptually synthesizes these three theoretical strands into a single, actionable framework. A review of existing literature reveals that the majority of studies on principal leadership training have relied upon either descriptive quantitative approaches or limited qualitative case studies. A rapid review of training programs identified that many initiatives lack empirical testing through comprehensive research and development methodologies. While experimental studies have occasionally employed randomized controlled trials, these investigations were not oriented toward developing complete training packages comprising model books, guides, and modules.

The methodological gap, therefore, consists of the scarcity of studies utilizing a full R&D framework to simultaneously develop and validate a coaching-based leadership training model in the education sector. The present study fills this gap by implementing the five-phase Plomp model, which includes preliminary investigation, design, realization, evaluation-revision, and implementation phases.

Additionally, the study concurrently assesses validity using intraclass correlation coefficients, practicality through implementation checklists, and effectiveness using normalized gain analysis.

A disproportionate share of research on principal leadership training has been conducted in developed countries or within centralized education systems. In the Indonesian context, particularly in underdeveloped, frontier, and outermost regions such as Gunungsitoli City, contextually responsive leadership training models remain extremely limited. Preliminary field observations indicate that school principals in this area continue to operate predominantly within administrative leadership paradigms, with available training opportunities being sporadic and misaligned with contemporary leadership demands. The contextual gap, therefore, consists of the absence of a leadership training model specifically developed and empirically tested for public junior high school principals operating in resource-constrained and geographically challenging environments. The current study addresses this gap by adapting the TLC model to this local context and subjecting it to rigorous field testing, thereby producing evidence relevant to similar decentralized education systems. Despite theoretical claims regarding the potential of coaching to enhance leadership effectiveness, empirical evidence quantifying the contribution of transformative learning coaching models to principal leadership competence remains insufficient. Previous studies have typically measured short-term outcomes or relied exclusively on self-report data without adequate methodological triangulation. The empirical gap, therefore, involves a lack of integrated quantitative and qualitative evidence demonstrating the effectiveness of TLC-based training. The present study addresses this deficiency by presenting pretest and posttest scores analyzed using chi-square normality testing and N-Gain calculations. Furthermore, methodological triangulation incorporates test data, questionnaires, observational checklists, and semi-structured interviews, thereby providing a more robust evidentiary base than earlier single-

method studies. Current professional development programs for school principals, particularly in Indonesia, remain dominated by conventional lecture-based training models that emphasize knowledge transmission and administrative compliance. Such approaches have been criticized for failing to develop reflective capacity or sustainable leadership identity. The practical gap consists of the unavailability of ready-to-use, validated training products specifically designed for transformative, coaching-based leadership development. The current study addresses this gap by producing a validated model book, training guidebook, and training modules that have undergone expert validation and practicality testing in authentic school contexts. These products are therefore positioned for immediate adoption by local education authorities

2. Methodology

This study employed a research and development design using a modified Plomp model consisting of preliminary investigation, design, realization, test–evaluation–revision, and implementation. A mixed-method approach was applied because the study combined quantitative measurement of model validity, practicality, and effectiveness with qualitative exploration of principals' experiences during the training process. The effectiveness test used a one-group pretest–posttest pre-experimental design. The participants were 26 public junior high school principals in Gunungsitoli City, Indonesia. Total sampling was used because all members of the population were included in the study. The participants were selected based on their status as active public junior high school principals under the Gunungsitoli City Education Office and their willingness to participate in all stages of the TLC-based training. Educational management experts and Education Office practitioners were also involved as validators. Data were collected using expert validation sheets, implementation checklists, pretest and posttest instruments, participant response questionnaires, facilitator evaluation questionnaires, observation sheets, and semi-structured interview guides. The

validation sheets assessed the model book, training guidebook, and modules. The pretest and posttest measured principals' leadership competence, while questionnaires, observations, and interviews examined practicality, participant engagement, and perceived leadership changes. The procedure consisted of five stages. First, a preliminary investigation was conducted to identify leadership development needs and contextual problems. Second, the TLC model and its supporting training products were designed. Third, the initial prototype was developed. Fourth, expert validation was conducted, and the model was revised based on expert feedback. Fifth, the revised model was implemented with 26 principals through pretest administration, TLC training activities, coaching cycles, reflective dialogue sessions, contextual leadership tasks, posttest administration, questionnaires, observations, and interviews. Quantitative data were analyzed using percentage-based validity criteria, Intraclass Correlation Coefficient, descriptive percentage analysis, chi-square normality testing, and normalized gain analysis. Qualitative data from observations and semi-structured interviews were analyzed thematically. Triangulation was applied by integrating test results, questionnaire responses, observation findings, and interview data to strengthen the validity and credibility of the findings.

3. Literature Review

3.1. Overview of Transformative Leadership Coaching (TLC) model Theory

The research developed by Harefa, Gultom, and Teviana (2025) is built upon five foundational theories that are systematically integrated into the Transformative Leadership Coaching (TLC) model. Transformative learning theory proposed by Mezirow (1997) serves as the primary foundation of the model. This theory emphasizes perspective transformation through critical reflection on previously unexamined assumptions. Within the TLC framework, this theory is operationalized through structured coaching cycles and reflective dialogue sessions

that encourage school principals to transform their professional identity and leadership practices (Harefa, Gultom, & Teviana, 2025).

Transformational leadership theory, originally introduced by Burns (1978) and further developed by Bass (1985), provides the competency framework that the TLC model aims to cultivate. This theory encompasses four core dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Bellibaş, Gümüş, & Liu, 2020; Alzoraiki et al., 2024). These dimensions guide the development of leadership competencies targeted by the training program.

leadership coaching theory (Huber & Pruitt, 2024; Tsarkos, 2024) supplies the operational mechanism for delivering the training. Coaching is conceptualized as a systematic and collaborative process that enhances a leader's capacity through reflective dialogue, constructive feedback, and structured questioning. This theory differentiates the TLC model from conventional lecture-based training approaches by emphasizing experiential and dialogical learning.

Andragogy theory developed by Knowles (1980) informs the instructional design principles of the TLC model. Adult learning is most effective when it is relevant to learners' needs, experience-based, participatory, and oriented toward solving real-world problems. The TLC training modules are therefore designed to be contextually responsive to the authentic leadership challenges faced by school principals in Gunungsitoli. The Plomp development model (Plomp, 1997) serves as the methodological framework for the research and development process. This model consists of five systematic phases: preliminary investigation, design, realization/construction, test-evaluation-revision, and implementation. The adoption of this framework ensures that the TLC model is developed systematically, refined iteratively, and validated empirically before field implementation. These five theories operate synergistically within the TLC model. Transformative learning theory provides the ultimate goal of perspective transformation.

Transformational leadership theory supplies the competency content to be developed. Leadership coaching theory offers the process mechanism for delivery. Andragogy provides the adult learning principles guiding instructional design. Finally, the Plomp development model furnishes the validation framework ensuring scientific rigor (Harefa, Gultom, & Teviana, 2025).

This study develops and empirically validates a Transformative Leadership Coaching (TLC) model that theoretically synthesizes transformational leadership, leadership coaching, and transformative learning. Methodologically, it applies a systematic Plomp R&D framework incorporating validity testing using intraclass correlation coefficients, practicality assessments, and effectiveness evaluations through normalized gain analysis. Contextually, the model is specifically designed for public junior high school principals in Gunungsitoli, a resource-constrained and geographically challenging region. Practically, the study produces ready-to-implement training products including a model book, training guidebook, and modules. By addressing the fragmented, non-experimental, and non-contextual nature of prior studies, this research offers a significant contribution to the field of school leadership development

3.2. Transformational Leadership

Transformational leadership represents a leadership paradigm where leaders stimulate and inspire followers to transcend their self-interests for the sake of broader organizational objectives, while simultaneously driving innovation and meaningful cultural change within educational institutions. Empirical studies have consistently identified four core dimensions of this leadership style: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. Previous investigations into this construct have predominantly employed quantitative methodologies, including large-scale survey designs and randomized field experiments, to assess the effectiveness of leadership training initiatives. The primary focus of existing

scholarship has been on enhancing principals' self-efficacy as instructional change agents and developing instructional leadership capacity through supervisory coaching mechanisms. For instance, a randomized field experiment demonstrated that transformational leadership training positively influenced leadership behaviors across diverse organizational settings, including schools. However, a critical distinction between prior work and the current study lies in the fact that earlier research primarily emphasized conventional training or transactional leadership models. In contrast, the present investigation integrates structured coaching within a transformative learning framework, offering a more profound and sustainable developmental approach, specifically validated for junior high school principals operating in resource-constrained environments such as Gunungsitoli.

3.3. Leadership Coaching

Leadership coaching is defined as a systematic and collaborative process designed to enhance a leader's capacity through reflective dialogue, constructive feedback, and structured questioning that fosters self-awareness and sustainable behavioral change. Key indicators of effective coaching practices include building awareness, fostering commitment, and reinforcing the application of newly acquired skills in authentic work settings. Prior research in this domain has frequently utilized qualitative approaches, including ethnographic case studies, to understand how school administrators perceive coaching models, as well as mixed-method designs to explore how supervisors deliver feedback to principals. The central focus of these studies has been on how coaching can cultivate transformational leadership competencies within job-embedded contexts. Despite these contributions, the novelty of the current research resides in its deliberate synthesis of Mezirow's transformative learning theory into structured coaching cycles. Unlike previous investigations that may have concentrated solely on technical or behavioral dimensions of coaching, the present study explicitly designs coaching processes to facilitate critical reflection

and perspective transformation among school principals. Furthermore, the effectiveness of this integrated approach is rigorously tested using a research and development framework, which represents a methodological advancement over earlier descriptive or single-method studies.

3.4. Transformative Leadership Coaching (TLC) Training Model

The Transformative Leadership Coaching (TLC) training model is conceptualized as an innovative professional development approach that merges transformational leadership principles with coaching mechanisms grounded in transformative learning theory. This model aims to alter a leader's frame of reference by prompting deep reflection on previously unexamined assumptions and beliefs. Success indicators for this model encompass enhanced reflective capacity (progressing from descriptive to critical analysis), shifts in professional identity, and measurable improvements across instructional, managerial, and relational leadership domains. Earlier investigations in this area have frequently relied on library research to formulate strategic leadership models or have employed purely qualitative approaches to explore transformative learning experiences. The predominant emphasis has been on how elements such as feedback mechanisms and learning structures contribute to leadership growth. The distinguishing feature of the present study is that, while previous works tended to be either conceptual in nature or limited to testing isolated components (such as training alone or coaching alone), this research develops and empirically validates a complete, measurable, and contextually grounded training model. By applying a systematic R&D methodology based on the Plomp model, the study produces tangible products including a model book, training guidebook, and training modules. These products undergo rigorous testing for validity, practicality, and effectiveness using pretest-posttest designs and N-Gain analysis. Consequently, this research offers a practical and applicable contribution to school leadership development in Indonesia,

particularly in geographically and structurally challenging regions.

4. Results

4.1. Expert Validation of the TLC Model

Expert validation results showed that the TLC model achieved a high level of content and construct validity across the assessed components, including conceptual consistency, language clarity, instructional coherence, and graphical presentation. Inter-rater agreement, assessed using the intraclass correlation coefficient, also indicated consistent judgment among validators. These findings suggest that the model was sufficiently robust for field testing. Validators consisted of educational management academics and senior practitioners from the Gunungsitoli City Education Office. Quantitative analysis of validation sheets indicated that the TLC model achieved a “very valid” category across all assessed dimensions, including conceptual consistency, theoretical grounding, instructional design coherence, language clarity, and graphical presentation. Inter-rater reliability measured using the Intraclass Correlation Coefficient (ICC) demonstrated strong agreement among validators, indicating high consistency in expert judgment (Mardapi, 2018). Theoretical alignment was confirmed with transformational leadership principles (Bellibaş et al., 2020; Alzoraiki et al., 2024), transformative learning theory (Mezirow, 1997; Cranton & Taylor, 2013), and coaching-based leadership development frameworks (Huber & Pruitt, 2024). Experts emphasized that the cyclical reflective structure of the TLC model coherently operationalizes transformative learning principles within practical leadership training contexts. These findings establish the model's conceptual robustness and readiness for field implementation.

4.2. Practicality of the TLC Training Model

The practicality assessment indicated that the TLC model was highly feasible for implementation in authentic school settings. Participants and facilitators reported that the training stages were clear, relevant, and

manageable in terms of time allocation and procedural flow. The reflective dialogue sessions and coaching cycles were especially perceived as applicable to day-to-day leadership challenges. Results indicated a high level of implementation fidelity. Participants reported that training stages—including reflective dialogue sessions, contextual problem-solving workshops, and coaching cycles—were clearly structured and practically applicable to real leadership challenges. Facilitators similarly rated the training manual and module design as operationally efficient and adaptable. Descriptive percentage analysis placed the TLC model in the “very practical” category. Participants highlighted the model’s emphasis on dialogical engagement and experiential reflection as distinct from conventional lecture-based formats, echoing findings by Huber and Pruitt (2024) that coaching-enhanced programs yield stronger engagement and leadership internalization.

4.3. Effectiveness: Pretest–Posttest and N-Gain Analysis

The effectiveness test revealed a substantial improvement in principals’ leadership competence following the intervention. The posttest mean score was higher than the pretest mean score across instructional, strategic, and relational leadership dimensions. Normality testing confirmed that the score distributions met statistical assumptions, while the N-Gain analysis indicated a moderate-to-high level of improvement.

4.3.1. Normality Testing

Prior to effectiveness analysis, chi-square normality testing confirmed that pretest and posttest score distributions met assumptions of normality, permitting parametric descriptive interpretation.

4.3.2. Pretest–Posttest Comparison

Post-intervention scores demonstrated a substantial increase in principals’ conceptual and applied leadership competence. The mean posttest score exceeded the pretest mean across

instructional leadership, strategic management, and relational leadership domains.

4.3.3. N-Gain Analysis

Normalized gain (N-Gain) calculations indicated a moderate-to-high improvement category, demonstrating that the TLC intervention generated meaningful competence enhancement rather than marginal score shifts (Savinainen & Scott, 2002; Sukarelawan et al., 2024). The magnitude of improvement aligns with empirical findings that transformational and coaching-based leadership interventions significantly improve leadership practice and organizational culture (Sliwka et al., 2024; Heenan et al., 2024). These results provide statistical evidence that the TLC model is effective in strengthening principal leadership quality.

4.4. Observational Findings

Observation data showed progressive changes in participant engagement and reflective depth throughout the training cycles. Early sessions were dominated by descriptive responses, whereas later sessions reflected stronger analytical reasoning, collaborative problem-solving, and greater alignment between leadership decisions and school vision. Principals exhibited improved articulation of school vision alignment, data-informed decision-making, and collaborative problem-solving strategies. Observation checklist percentages indicated high adherence to the designed TLC stages, confirming procedural reliability and training integrity. These findings are consistent with transformative learning theory, which posits that structured critical reflection fosters perspective transformation and professional identity reconstruction (Cranton & Taylor, 2013).

4.5. Interview Results

Interview findings supported the quantitative results. Participants reported greater confidence in strategic decision-making, stronger awareness of instructional leadership responsibilities, and improved capacity for mentoring teachers and engaging in collaborative dialogue. Several principals also described a shift from an

administrative orientation toward a more reflective and vision-driven leadership approach. Semi-structured interviews further substantiated quantitative findings. Principals reported:

1. Increased confidence in strategic decision-making
2. Greater awareness of instructional leadership responsibilities
3. Enhanced capacity for teacher mentoring and collaborative dialogue

Participants emphasized that coaching sessions enabled deeper reflection on previously unexamined leadership assumptions, reinforcing Mezirow's (1997) transformative learning construct. Several principals noted a shift from administrative compliance orientation toward adaptive and vision-driven leadership, resonating with contemporary global leadership standards (Chen & Chen, 2024; Fusarelli & Fusarelli, 2024).

4.6. Integrated Statistical Output

The combined statistical outputs—validity percentages, ICC reliability coefficients, N-Gain results, descriptive response analysis, and normality testing—demonstrate that the TLC model satisfies the three principal R&D quality criteria:

1. Validity: High expert agreement and strong theoretical alignment
2. Practicality: High implementation feasibility and positive participant response
3. Effectiveness: Statistically meaningful improvement in leadership competence

Methodological triangulation integrating test data, questionnaires, observation, and interviews (Denzin, 1978) strengthens the credibility of these findings. The empirical results corroborate international evidence that transformational and coaching-based leadership models enhance instructional and organizational outcomes (Bellibaş et al., 2020; Alzoraiki et al., 2024; Sliwka et al., 2024). Unlike conventional principal training models criticized for procedural emphasis (Alladatin et al., 2023), the TLC model

embeds reflective transformation and cyclical mentoring processes. The integration of transformative learning theory into structured leadership coaching extends previous conceptual discussions (Shields, 2024; Huber & Pruitt, 2024) by operationalizing reflection within measurable training stages. This study therefore contributes empirical validation of a context-sensitive, theoretically grounded principal development model tailored to decentralized educational environments. The Transformative Leadership Coaching (TLC) model demonstrates strong empirical support in terms of validity, practicality, and effectiveness. The integration of transformative learning principles, andragogical design, and structured coaching cycles significantly enhances principal leadership competence in public junior high schools. The findings confirm that leadership development grounded in reflective transformation and contextualized coaching provides a sustainable pathway for strengthening school leadership quality in geographically and structurally constrained regions

5. Discussion

The findings suggest that the effectiveness of the TLC model lies not only in its coaching structure but also in its capacity to activate reflective transformation among school principals. This indicates that leadership development becomes more meaningful when principals are positioned as adult learners who reconstruct their assumptions through dialogue, feedback, and contextual problem-solving rather than merely receiving procedural instruction. The development and implementation of the Transformative Leadership Coaching (TLC) model demonstrate that principal professional development grounded in transformative learning and structured coaching can produce measurable improvements in leadership quality. The findings consistently indicate that the TLC model satisfies the three fundamental R&D quality criteria—validity, practicality, and effectiveness—while aligning with the systematic design logic of the Plomp development framework.

Expert validation confirmed that the TLC model possesses strong conceptual and construct validity. High agreement among validators, supported by Intraclass Correlation Coefficient (ICC) analysis, indicates consistent expert judgment regarding theoretical coherence, structural design, language clarity, and instructional feasibility. This validation outcome reflects the successful integration of transformational leadership constructs (Bellibaş et al., 2020; Alzoraiki et al., 2024) with transformative learning principles (Mezirow, 1997; Cranton & Taylor, 2013) and coaching-based leadership development approaches (Huber & Pruitt, 2024). The structured reflective cycles embedded in the TLC framework operationalize abstract transformative learning theory into concrete training mechanisms, extending prior conceptual discussions into an empirically validated design.

The practicality assessment further demonstrates that the model is implementable in authentic school contexts. Implementation checklists, facilitator evaluations, and focus group discussions reveal high levels of procedural clarity, time efficiency, and contextual adaptability. Participants reported that dialogical reflection sessions and contextual problem-solving workshops were directly relevant to daily leadership challenges. These findings reinforce earlier research suggesting that leadership training is most effective when grounded in experiential and reflective adult learning principles (Knowles, 1980) and when supported by structured mentoring systems (Huber & Pruitt, 2024). Unlike conventional training programs criticized for emphasizing compliance and short-term competency acquisition (Alladatin et al., 2023), the TLC model fosters sustained engagement and internalization of leadership values. Effectiveness testing provides robust empirical evidence of leadership competence enhancement. Pretest–posttest comparisons demonstrate substantial improvement across instructional, managerial, and relational leadership dimensions. Chi-square normality testing confirmed that score distributions met statistical assumptions,

ensuring analytical rigor. The calculated N-Gain values indicate moderate-to-high improvement, suggesting meaningful learning gains rather than marginal performance shifts (Savinainen & Scott, 2002; Sukarelawan et al., 2024). These quantitative findings are consistent with empirical studies linking transformational leadership interventions to improved organizational climate and instructional outcomes (Sliwka et al., 2024; Heenan et al., 2024). The magnitude of improvement suggests that embedding reflective coaching within leadership training enhances cognitive restructuring and professional competence development. Observational data complement these statistical results by revealing progressive shifts in reflective depth and collaborative engagement. Early-stage discussions were largely descriptive; however, subsequent coaching cycles demonstrated analytical reasoning, critical self-examination, and strategic alignment with school vision. This progression reflects the core mechanism of transformative learning, wherein critical reflection facilitates perspective transformation (Mezirow, 1997). Observed increases in collaborative problem-solving and data-informed decision-making further support the argument that reflective coaching strengthens adaptive leadership capacity. Interview findings corroborate both quantitative and observational evidence. Principals reported heightened confidence in strategic decision-making, improved instructional supervision practices, and enhanced relational leadership with teachers. Participants described a transition from administrative compliance toward vision-driven and innovation-oriented leadership. These shifts align with contemporary global expectations for principal leadership that emphasize adaptability, digital responsiveness, and collaborative governance (Chen & Chen, 2024; Fusarelli & Fusarelli, 2024). The qualitative evidence therefore substantiates the claim that the TLC model contributes not only to knowledge acquisition but also to identity transformation and professional repositioning. From a theoretical standpoint, this study advances educational leadership scholarship by empirically

linking transformative learning theory with transformational leadership practice. While prior research has documented the impact of transformational leadership on school effectiveness (Bellibaş et al., 2020; Alzoraiki et al., 2024), limited studies have translated transformative learning into structured principal training design. The TLC model bridges this gap by embedding critical reflection, dialogical engagement, and cyclical mentoring into a coherent developmental system. The integration of these components operationalizes abstract theoretical constructs within measurable training outcomes. Methodologically, the systematic application of the Plomp R&D framework strengthens the credibility of the findings. The iterative sequence of preliminary investigation, design, validation, testing, and implementation ensures that the resulting model is not only theoretically sound but also empirically refined.

Triangulation across statistical outputs, participant responses, observation, and interviews (Denzin, 1978) enhances internal validity and supports the robustness of conclusions. Transformative Leadership Coaching model effectively enhances principal leadership quality through a validated, practical, and statistically supported training design. By integrating transformative learning, andragogical principles, and structured coaching cycles, the model offers a context-sensitive and sustainable approach to leadership development. These findings contribute to ongoing international discourse advocating leadership preparation models that move beyond technocratic administration toward reflective, adaptive, and innovation-oriented school leadership (Sliwka et al., 2024; Huber & Pruitt, 2024). This study contributes to educational leadership scholarship by empirically operationalizing transformative learning within a principal training model. While prior studies have widely discussed transformational leadership and coaching, fewer studies have integrated these perspectives into a validated development framework for principals in decentralized school systems. The TLC model therefore extends existing theory into an applied

and measurable leadership development design. From a practical perspective, the TLC model provides education authorities with a more sustainable alternative to one-off workshop formats. Its structured coaching cycles, reflective sessions, and contextual leadership tasks can be adapted for principal development programs in similar regions, especially where school leaders face limited access to continuous mentoring and professional support.

Future research should employ quasi-experimental designs with control groups to strengthen causal inference regarding the TLC model's effectiveness. Longitudinal studies spanning two to three years are needed to examine the sustainability of leadership transformations and their impact on teacher performance and student achievement. Cross-contextual replication across different educational levels and regions is essential to establish the model's external validity. Digital coaching platforms should be integrated into the TLC framework to enhance scalability and accessibility for principals in geographically isolated areas. Education authorities are encouraged to incorporate the validated TLC modules into mandatory principal certification programs as a sustainable alternative to conventional training. Subsequent research should include downstream outcome indicators such as teacher performance metrics, student academic data, and school accreditation results. A structured Trainer-of-Trainers certification system is recommended to ensure implementation fidelity when scaling the model across multiple schools.

This study has several limitations that should be acknowledged. First, the research employed a one-group pre-experimental pretest-posttest design without a control group, which limits causal inference and restricts the ability to attribute leadership improvements exclusively to the TLC intervention. Second, the sample consisted of only 26 public junior high school principals from a single municipal context in Gunungsitoli City, which constrains external validity and generalizability to other educational

systems with different structural and socio-cultural conditions. Third, the study focused primarily on leadership competence indicators measured through cognitive assessments, questionnaires, observations, and interviews, but did not directly assess downstream organizational outcomes such as teacher performance metrics, student achievement data, or long-term school improvement indicators. Fourth, the intervention was implemented within a limited timeframe, preventing longitudinal examination of sustainability effects. Future research employing quasi-experimental or multi-site longitudinal designs is recommended to strengthen causal claims and broader applicability.

The future scope of this research extends across multiple dimensions. Methodologically, subsequent studies should employ quasi-experimental or randomized controlled designs with control groups to strengthen causal inference regarding the TLC model's effectiveness. Longitudinally, future research should examine the sustainability of leadership transformations over two to three years to determine whether reflective and coaching-based interventions produce enduring changes in leadership behavior and institutional culture. Contextually, replication studies across different educational levels (elementary and senior high schools), diverse Indonesian regions, and international contexts are needed to test the external validity and generalizability of the TLC model. Technologically, the integration of digital coaching platforms and hybrid implementation formats should be explored to increase scalability and accessibility for principals in geographically isolated areas. Practically, future research should incorporate downstream outcome indicators such as teacher performance metrics, student achievement data, and school accreditation results to evaluate systemic impact beyond individual leadership competence. Finally, the development of a structured Trainer-of-Trainers certification system would ensure implementation fidelity and long-term sustainability when scaling the model across multiple schools and districts.

6. Conclusion

This study developed and validated a Transformative Leadership Coaching (TLC)-based training model for public junior high school principals in Gunungsitoli City. The results demonstrate that the model met the criteria of validity, practicality, and effectiveness, indicating its potential as a context-responsive leadership development framework. Theoretically, the study extends transformative learning into an applied principal training model. Practically, it offers education stakeholders a feasible approach to strengthening reflective, adaptive, and collaborative school leadership in decentralized and resource-constrained settings. The findings demonstrate that the TLC model fulfils the three principal quality criteria of educational product development: validity, practicality, and effectiveness. Expert validation confirmed strong content and construct validity, with high inter-rater reliability indicating consistent expert agreement. The model's conceptual structure successfully integrates transformational leadership theory and coaching-based leadership development into a coherent and operational framework. Practicality testing revealed high levels of implementation feasibility and participant engagement. The structured reflective cycles, dialogical sessions, and contextual problem-solving activities were perceived as relevant and applicable to authentic school leadership challenges. These results indicate that the TLC model moves beyond conventional procedural training toward experiential and reflective professional development aligned with adult learning principles. Effectiveness analysis further confirmed statistically meaningful improvements in leadership competence. Pretest–posttest comparisons showed substantial score increases, supported by chi-square normality testing and moderate-to-high N-Gain results. Observational data and interview findings reinforced these quantitative outcomes, revealing progressive shifts in reflective depth, strategic thinking, instructional supervision awareness, and collaborative leadership practices. Triangulation

across statistical outputs, observations, and interviews strengthens the credibility and internal consistency of the results. Overall, the study provides empirical evidence that leadership development grounded in transformative learning and structured coaching can significantly enhance principal leadership capacity. The TLC model offers a context-sensitive and sustainable framework for strengthening school leadership in decentralized and resource-constrained educational settings. By operationalizing reflective transformation within measurable training cycles, this research contributes both theoretically and practically to contemporary discourse on principal professional development and transformational educational leadership

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Author Declaration

Originality Statement

The authors confirm that this manuscript is an original work and has not been published previously in any form. The manuscript is not currently under consideration or review by any other journal, conference, or publication outlet. All sources used in this study have been properly cited and acknowledged in accordance with academic integrity standards.

Conflict of Interest Statement

The authors declare that there are no conflicts of interest related to this study. The authors also confirm that there are no financial, personal, institutional, or professional interests that could have influenced the research process, data analysis, interpretation of findings, or preparation of this manuscript.

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