Transdisciplinary Leadership Approaches in Teacher Collaboration and Innovation

Teresa S. Echano, Consuelo R. Saenz, EdD

Mabini Colleges, Incorporated, Daet, Camarines Norte

DOI: https://dx.doi.org/10.47772/IJRISS.2025.910000855

Received: 07 November 2025; Accepted: 14 November 2025; Published: 26 November 2025

ABSTRACT

This study aimed to describe the transdisciplinary leadership approaches of school heads in teacher collaboration and innovation in Mercedes, Camarines Norte, for the School Year 2024-2025. A quantitative method using a descriptive-correlational design was used, with a structured questionnaire to gather data from all 113 teachers in three mainland public elementary schools in Mercedes, Camarines Norte. Data were analyzed using Microsoft Excel and IBM SPSS Version 21 with weighted mean and Pearson correlation as statistical tools. The findings revealed that school heads consistently demonstrated transdisciplinary leadership approaches in adaptive and empowering leadership, knowledge integration and support, and values-driven complexity management. The findings also indicate that the level of teacher collaboration was very high in collaborative lesson planning, teamwork, shared reflection, feedback exchange, and professional learning communities. Likewise, the level of teacher innovation was very high in opportunity exploration, idea generation, idea promotion, idea realization, and idea sustainability. In addition, test for significant relationship between variables revealed that transdisciplinary leadership approaches was significantly related to level of teacher collaboration and to level of teacher innovation. Levels of teacher collaboration and innovation also showed significant relationship. Moreover, the findings showed that schools experienced minimal to no challenges in implementing transdisciplinary leadership approaches. Based on the findings, Project LEAD was proposed to further enhance transdisciplinary leadership approaches of school heads.

Keywords: Transdisciplinary leadership, school leadership, teacher collaboration, teacher innovation, challenges

INTRODUCTION

Leadership in schools is critical to improving the quality of education, as it shapes how teachers collaborate and introduces new methods for enhancing student learning. School heads play an essential role in guiding teachers and fostering an environment that supports teamwork and innovative practices. Leadership in schools is about making decisions, managing resources, and empowering teachers to work together to solve problems and implement effective teaching strategies (Gabutan Jr. et al., 2024).

The idea of transdisciplinary leadership is increasingly recognized for its potential to create collaborative teaching environments and stimulate pedagogical innovation. This idea focuses on leadership roles that cross traditional disciplinary borders, enhancing teacher collaboration and creativity by integrating diverse expertise and viewpoints within educational institutions. According to Reynolds (2021), transdisciplinary leadership helps break down barriers between different subject areas or fields, enabling teachers to investigate new teaching strategies that are more adaptable to the varying needs of students and the ever-changing educational landscape. As schools globally face the challenges of globalization, many educators discover that transdisciplinary leadership models improve collaborative skills and advance progressive teaching practices.

There is growing recognition of the need to adopt transdisciplinary leadership approaches to improve teacher collaboration and promote innovative teaching practices in the Philippines. Juanico (2021) observes that there is a shift towards practices that encourage transdisciplinary collaboration in response to the challenges faced by

schools. School heads play a key role in leading these efforts, setting up initiatives that motivate teachers to work together on projects that address local community needs. Furthermore, Gabutan Jr. et al. (2024) argue that school heads who exhibit high-quality leadership create a positive school climate, which fosters teacher collaboration and innovation.

Additionally, with the introduction of the MATATAG curriculum in the Philippines, transdisciplinary leadership may be applied as a major tool in its implementation by fostering cohesive and comprehensive instructional strategies that cover various subject areas. Teachers can benefit from leadership practices that promote pedagogical experimentation, enabling a curriculum responsive to Filipino students' evolving needs. As this educational framework prioritizes critical thinking, practical skills, and the integration of core competencies, the collaborative essence of transdisciplinary leadership could be instrumental in helping teachers effectively implement these standards through interdisciplinary projects and cooperative learning methodologies.

School heads who proactively support the transdisciplinary leadership approaches encourage collaboration among teachers from different learning areas. The Philippine Professional Standards for School Heads (PPSSH) are outlined in DepEd Order No. 24, s. 2020 provided specific competencies and expectations for school heads, emphasizing the need to promote teacher growth and collaborative practices within the school. The standards stress the importance of leadership practices that build a culture of teamwork and innovation, creating conditions that allow teachers to work together effectively while encouraging professional development activities that foster the sharing of new teaching strategies. School heads can thus foster environments where learning needs are met comprehensively, allowing teachers to find connections between different areas and work collectively to enhance their teaching practices.

In the Division of Camarines Norte, transdisciplinary leadership approaches may be a potential solution for addressing school challenges, such as large class sizes and diverse learning needs. Rodelas and Puse (2024) found that schools practicing this leadership approach experienced improvements in how teachers worked together and developed new teaching strategies. School heads can adopt transdisciplinary approaches by guiding teachers to participate in projects that engage with local issues, making learning more meaningful for students. For instance, they might bring teachers from different departments together to design community-based environmental awareness programs. This kind of leadership creates a supportive environment where teachers can share resources, collaborate on solutions, and enhance their teaching.

The study sought to determine the transdisciplinary leadership approaches of school heads in teacher collaboration and innovation in Mercedes, Camarines Norte. By identifying transdisciplinary leaders' key characteristics and approaches, the level of collaboration and innovation, the relationships between these variables, and the challenges in implementing such leadership approaches, this study provides valuable insights for aspiring and experienced school heads. Ultimately, this study proposes an intervention to further enhance transdisciplinary leadership approaches of school heads.

METHODOLOGY

The study utilized a quantitative method with a descriptive-correlation research design to describe the transdisciplinary leadership approaches of school heads in teacher collaboration and innovation. The study's population was the three public elementary mainland schools in Mercedes, Camarines Norte with a total of 126 respondents. However, a total of 113 teachers participated in this study. The difference in participation was primarily due to the timing of data collection, which coincided with activities conducted by the Division of Camarines Norte, making some of the teachers unavailable to respond to the survey.

The primary data collection tool was a structured questionnaire divided into four sections, namely Part I: Transdisciplinary Leadership Approaches of School Heads, Part II: Level of Teacher Collaboration adopted from De Guzman (2024), Part III: Level of Teacher Innovation adopted from the innovative work behavior scale of Ayoub et al. (2023), and Part IV: Challenges in Applying Transdisciplinary Leadership Approaches.

Parts I and IV were subjected to validity and reliability test. To ensure its validity, it underwent expert validation by 5 School Heads and 1 Education Program Supervisor from other districts in the province. Moreover, 20 teacher respondents from other districts were asked to participate in the survey's dry run. The dry run results were subjected to reliability testing using Cronbach's alpha, which resulted in reliability coefficients of .927 for transdisciplinary leadership approaches along adaptive and empowering leadership, .890 for knowledge integration and support, and .807 for values-driven complexity management and .986 for challenges experienced by schools in applying transdisciplinary leadership approaches along adaptive and empowering leadership, .986 for knowledge integration and support, and .984 for values-driven complexity management, showing internal consistency among the indicators.

Data analysis was conducted using Microsoft Excel and IBM SPSS Version 21. To describe transdisciplinary leadership approaches employed by school heads to enhance teacher collaboration and innovation, descriptive and inferential statistics were utilized, including weighted mean and Pearson's productmoment correlation.

RESULTS AND DISCUSSION

Transdisciplinary Leadership Approaches Employed by School Heads to Enhance Teacher Collaboration and Innovation

This section presents the transdisciplinary leadership approaches used by school heads to foster teacher collaboration and innovation. It highlights leadership approaches along adaptive and empowering leadership, knowledge integration and support, and values-driven complexity management.

Adaptive and Empowering Leadership. This section presents the transdisciplinary leadership approaches employed by school heads along adaptive and empowering leadership. It includes promoting teacher autonomy, creating a responsive and supportive environment, encouraging collaboration, and providing opportunities for professional growth and innovation.

Table 1 shows that the overall weighted mean for transdisciplinary leadership approaches along adaptive and empowering leadership is 3.80, interpreted as "Always", indicating that school heads consistently demonstrate this leadership approach. The highest-rated indicator is adapting leadership strategies based on the specific needs of the team, with a weighted mean of 3.93, interpreted as "Always", reflecting school heads' flexibility. The lowest-rated indicator is listening to feedback and adjusting leadership approach accordingly, with a weighted mean of 3.50, still interpreted as "Always", suggesting that while feedback is acknowledged.

The results confirm that school heads created an empowering environment where teachers felt encouraged to lead and innovate. The strong emphasis on adapting to team needs supported a flexible, responsive leadership culture. In many elementary schools, school heads assigned leadership roles such as grade chairpersons or project coordinators, giving teachers ownership of key programs. They also tailored coaching and mentoring strategies based on individual teacher needs, using tools like the Performance Management and Evaluation System – Philippine Professional Standards for Teachers (PMES-PPST) observation form and postconference notes to track and adjust support. Teachers were encouraged to take the initiative to integrate innovative strategies into their lessons, particularly during In-Service Trainings (INSET).

The lower score on feedback integration highlighted an area for improvement, where school heads could have benefited from developing more effective ways to translate teacher input into actionable changes. Teacher feedback was commonly collected during faculty meetings and post-observation conferences. However, this feedback was not always systematically analyzed or used to inform policy or procedural adjustments. Some school heads acknowledged receiving suggestions on scheduling, resource allocation, or instructional materials, but often faced delays in acting on them due to budget constraints or a lack of monitoring systems. Teachers sometimes felt their feedback was heard but not visibly acted upon, reducing the potential for adaptive leadership to take full effect.

Table 1 Transdisciplinary Leadership Approaches Employed by School Heads along Adaptive and Empowering Leadership

Indicators	Weighted Mean	Interpretation
1. Encourages teachers to take initiative and make independent decisions.	3.92	Always
2. Adapts leadership strategies based on the specific needs of the team.	3.93	Always
3. Flexible and responsive to changes in the educational environment.	3.90	Always
4. Provides teachers with leadership roles and involves them in decision-making.	3.75	Always
5. Supports teachers in implementing innovative strategies for student learning.	3.88	Always
6. Promotes an environment where teachers feel confident to share their ideas.	3.76	Always
7. Listens to feedback and adjusts leadership approach accordingly.	3.50	Always
8. Encourages collaboration across different grade levels and subjects.	3.69	Always
9. Motivates teachers to continuously develop their skills.	3.91	Always
10. Provides resources that enable teachers to implement innovative teaching methods.	3.73	Always
Overall Weighted Mean	3.80	Always

Rating Scale: 3.25-4.00 = Always, 2.50-3.24 = Often, 1.75-2.49 = Sometimes, 1.00-1.74 = Never

The present study's findings were corroborated by Rodelas and Puse (2024), emphasizing that transdisciplinary leadership thrives on adaptability and shared decision-making across disciplines, empowering teachers to take initiative while promoting cross-subject collaboration. This approach was further supported by Laduca et al. (2019), who presented a transdisciplinary education model that encouraged flexibility and distributed leadership, highlighting how responsive, empowering leaders enabled teachers to integrate diverse knowledge and innovate within and beyond their subject areas.

Knowledge Integration and Support. This section presents the transdisciplinary leadership approaches employed by school heads along knowledge integration and support. It includes promoting interdisciplinary projects, fostering collaborative planning, encouraging diverse perspectives, and providing access to varied resources to improve instructional practices.

Table 2 shows that the overall weighted mean for knowledge integration and support is 3.92, interpreted as "Always", indicating that school heads consistently promote this leadership approach. The highest-rated indicator is valuing and integrating diverse viewpoints in decision-making, with a weighted mean of 3.96, interpreted as "Always", demonstrating school heads' commitment to inclusive and collaborative leadership. The lowest-rated indicator facilitates access to information and resources across various subjects, with a weighted mean of 3.86, still interpreted as "Always", suggesting that while access to resources is prioritized, there may be room for more extensive resource availability or support.

Table 2 Transdisciplinary Leadership Approaches Employed by School Heads along Knowledge Integration and Support

Indicators	Weighted Mean	Interpretation
1. Encourages teachers to share knowledge across different disciplines.	3.91	Always
2. Supports interdisciplinary projects and teaching approaches.	3.92	Always
3. Fosters an environment where teachers can learn from each other.	3.93	Always
4. Promotes knowledge sharing to enhance teaching practices.	3.89	Always
5. Facilitates access to information and resources across various subjects.	3.86	Always
6. Organizes professional development that integrates multiple disciplines.	3.93	Always
7. Values and integrates diverse viewpoints in decision-making.	3.96	Always
8. Encourages teachers to apply knowledge from different fields to solve problems.	3.95	Always
9. Supports collaborative planning across different subjects.	3.93	Always
10. Prioritizes knowledge-sharing platforms and practices in the school.	3.95	Always
Overall Weighted Mean	3.92	Always

Rating Scale: 3.25-4.00 = Always, 2.50-3.24 = Often, 1.75-2.49 = Sometimes, 1.00-1.74 = Never

The results suggested that school heads effectively fostered a culture of knowledge sharing and interdisciplinary collaboration, contributing to a more innovative and connected teaching environment. In the context of public elementary schools, school heads promoted this through regular Learning Action Cell (LAC) sessions. During these sessions, teachers were encouraged to present ideas, reflect on practices, and share strategies across subject areas. The inputs of teachers were typically documented in minutes and were used in school-level decisions, including instructional improvement. School heads also practiced shared decisionmaking, especially during crafting the School Improvement Plan (SIP), where teachers formed part of the planning teams and contributed insights based on their classroom experiences and student needs.

The lower rating for resource accessibility indicated that while school heads encouraged collaboration, the provision of materials and access to cross-curricular resources were not always timely or sufficient. This was often due to budget limitations, delayed procurement processes, or the lack of centralized repositories for instructional materials. Many school heads addressed this by encouraging teachers to share their resources informally or through teacher-created learning materials, although formal platforms for systematic access were still limited.

The present study's findings were confirmed by Gaikwad et al. (2022), emphasizing that transdisciplinary learning fosters transdisciplinary collaboration and promotes diverse perspectives to enhance teacher education programs, reflecting the school heads' commitment to transdisciplinary projects. Similarly, Rodelas and Puse (2024) highlighted that transdisciplinary leadership involved integrating varied knowledge systems to drive curriculum innovation, supporting the present study's observation that school heads valued diverse viewpoints in decision-making.

Values-Driven Complexity Management. This section presents the transdisciplinary leadership approaches employed by school heads along values-driven complexity management. It includes promoting transparency, aligning policies with educational values, balancing competing priorities, and ensuring that leadership actions reflect the school's ethical foundation.

Table 3 shows that the overall weighted mean for values-driven complexity management is 3.90, interpreted as "Always", indicating that school heads consistently apply this leadership approach. The highestrated indicator is managing resources in a way that reflects the school's core values, with a weighted mean of 3.95, interpreted as "Always", demonstrating a strong commitment to ethical resource management. The lowestrated indicator considers ethical principles when making decisions on complex issues, with a weighted mean of 3.84, still interpreted as "Always", suggesting that while ethical considerations are present, navigating complex decisions may involve additional factors that complicate consistent adherence to these principles.

The results suggest that school heads fostered a values-centered culture that guided management practices and decision-making, ensuring consistency in promoting ethical leadership. In public elementary schools, school heads managed resources ethically by adhering to Department of Education policies and financial procedures. Most schools had designated school bookkeepers and a functioning Bids and Awards Committee (BAC), especially for procurement of materials and services. Procurement planning was typically aligned with the approved School Improvement Plan (SIP) and Annual Procurement Plan (APP).

The lower score for ethical decision-making in complex situations highlighted a potential area for support, where leaders needed additional strategies or frameworks to handle challenging scenarios while staying rooted in core values. In these situations, school heads often consulted the school's core values, DepEd guidelines, and inputs from the School Planning Team or the School Governing Council. However, when ethical dilemmas involved conflicting interests or limited resources, decisions relied heavily on experience, personal judgment, or district-level advice. This made consistent ethical decision-making more complex and underscored the need for training in ethical frameworks and values-based leadership.

Table 3 Transdisciplinary Leadership Approaches Employed by School Heads along Values-Driven Complexity Management

Indicators	Weighted Mean	Interpretation
1. Uses core values to guide the management of complex situations.	3.90	Always
2. Communicates the school's values effectively to all staff members.	3.93	Always
3. Considers ethical principles when making decisions on complex issues.	3.84	Always
4. Encourages teachers to adhere to the school's values in their work.	3.88	Always
5. Ensures that school policies align with shared educational values.	3.88	Always
6. Effectively balances multiple demands and priorities.	3.88	Always
7. Manages resources in a way that reflects the school's core values.	3.95	Always
8. Encourages transparency in handling challenging situations.	3.92	Always
9. Aligns school practices with both educational standards and ethical values.	3.88	Always
10. Demonstrates values-driven leadership when addressing school challenges.	3.88	Always
Overall Weighted Mean	3.90	Always

Rating Scale: 3.25-4.00 = Always, 2.50-3.24 = Often, 1.75-2.49 = Sometimes, 1.00-1.74 = Never

The present study's findings were supported by Jakavonytė-Staškuvienė and Barkauskienė (2023), highlighting that transformative teacher leadership fostered an ethical, values-based culture that supported innovation and decision-making, reflecting the school heads' efforts to align policies with core values and manage resources ethically. Similarly, Perez (2023) underscored that navigating leadership challenges in Filipino schools

required balancing complex demands with moral integrity, supporting the present study's observation that while school heads prioritized values-driven leadership, making ethically consistent decisions in complex situations remained a challenge.

Level of Teacher Collaboration in Schools Implementing Transdisciplinary Leadership Approaches

This section examines the level of teacher collaboration in schools where transdisciplinary leadership approaches are applied. It explores how teachers work together through collaborative lesson planning, teamwork, shared reflection, feedback exchange, and participation in professional learning communities.

Collaborative Lesson Planning. This section presents the level of teacher collaboration in schools implementing transdisciplinary leadership approaches along collaborative lesson planning. It includes engaging in collaborative lesson planning to improve instructional effectiveness, sharing expertise, aligning instructional practices, integrating diverse teaching strategies, and promoting continuous reflection for professional growth.

Table 4 shows that the overall weighted mean for collaborative lesson planning is 3.90, interpreted as "Very High", indicating that teachers consistently collaborate in designing and improving lessons. The highestrated indicator is encouraging reflection and continuous improvement in instructional practices, with a weighted mean of 3.92, interpreted as "Very High", highlighting the emphasis on reflective teaching for ongoing development. The lowest-rated indicator is sharing expertise and insights to create more engaging and effective lessons, with a weighted mean of 3.88, still interpreted as "Very High", suggesting that while teachers collaborate effectively, there may be opportunities to enhance knowledge-sharing practices further.

Table 4 Level of Teacher Collaboration in Schools Implementing Transdisciplinary Leadership Approach along Collaborative Lesson Planning

Indicators	Weighted Mean	Interpretation
1. Actively engages in collaborative lesson planning to enhance instructional effectiveness and professional development.	3.90	Very High
2. Shares expertise and insights to create more engaging and effective lessons.	3.88	Very High
3. Incorporates a variety of teaching strategies and resources to meet diverse student needs.	3.91	Very High
4. Promotes consistency and alignment in instructional practices across grade levels and subject areas.	3.90	Very High
5. Facilitates the identification, sharing, and application of best practices among teachers.	3.91	Very High
6. Encourages reflection and continuous improvement in instructional practices.	3.92	Very High
Overall Weighted Mean	3.90	Very High

Rating Scale: 3.25-4.00 = Very High, 2.50-3.24 = High, 1.75-2.49 = Moderate, 1.00-1.74 = Low

The results suggest that collaborative lesson planning was an integral part of teacher practice, with a strong focus on continuous improvement and alignment across subjects and grade levels. In public elementary schools, school heads encouraged reflection and continuous improvement by setting aside regular time for informal collaborative sessions by grade level focused on lesson planning. During these sessions, teachers

discussed the outcomes of their lessons, identified areas for enhancement, and received feedback from peers, master teachers, head teachers, and school heads.

The lower score on knowledge sharing indicated a need for more structured platforms or time for teachers to exchange insights, particularly across disciplines. Currently, knowledge sharing is often informal, limited to short exchanges during breaks, or discussed briefly during meetings. Many elementary school heads relied on subject coordinators or master teachers to facilitate knowledge transfer, but this was not always consistent or systematic across all grade levels.

The present study's findings were confirmed by Ma and Marion (2024), emphasizing that supportive leadership fostered teacher collaboration by promoting shared instructional planning and reflective practice, reinforcing the observed focus on continuous improvement in teaching strategies. Additionally, De Guzman (2024) highlighted that transdisciplinary leadership enhanced teacher collaboration through structured knowledge-sharing platforms, supporting the present study's insight that while teachers collaborated effectively, there was room to improve how expertise was exchanged.

Teamwork. This section presents the level of teacher collaboration in schools implementing transdisciplinary leadership approaches along teamwork. It includes respecting each other's expertise, sharing resources, addressing challenges collectively, and promoting a positive, collaborative school culture.

Table 5 shows that the overall weighted mean for teamwork is 3.93, interpreted as "Very High", indicating that teachers consistently demonstrate strong collaboration and mutual support. The highest-rated indicator is actively collaborating with other teachers to achieve common goals and support student learning, with a weighted mean of 3.96, interpreted as "Very High", reflecting a strong commitment to collective goal-setting and student success. The lowest-rated indicator is sharing resources, ideas, and instructional strategies effectively through collaborative teamwork, with a weighted mean of 3.89, still interpreted as "Very High", suggesting that while collaboration is strong, resource sharing may benefit from more structure or facilitation.

Table 5 Level of Teacher Collaboration in Schools Implementing Transdisciplinary Leadership Approach along Teamwork

Indicators	Weighted Mean	Interpretation
1. Actively collaborates with other teachers to achieve common goals and support student learning.	3.96	Very High
2. Respects and values each other's contributions and expertise in a team setting.	3.94	Very High
3. Shares resources, ideas, and instructional strategies effectively through collaborative teamwork.	3.89	Very High
4. Addresses challenges and solves problems efficiently through teamwork.	3.92	Very High
5. Fosters a supportive and positive work environment among teachers.	3.92	Very High
6. Actively promotes collaboration and teamwork with the support provided by the school leader.	3.93	Very High
Overall Weighted Mean	3.93	Very High

Rating Scale: 3.25-4.00 = Very High, 2.50-3.24 = High, 1.75-2.49 = Moderate, 1.00-1.74 = Low

The results suggested that teamwork was a core strength among teachers, contributing to a collaborative, goal-oriented school culture. In public elementary schools, teacher collaboration was commonly practiced during

crafting of School Improvement Plan where specific activities were planned and were allocated resources with the main purpose of addressing priority improvement areas. Faculty meetings and grade-level planning sessions such as intervention or remediation planning also provided opportunities for collaboration, particularly when discussing student performance, classroom challenges, or curriculum adjustments. In many schools, subject coordinators facilitated these discussions to ensure alignment and documentation.

The lower score for resource sharing indicated a potential opportunity for school heads to establish more streamlined systems or collaborative platforms to encourage the exchange of teaching materials and innovative strategies. This need arose from the then-current practice where most sharing was informal, often limited to personal chats, social media groups, or teacher-to-teacher conversations. There were rarely institutionalized systems, such as shared digital repositories, that would ensure consistent access and distribution of teaching resources. As a result, some teachers may not have fully benefited from their colleagues' innovations or best practices, especially in schools with limited time or technical infrastructure.

The present study's findings were corroborated by De Jong et al. (2023), emphasizing that distributed leadership strengthened teacher collaboration by fostering mutual trust, shared responsibility, and collective problem-solving, reflecting the observed commitment to achieving common goals and supporting student learning. Similarly, Sarong (2024) highlighted that effective educational leadership promoted collaborative teams by creating a supportive environment where teachers valued each other's expertise and addressed challenges together, reinforcing the study's insight that while teamwork was strong, resource sharing could have benefited from more structured facilitation to maximize collaboration.

Shared Reflection. This section presents the level of teacher collaboration in schools implementing transdisciplinary leadership approaches along shared reflection. It includes discussing successes and challenges, fostering professional growth and development, and identifying effective teaching strategies through reflective dialogue.

Table 6 shows that the overall weighted mean for shared reflection is 3.92, interpreted as "Very High", indicating that teachers consistently engage in reflective practices to improve instruction. The highest-rated indicator is engaging in regular shared reflection to evaluate and improve instructional practices, with a weighted mean of 3.93, interpreted as "Very High", highlighting teachers' strong commitment to regularly assessing and enhancing their teaching. The lowest-rated indicator is providing and supporting constructive feedback to colleagues during shared reflection sessions, with a weighted mean of 3.91, still interpreted as "Very High", suggesting that while feedback is present, there may be a need to strengthen the depth or frequency of feedback.

Table 6 Level of Teacher Collaboration in Schools Implementing Transdisciplinary Leadership Approach along Shared Reflection

Indicators	Weighted Mean	Interpretation
1. Engages in regular shared reflection to evaluate and improve instructional practices.	3.93	Very High
2. Discusses and learns from both successful and challenging teaching experiences during shared reflection sessions.	3.92	Very High
3. Values and seeks feedback from colleagues as part of shared reflection.	3.92	Very High
4. Promotes a culture of continuous professional growth and development through collaborative reflection.	3.92	Very High
5. Identifies and shares effective instructional strategies through reflective discussions.	3.92	Very High

6. Provides and supports constructive feedback to colleagues during shared reflection sessions.	3.91	Very High
Overall Weighted Mean	3.92	Very High

Rating Scale: 3.25-4.00 = Very High, 2.50-3.24 = High, 1.75-2.49 = Moderate, 1.00-1.74 = Low

The results suggested that shared reflection was a key component of teacher collaboration, fostering continuous improvement and professional growth. In public elementary schools, teachers commonly engaged in regular shared reflection through teaching demonstrations. Additionally, post-observation conferences were conducted after classroom observations, where teachers reflected on their instructional delivery, identified areas for improvement, and received feedback from school heads. These post-conferences served as immediate and targeted opportunities for reflective dialogue.

The lower score for providing feedback pointed to a need for more supportive structures or strategies to ensure that feedback was consistently constructive and promoted meaningful instructional changes. While peer feedback was encouraged during LAC sessions, much of the structured, constructive feedback was delivered by Head Teachers and Master Teachers during post-observation conferences. School heads also played an active role in these conferences, offering insights based on observed teaching practices. However, the feedback provided was sometimes limited to performance appraisal criteria rather than deep instructional analysis, suggesting a need to further train school leaders in delivering feedback that encouraged reflection, innovation, and growth.

The present study's findings were confirmed by Ma and Marion (2024), emphasizing that effective leadership fostered reflective teacher collaboration by promoting regular dialogue on instructional practices and encouraging continuous improvement, reflecting the strong commitment to evaluating and refining teaching methods observed in this study. Additionally, De Guzman (2024) supported the idea that transdisciplinary leadership strengthened collaborative reflection by creating a culture of professional growth. However, both studies highlighted that constructive feedback remained an area for improvement, suggesting a need for more structured feedback practices to deepen reflective discussions and enhance instructional outcomes.

Feedback Exchange. This section presents the level of teacher collaboration in schools implementing transdisciplinary leadership approaches along feedback exchange. It includes promoting open communication, reflecting on teaching strategies, and fostering a culture where feedback is regular, supportive, and growthoriented.

Table 7 shows that the overall weighted mean for feedback exchange is 3.92, interpreted as "Very High", indicating that teachers consistently engage in meaningful feedback to improve instruction. The highest-rated indicator is cultivating a culture of regular feedback exchange with the support of the school leader, with a weighted mean of 3.94, interpreted as "Very High", highlighting the school leader's essential role in promoting a feedback-rich environment. The lowest-rated indicator is actively engaging in feedback exchanges to enhance teaching approaches and student learning outcomes, with a weighted mean of 3.89, still interpreted as "Very High", suggesting that while teachers value feedback, there may be room to make these exchanges more interactive or impactful.

Table 7 Level of Teacher Collaboration in Schools Implementing TransdisciplinaryLeadership Approach along Feedback Exchange

Indicators	Weighted Mean	Interpretation
1. Engages in regular shared reflection to evaluate and improve instructional practices.	3.93	Very High

2. Discusses and learns from both successful and challenging teaching experiences during shared reflection sessions.	3.92	Very High
3. Values and seeks feedback from colleagues as part of shared reflection.	3.92	Very High
4. Promotes a culture of continuous professional growth and development through collaborative reflection.	3.92	Very High
5. Identifies and shares effective instructional strategies through reflective discussions.	3.92	Very High
6. Provides and supports constructive feedback to colleagues during shared reflection sessions.	3.91	Very High
Overall Weighted Mean	3.92	Very High

Rating Scale: 3.25-4.00 = Very High, 2.50-3.24 = High, 1.75-2.49 = Moderate, 1.00-1.74 = Low

The results suggest that feedback exchange was vital to teacher collaboration, with strong leadership support driving a culture of openness and continuous improvement. In public elementary schools, school heads promoted a culture of feedback exchange by institutionalizing post-observation conferences and teaching demonstrations. These activities served as platforms where teachers received comments and suggestions not only from school heads but also from peers. Moreover, some school heads encouraged peer observation, allowing teachers to provide feedback on each other's teaching strategies. The visible presence of school heads during instructional supervision also signaled that feedback was part of the school's professional culture.

The lower score for active participation in feedback discussions indicated a need for more structured opportunities or professional development to facilitate productive feedback dialogues. While school heads regularly provided feedback, some teachers were less proactive in initiating or engaging in peer-to-peer feedback. This may have stemmed from discomfort in giving feedback, fear of conflict, or uncertainty about how to frame constructive suggestions. Addressing these concerns required intentional capacity-building in communication, emotional intelligence, and collaborative protocols for giving and receiving feedback.

The present study's findings were supported by De Jong et al. (2023), emphasizing that distributed leadership fostered a collaborative culture where open communication and regular feedback were essential for team growth, reflecting the school leaders' significant role in cultivating a feedback-rich environment. Additionally, Sarong (2024) highlighted that effective transdisciplinary leadership built high-performing teams through continuous dialogue and shared reflection, supporting the study's insight that while feedback was valued, more structured opportunities and teacher-led feedback sessions could have enhanced engagement.

Professional Learning Communities. This section presents the level of teacher collaboration in schools implementing transdisciplinary leadership approaches along professional learning communities (PLCs). It includes sharing best practices, analyzing student data, solving common challenges, and fostering a culture of continuous professional growth.

Table 8 shows that the overall weighted mean for professional learning communities is 3.95, interpreted as "Very High", indicating that teachers are highly engaged in collaborative learning and professional development through PLCs. The highest-rated indicator is engages in PLC activities supported by dedicated time allocated by the school leader, with a weighted mean of 3.96, interpreted as "Very High", reflecting the importance of leadership support in enabling effective PLC participation. The lowest-rated indicators, both with a weighted mean of 3.94 and interpreted as "Very High", are actively participates in professional learning communities to enhance professional growth and promotes a culture of continuous learning, reflection, and professional dialogue during PLC meetings, suggesting that while participation and reflective culture are strong, they may benefit from further encouragement or structure to sustain engagement.

The results suggest that professional learning communities (PLCs) were a powerful platform for teacher collaboration and continuous improvement, driven by leadership support and a shared commitment to enhancing teaching practices. In elementary schools, this was most evident through the conduct of Learning Action Cell (LAC) sessions, which served as the operational structure of PLCs. These sessions were typically held monthly and facilitated by Master Teachers or designated LAC leaders. Teachers collaboratively analyzed lesson effectiveness, assessed student performance data, and shared best practices. School heads also allocated time for these activities during in-service training (INSET).

Table 8 Level of Teacher Collaboration in Schools Implementing Transdisciplinary Leadership Approach along Professional Learning Communities

Indicators	Weighted Mean	Interpretation
1. Actively participates in Professional Learning Communities to enhance professional growth.	3.94	Very High
2. Collaborates and shares best practices to improve instructional effectiveness within PLCs.	3.95	Very High
3. Promotes a culture of continuous learning, reflection, and professional dialogue during PLC meetings.	3.94	Very High
4. Collectively analyzes student data and uses it to inform instructional decisions.	3.95	Very High
5. Addresses common challenges and develops collaborative solutions within PLCs.	3.95	Very High
6. Engages in PLC activities supported by dedicated time allocated by the school leader.	3.96	Very High
Overall Weighted Mean	3.95	Very High

Rating Scale: 3.25-4.00 = Very High, 2.50-3.24 = High, 1.75-2.49 = Moderate, 1.00-1.74 = Low

The lower participation and reflective dialogue scores indicated a need to empower more teachers to take active leadership roles within PLCs or to facilitate more diverse discussions beyond regular topics. At the time, most LACs were facilitated by the same teacher leaders, often Master Teachers, which could have limited the diversity of perspectives. Some teachers felt hesitant to speak up or lead sessions due to a lack of experience or confidence. Expanding facilitation roles through rotation, co-facilitation, or mentoring provided more teachers with leadership experience. In some schools, teachers had started leading LAC topics based on their strengths, such as ICT integration or differentiated instruction, but this was not a widespread practice.

The present study's findings were corroborated by De Guzman (2024), emphasizing that transdisciplinary leadership enhanced teacher collaboration by fostering structured, data-driven PLCs, supporting the role of leadership in ensuring dedicated time and resources for professional growth. Similarly, Sarong (2024) highlighted that effective leadership built high-performing teams by promoting continuous learning and reflective dialogue, reinforcing the present study's insight that empowering teachers to take on leadership roles could have further enriched discussions and sustained engagement.

Level of Teacher Innovation in Schools with Transdisciplinary Leadership Approaches

This section investigates the level of teacher innovation in schools implementing transdisciplinary leadership approaches. It assesses how teachers explore opportunities, generate ideas, promote, realize, and sustain innovation.

Opportunity Exploration. This section presents the level of teacher innovation in schools implementing transdisciplinary leadership approaches along opportunity exploration. It includes seeking innovative solutions, sharing potential improvements, responding to emerging challenges, and enhancing student outcomes through creative strategies.

Table 9 shows that the overall weighted mean for opportunity exploration is 3.93, interpreted as "Very High", indicating that teachers consistently explore new ideas and strategies to improve instruction. The highestrated indicator is actively seeking opportunities to develop creative solutions in teaching practices, with a weighted mean of 3.97, interpreted as "Very High", reflecting teachers' strong commitment to finding innovative approaches. The lowest-rated indicators, both with a weighted mean of 3.91, are regularly identifying and sharing potential improvements for teaching methods with colleagues or supervisors and identifying new ways to enhance learning outcomes through changes in teaching strategies, still interpreted as "Very High", suggesting that while innovation is present, more structured opportunities for collaboration on improvements may enhance these efforts further.

Table 9 Level of Teacher Innovation in Schools Implementing Transdisciplinary Leadership Approach along Opportunity Exploration

Indicators	Weighted Mean	Interpretation
1. Actively seeking opportunities to develop creative solutions in teaching practices.	3.97	Very High
2. Regularly identifying and sharing potential improvements for teaching methods with colleagues or supervisors.	3.91	Very High
3. Exploring opportunities to solve challenges that arise in the teaching and learning process.	3.95	Very High
4. Identifying new ways to enhance learning outcomes through changes in teaching strategies.	3.91	Very High
5. Frequently discussing opportunities to adopt new approaches that improve student performance.	3.92	Very High
6. Proactively exploring innovative ways to respond to emerging educational challenges.	3.93	Very High
Overall Weighted Mean	3.93	Very High

Rating Scale: 3.25-4.00 = Very High, 2.50-3.24 = High, 1.75-2.49 = Moderate, 1.00-1.74 = Low

The results suggest that teachers embraced opportunity exploration as a key part of their professional practice, with a desire to improve student outcomes. In elementary schools, teachers demonstrated this through peer mentoring programs where more experienced teachers guided new teachers in trying differentiated instruction strategies. Teachers also displayed opportunity exploration through active participation in INSET workshops, where they experimented with integrating digital platforms like Google Classroom into their lessons. Others designed remediation programs for struggling learners using creative approaches such as story-based Math problem solving or gamified spelling drills.

The lower ratings for sharing and identifying new strategies indicated a need for structured platforms where teachers could collaboratively explore and refine ideas. At the time, idea sharing was mostly done informally during faculty meetings or casually between peers. Some schools lacked a formal process for capturing and disseminating successful strategies beyond classrooms. Although LAC sessions provided some structure, they focused more on compliance topics than on innovation. As a result, good practices remained isolated and

underutilized. Establishing platforms like school-wide showcases of teaching strategies or repositories of teacher-created materials could have addressed this gap.

The present study's findings were confirmed by Ayoub et al. (2023), emphasizing that innovative work behavior thrived when leadership fostered a proactive problem-solving and knowledge-sharing culture, supporting the observed commitment to developing creative teaching solutions. Additionally, Gabutan Jr. et al. (2024) highlighted that leadership quality and a supportive learning environment drove teacher innovativeness, reinforcing the study's insight that while teachers actively explored opportunities, more structured platforms for sharing and refining ideas could have amplified collaborative innovation and enhanced instructional strategies.

Idea Generation. This section presents the level of teacher innovation in schools implementing transdisciplinary leadership approaches along idea generation. It involves developing creative approaches, collaborating with colleagues, and contributing to brainstorming sessions about instructional innovation.

Table 10 shows that the overall weighted mean for idea generation is 3.94, interpreted as "Very High", indicating that teachers consistently generate new ideas. The highest-rated indicator is consistently exploring and experimenting with innovative approaches to enhance classroom instruction, with a weighted mean of 3.96, interpreted as "Very High", highlighting teachers' commitment to trying new methods. The lowest-rated indicators, both with a weighted mean of 3.93 and interpreted as "Very High", are regularly proposing new and creative teaching strategies to improve student learning, providing suggestions to improve existing teaching methods and strategies, and collaborating with colleagues to generate ideas for improving student engagement and outcomes, suggesting that further collaboration may enhance the process.

The results suggest that teachers embraced idea generation as a key part of fostering innovation in their classrooms. In actual practice, teachers often propose intervention programs to address learning difficulties of learners. In one school, Project ReLem (Read More, Learn More) was proposed to address difficulties of learners in reading and comprehension.

The lower ratings on collaboration and refining strategies indicated a potential need for more facilitated opportunities where teachers could build on each other's ideas and collectively develop more effective instructional approaches. At the time, idea generation tended to be isolated within grade-level teams or limited to informal conversations. In many schools, there were few structured brainstorming mechanisms outside of LACs, and the emphasis during these sessions was often on compliance or reporting rather than cultivating creativity. School heads and Master Teachers rarely led formal design-thinking sessions or structured innovation cycles where ideas were co-developed, refined, and tested.

Table 10 Level of Teacher Innovation in Schools Implementing Transdisciplinary Leadership Approach along Idea Generation

Indicators	Weighted Mean	Interpretation
1. Regularly proposing new and creative teaching strategies to improve student learning.	3.93	Very High
2. Generating ideas to address teaching challenges and sharing them with colleagues.	3.95	Very High
3. Consistently exploring and experimenting with innovative approaches to enhance classroom instruction.	3.96	Very High
4. Providing suggestions to improve existing teaching methods and strategies.	3.93	Very High

5. Collaborating with colleagues to generate ideas for improving student engagement and outcomes.	3.93	Very High
6. Actively contributing creative solutions during brainstorming sessions or meetings about teaching innovations.	3.95	Very High
Overall Weighted Mean	3.94	Very High

Rating Scale: 3.25-4.00 = Very High, 2.50-3.24 = High, 1.75-2.49 = Moderate, 1.00-1.74 = Low

The present study's findings were supported by Laduca et al. (2019), emphasizing that transdisciplinary collaboration fueled creative problem-solving by encouraging teachers to experiment with new approaches and share ideas across disciplines, supporting the observed commitment to exploring innovative classroom strategies. Similarly, Gabutan Jr. et al. (2024) highlighted that leadership-driven, collaborative environments promoted teacher innovativeness, reinforcing the study's insight that creating more structured brainstorming opportunities and collaborative platforms could have enhanced the refinement and development of creative instructional methods.

Idea Promotion. This section presents the level of teacher innovation in schools implementing transdisciplinary leadership approaches along idea promotion. It involves persuading colleagues and decisionmakers to embrace innovations, demonstrating their practical benefits, and fostering a culture where new ideas are actively supported and adopted.

Table 11 shows that the overall weighted mean for idea promotion is 3.92, interpreted as "Very High", indicating that teachers consistently promote innovative ideas to enhance the teaching and learning process. The highest-rated indicator regularly advocates for adopting new teaching ideas or methods, with a weighted mean of 3.94, interpreted as "Very High", highlighting teachers' proactive efforts to push for instructional improvements. The lowest-rated indicator is supporting innovative ideas proposed by others and presenting their benefits, with a weighted mean of 3.88, still interpreted as "Very High", suggesting that while teachers promote their own ideas, they may need more encouragement or structured opportunities to champion the innovations of their colleagues.

Table 11 Level of Teacher Innovation in Schools Implementing Transdisciplinary Leadership Approach along Idea Promotion

Indicators	Weighted Mean	Interpretation
1. Regularly advocating for the adoption of new teaching ideas or methods.	3.94	Very High
2. Encouraging colleagues to try new strategies or technologies in teaching.	3.93	Very High
3. Consistently promoting innovative ideas to improve the teaching and learning process.	3.92	Very High
4. Demonstrating how new ideas or strategies can be applied effectively in the classroom.	3.92	Very High
5. Supporting innovative ideas proposed by others and presenting their benefits.	3.88	Very High
6. Persuading decision-makers to consider new teaching approaches and allocate resources for implementation.	3.91	Very High
Overall Weighted Mean	3.92	Very High

Rating Scale: 3.25-4.00 = Very High, 2.50-3.24 = High, 1.75-2.49 = Moderate, 1.00-1.74 = Low

The results suggest that teachers recognized the importance of promoting innovation to improve teaching practices. This was particularly evident in grade-level collaborative sessions where teachers of the same grade came together to address learning gaps. This can be seen when Grade 3 teachers collectively analyzed Comprehensive Rapid Literacy Assessment (CRLA) and Philippine Informal Reading Inventory (Phil-IRI) results and shared strategies to improve learners' vocabulary. It is also a common practice among mainland elementary schools in Mercedes District to share best practices on classroom management during District-based INSET.

The lower score on supporting others' ideas indicated a need for fostering a more collaborative environment where teachers felt equally motivated to support the ideas of their colleagues, not just their own. At the time, while many teachers enthusiastically promoted their own classroom innovations, opportunities to formally support or build on others' ideas were limited. Structured platforms where teachers could co-develop, review, and endorse one another's strategies were not yet institutionalized in most schools.

The present study's findings on idea promotion were corroborated by Ayoub et al. (2023), emphasizing that fostering an innovation-supportive environment empowered teachers to advocate for new methods and drive instructional improvements, reflecting the observed commitment to promoting new ideas. Additionally, Gabutan Jr. et al. (2024) highlighted that leadership quality and a positive organizational climate encouraged teachers to push for innovation. However, both studies acknowledged the challenge of ensuring teachers actively supported their colleagues' ideas, reinforcing the present study's insight that promoting a more collaborative, peer-driven culture could have strengthened the collective adoption of innovative strategies.

Idea Realization. This section presents the level of teacher innovation in schools implementing transdisciplinary leadership approaches along idea realization. It involves implementing, monitoring, evaluating, and refining new methods to improve student learning outcomes. This stage ensures that innovations move beyond planning and promotion into sustained, measurable classroom improvements.

Table 12 shows that the overall weighted mean for idea realization is 3.93, interpreted as "Very High", indicating that teachers consistently put innovative ideas into action and work to refine them for better results. The highest-rated indicators are setting clear criteria to measure the success of newly applied teaching strategies and evaluating and refining steps taken to successfully implement new teaching strategies, both with a weighted mean of 3.96, interpreted as "Very High", highlighting a strong commitment to ensuring innovations are effective and continuously improved. The lowest-rated indicator is consistently testing and implementing new teaching strategies to improve student learning, with a weighted mean of 3.88, still interpreted as "Very High", suggesting that while teachers are dedicated to applying new methods, initial implementation may face challenges or require more support.

Table 12 Level of Teacher Innovation in Schools Implementing Transdisciplinary Leadership Approach along Idea Realization

Indicators	Weighted Mean	Interpretation
1. Consistently testing and implementing new teaching strategies to improve student learning.	3.88	Very High
2. Regularly monitoring and assessing the progress of new ideas applied in teaching.	3.93	Very High
3. Analyzing and resolving challenges that arise during the implementation of innovative methods.	3.92	Very High

4. Setting clear criteria to measure the success of newly applied teaching strategies.	3.96	Very High
5. Frequently updating others about progress when applying teaching innovations.	3.95	Very High
6. Evaluating and refining steps taken to successfully implement new teaching strategies.	3.96	Very High
Overall Weighted Mean	3.93	Very High

Rating Scale: 3.25-4.00 = Very High, 2.50-3.24 = High, 1.75-2.49 = Moderate, 1.00-1.74 = Low

The results suggest that teachers were committed to ensuring the success of innovative strategies through ongoing assessment. In many schools, this process was collaboratively undertaken at the grade level in alignment with KRA 3: Diversity of Learners & Curriculum and Assessment (Objective 10: Adapted and implemented learning programs that ensure relevance and responsiveness to the needs of all learners). Grade 1 teachers jointly implemented a remedial reading program using phonics-based strategies and differentiated activities designed for slow readers. Weekly monitoring of learners' progress showed notable improvement in reading fluency and comprehension levels, reflecting the effectiveness of these adaptive interventions.

The lower score for initial implementation indicated a need for more structured support, particularly during the early stages of applying new methods, to help teachers move ideas from concept to classroom practice more smoothly. This challenge stemmed from limited resources and time constraints. In many schools, teachers implementing new ideas often work independently without structured guidance or mentorship. School heads and master teachers were sometimes unable to extend technical assistance during early implementation stages due to overlapping duties. Hence, some teachers hesitated to take the first step or abandoned innovations when initial trials were unsuccessful.

The present study's findings were confirmed by Laduca et al. (2019), emphasizing that transdisciplinary collaboration supported the practical implementation and continuous refinement of innovative strategies, reflecting the observed commitment to setting clear criteria and evaluating results. Similarly, Gabutan Jr. et al. (2024) highlighted that leadership quality and a supportive organizational climate were crucial for translating ideas into action. This reinforces the present study's insight that more structured support could help overcome early-stage challenges and ensure sustainable improvements in teaching practices.

Idea Sustainability. This section presents the level of teacher innovation in schools implementing transdisciplinary leadership approaches along idea sustainability. It involves assessing outcomes, collaborating to sustain effective strategies, expanding innovations to other areas, and institutionalizing practices to ensure lasting impact on teaching and learning.

Table 13 shows that the overall weighted mean for idea sustainability is 3.92, interpreted as "Very High", indicating that teachers consistently work to maintain and expand effective teaching innovations. The highestrated indicator is collaborating with others to refine and sustain successful teaching innovations, with a weighted mean of 3.94, interpreted as "Very High", reflecting the importance of teamwork in keeping innovations alive and evolving. The lowest-rated indicator is institutionalizing successful innovations as part of regular teaching practices, with a weighted mean of 3.89, still interpreted as "Very High", suggesting that while innovations are sustained, embedding them fully into standard practices may require more support or formal recognition.

The results suggested teachers were committed to sustaining innovations through collaboration and ongoing discussions. Grade-level collaboration played a central role in this. Grade 2 teachers sustained interactive reading strategies by meeting weekly to review learner fluency scores, then refining the same set of approaches for use across all Grade 2 sections. Teachers also sustained innovations by integrating them into collective

outputs like grade-level lesson exemplars. This is evident when Grades 1 to 3 teachers developed slide deck presentations in Integrated Learning Experience (ILE), they created a repository of these materials, which was then used year after year.

Table 13 Level of Teacher Innovation in Schools Implementing Transdisciplinary Leadership Approach along Idea Sustainability

Indicators	Weighted Mean	Interpretation
1. Assessing whether the results of innovative practices align with predetermined goals.	3.93	Very High
2. Collaborating with others to refine and sustain successful teaching innovations.	3.94	Very High
3. Extending effective teaching practices to other classrooms or subject areas.	3.91	Very High
4. Institutionalizing successful innovations as part of regular teaching practices.	3.89	Very High
5. Participating in discussions to sustain and strengthen implemented teaching strategies.	3.92	Very High
6. Ensuring that successful innovations are continuously applied over the long term.	3.91	Very High
Overall Weighted Mean	3.92	Very High

Rating Scale: 3.25-4.00 = Very High, 2.50-3.24 = High, 1.75-2.49 = Moderate, 1.00-1.74 = Low

However, the lower rating for institutionalizing practices pointed to a potential need for more leadershipdriven efforts to formalize and scale successful innovations across the school. While teachers applied successful methods consistently, there was often no formal policy or system ensuring their adoption school-wide. Without official documentation, designated innovation leads, or regular integration into curriculum planning, many promising strategies remained informal or dependent on the teacher who created them.

The present study's findings were corroborated by Rodelas and Puse (2024), emphasizing that transdisciplinary leadership supported long-term innovation by fostering collaboration and creating systems for refining and expanding successful strategies, reflecting the importance of teamwork in sustaining innovations. Additionally, Kilag et al. (2024) highlighted that transdisciplinary leadership approaches drove educational innovation by embedding practices into institutional frameworks, reinforcing the present study's insight that while collaboration fueled sustainability, more leadership-driven efforts were needed to formalize and integrate innovations into teaching practices.

Relationship between Transdisciplinary Leadership Approaches and the Level of Teacher Collaboration in Schools

This section presents the test for a significant relationship between transdisciplinary leadership approaches and the level of teacher collaboration using Pearson Product Moment Correlation Coefficient (r). The analysis examines how adaptive and empowering leadership, knowledge integration and support, and values-driven complexity management relate to collaborative lesson planning, teamwork, shared reflection, feedback exchange, and professional learning communities.

Table 14 shows that there is a significant positive correlation between the variables analyzed, as reflected by the r coefficients. Specifically, the values of the r coefficients range from 0.573 to 0.837 with p-values less than 0.01 (p-values<.01). This suggests that as the transdisciplinary leadership approaches increase, the level of teacher collaboration in schools also tends to increase. This means that as school heads practice transdisciplinary leadership approaches in adaptive and empowering leadership, knowledge integration and support, and valuesdriven complexity management, teachers are inspired to collaborate with colleagues to create innovative solutions. Additionally, the p-values less than .01 indicate that the relationships are statistically significant. Thus, the null hypothesis will be rejected.

Table 14 Test for Significant Relationship between Transdisciplinary Leadership Approaches and Level of Teacher Collaboration in Schools

Level of Teacher Collaboration in Schools	Transdisciplinary Leadership Approaches					
	Adaptive and Empowering Leadership		Knowledge Integration and Support		Values-Driven Complexity Management	
	r	*p-value*	*r*	*p-value*	*r*	*p-value*
Collaborative Lesson Planning	.573**	.000	.699**	.000	.746**	.000
Teamwork	.606**	.000	.810**	.000	.783**	.000
Shared Reflection	.697**	.000	.827**	.000	.829**	.000
Feedback Exchange	.698**	.000	.782**	.000	.760**	.000
Professional Learning Communities	.722**	.000	.837**	.000	.852**	.000

**Correlation is significant @ 0.01 level.

For adaptive and empowering leadership, significant relationships were observed in collaborative lesson planning (r=.573, moderate relationship), teamwork (r=.606, strong relationship), shared reflection (r=.697, strong relationship), feedback exchange (r=.698, strong relationship), and professional learning communities (r=.722, strong relationship). This indicates that when school heads empower teachers and adapt to their needs, teachers become more engaged in collaboration. When a school head delegates curriculum alignment projects to grade-level teams, teachers work together in designing remediation materials, which fosters ownership and accountability.

For knowledge integration and support, significant relationships were found in collaborative lesson planning (r=.699, strong relationship), teamwork (r=.810, very strong relationship), shared reflection (r=.827, very strong relationship), feedback exchange (r=.782, strong relationship), and professional learning communities (r=.837, very strong relationship). This suggests that when school heads promote interdisciplinary knowledge-sharing and provide access to diverse resources, collaboration becomes more meaningful. This may be observed when teachers from Science and Mathematics departments co-design performance tasks that combine problem-solving with scientific inquiry.

For values-driven complexity management, significant relationships were also found in collaborative lesson planning (r=.746, strong relationship), teamwork (r=.783, strong relationship), shared reflection (r=.829, very strong relationship), feedback exchange (r=.760, strong relationship), and professional learning communities (r=.852, very strong relationship). This implies that when school leaders uphold ethical standards and core values in decision-making, teachers are more committed to collaboration. When leaders ensure transparency in assigning teaching loads or conducting classroom observations, teachers are more willing to engage in peer mentoring, team-teaching, and joint classroom observations without fear of bias or favoritism.

Overall, the results show that all dimensions of transdisciplinary leadership have significant and positive relationships with the various aspects of teacher collaboration. This means that as school heads demonstrate transdisciplinary leadership approaches in adaptive and empowering leadership, knowledge integration and support, and values-driven complexity management, they strengthen teacher collaboration in collaborative lesson planning, teamwork, shared reflection, feedback exchange, and professional learning communities.

The present study's findings were confirmed by De Jong et al. (2023), emphasizing that effective leadership characterized by adaptability, knowledge-sharing, and shared decision-making fostered stronger teamwork, reflective practice, and collaborative planning, mirroring the significant relationships observed across variables. Similarly, De Guzman (2024) highlighted that leadership competence directly enhanced teacher collaboration, particularly through professional learning communities and feedback exchange. This reinforces the present study's insight that strengthening leadership approaches could further boost teacher engagement and cooperative practices.

Relationship between Transdisciplinary Leadership Approaches and the Level of Teacher Innovation in Schools

This section presents the test for a significant relationship between transdisciplinary leadership approaches and the level of teacher innovation using Pearson Product Moment Correlation Coefficient (r). The analysis examines how adaptive and empowering leadership, knowledge integration and support, and valuesdriven complexity management relate to opportunity exploration, idea generation, idea promotion, idea realization, and idea sustainability.

Table 15 shows that significant relationships exist between the variables considered, as reflected by the r coefficients. It can be noted that the values of r coefficients range from .604 to .870 with p-values less than 0.01 (p-values<.01). This indicates that as the transdisciplinary leadership approaches increase, the level of teacher innovation in schools tends to increase also. This means that school heads became catalysts for teacher innovation in the mainland elementary schools. Further, the p-values less than .01 suggest that the relationship is statistically significant. Thus, the null hypothesis will be rejected.

For adaptive and empowering leadership, significant relationships were observed in opportunity exploration (r=.604, strong relationship), idea generation (r=.772, strong relationship), idea promotion (r=.669, strong relationship), idea realization (r=.621, strong relationship), and idea sustainability (r=.667, strong relationship). This implies that when school leaders empower teachers and adapt to their evolving needs, teachers are more likely to consistently create and experiment with new teaching strategies. This is evident when a school head who allows teachers to pilot new assessment formats, such as project-based assessments or digital portfolios, enables them to test ideas in practice and refine them based on student response.

Table 15 Test for Significant Relationship between Transdisciplinary Leadership Approaches and Level of Teacher Collaboration in Schools

Level of Teacher Innovation in Schools	Transdisciplinary Leadership Approaches					
	Adaptive and Empowering Leadership		Knowledge Integration and Support		Values-Driven Complexity Management	
	r	*p-value*	*r*	*p-value*	*r*	*p-value*
Opportunity Exploration	.604**	.000	.699**	.000	.746**	.000
Idea Generation	.772**	.000	.810**	.000	.783**	.000
Idea Promotion	.669**	.000	.827**	.000	.829**	.000

Idea Realization	.621**	.000	.782**	.000	.760**	.000
Idea Sustainability	.667**	.000	.837**	.000	.852**	.000

**Correlation is significant @ 0.01 level.

For knowledge integration and support, significant relationships were observed in opportunity exploration (r=.801, very strong relationship), idea generation (r=.870, very strong relationship), idea promotion (r=.849, very strong relationship), idea realization (r=.817, very strong relationship), and idea sustainability (r=.853, very strong relationship). This shows that when school heads encourage interdisciplinary collaboration and facilitate access to shared knowledge and resources, teachers become more capable of developing innovative instructional approaches. When English and Social Studies teachers co-design a research-based debate activity, integrating language skills with historical analysis, it results in richer classroom innovations.

For values-driven complexity management, significant relationships were observed in opportunity exploration (r=.734, strong relationship), idea generation (r=.844, very strong relationship), idea promotion (r=.787, strong relationship), idea realization (r=.763, strong relationship), and idea sustainability (r=.803, very strong relationship). This suggests that ethical leadership and decision-making grounded in core values strongly influence teachers' ability to generate relevant and sustainable ideas for instructional innovation. School leaders promote inclusivity as a guiding principle, motivating teachers to design differentiated learning activities for students, ensuring innovation is ethical and sustainable.

Overall, the results show that all dimensions of transdisciplinary leadership have significant and positive relationships with the various aspects of teacher innovation. This means that as school heads demonstrate transdisciplinary leadership approaches in adaptive and empowering leadership, knowledge integration and support, and values-driven complexity management, they strengthen teacher innovation in opportunity exploration, idea generation, idea promotion, idea realization, and idea sustainability.

The present study's findings were supported by Ayoub et al. (2023), emphasizing that leadership fostering empowerment, collaboration, and innovation-friendly environments drove opportunity exploration, idea promotion, and sustained creative efforts, reflecting the strong correlations observed across variables. Similarly, Gabutan Jr. et al. (2024) highlighted that leadership quality, organizational climate, and supportive learning environments were key predictors of teacher innovativeness, reinforcing the present study's insight that strengthening adaptive leadership and interdisciplinary knowledge-sharing was crucial.

Relationship between Teacher Collaboration and Teacher Innovation in Schools

This section presents the test for a significant relationship between teacher collaboration and teacher innovation in schools using Pearson Product Moment Correlation Coefficient (r). The analysis explores how collaborative lesson planning, teamwork, shared reflection, feedback exchange, and professional learning communities relate to opportunity exploration, idea generation, idea promotion, idea realization, and idea sustainability.

Table 16 reveals that significant relationships exist between the variables considered, as reflected by the r coefficients. It can be noted that the values of r coefficients range from .696 to .910 with p-values less than 0.01 (p-values<.01). This indicates that as the level of teacher collaboration increases, the level of teacher innovation in schools tend to increase also. This means that teacher collaboration, especially through the LAC structure ensures that a successful innovation developed by one teacher can be refined by multiple teachers and pilot the innovation in different classes leading to the sustainability of effective teaching strategies. Further, the p-values less than .01 suggest that the relationship is statistically significant. Thus, the null hypothesis will be rejected.

Table 16 Test for Significant Relationship between Teacher Collaboration and Teacher Innovation in Schools

Innovation	Collaboration									
	Collaborative Lesson Planning		Teamwork		Shared Reflection		Feedback Exchange		Professional Learning Communities	
	r	p-value	r	p-value	r	p-value	r	p-value	r	p-value
Opportunity Exploration	.696**	.000	.729**	.000	.809**	.000	.715**	.000	.777**	.000
Idea Generation	.776**	.000	.797**	.000	.850**	.000	.811**	.000	.910**	.000
Idea Promotion	.697**	.000	.793**	.000	.850**	.000	.789**	.000	.800**	.000
Idea Realization	.677**	.000	.761**	.000	.796**	.000	.733**	.000	.779**	.000
Idea Sustainability	.741**	.000	.776**	.000	.801**	.000	.747**	.000	.842**	.000

**Correlation is significant @ 0.01 level.

For collaborative lesson planning, significant relationships were observed in opportunity exploration (r=.696, strong relationship), idea generation (r=.776, strong relationship), idea promotion (r=.697, strong relationship), idea realization (r=.677, strong relationship), and idea sustainability (r=.741, strong relationship). This indicates that that when teachers co-design lessons, they are more likely to develop innovative instructional strategies. Teachers who collaboratively design integrative performance tasks, such as linking Science concepts with practical Math applications, can create more innovative lessons that directly address diverse learner needs.

For teamwork, significant relationships were observed in opportunity exploration (r=.729, strong relationship), idea generation (r=.797, strong relationship), idea promotion (r=.793, strong relationship), idea realization (r=.761, strong relationship), and idea sustainability (r=.776, strong relationship). This suggests that strong collaborative dynamics and shared goals among teachers promote the flow of new instructional ideas. This can be observed when teaching teams organize remedial programs where relatively new and senior teachers share strategies, leading to innovative intervention for students.

For shared reflection, significant relationships were observed in opportunity exploration (r=.809, very strong relationship), idea generation (r=.850, very strong relationship), idea promotion (r=.850, very strong relationship), idea realization (r=.796, strong relationship), and idea sustainability (r=.801, very strong relationship). This indicates that that reflective dialogue helps teachers to advocate for innovative practices. After classroom observations, reflective discussions often lead to proposing new strategies such as tech-based assessments like Kahoot or Quizizz, which teachers then endorse during faculty meetings.

For feedback exchange, significant relationships were observed in opportunity exploration (r=.715, strong relationship), idea generation (r=.811, very strong relationship), idea promotion (r=.789, strong relationship), idea realization (r=.733, strong relationship), and idea sustainability (r=.747, strong relationship). This implies that open, constructive communication among teachers enhances their ability to refine and generate novel teaching strategies. This is illustrated when teachers share feedback on trial use of gamified assessments, leading to adjustments that make the approach more effective and widely acceptable.

For professional learning communities, significant relationships were observed in opportunity exploration (r=.777, strong relationship), idea generation (r=.910, very strong relationship), idea promotion (r=.800, very strong relationship), idea realization (r=.779, strong relationship), and idea sustainability (r=.842, very strong relationship). This highlights the critical role of structured, sustained collaboration in fostering an innovation-

driven culture in schools. PLCs often initiate long-term projects such as integrating project-based learning across grade levels, ensuring that innovative strategies are not only generated but institutionalized.

Overall, the results show that all dimensions teacher collaboration have significant and positive relationships with the various aspects of teacher innovation. This means that as teachers demonstrate collaboration in collaborative lesson planning, teamwork, shared reflection, feedback exchange, and professional learning communities, they strengthen teacher innovation in opportunity exploration, idea generation, idea promotion, idea realization, and idea sustainability.

The present study's findings were corroborated by Ma and Marion (2024), emphasizing that collaborative environments characterized by shared planning, teamwork, and reflective dialogue drove creative problemsolving and instructional innovation, reflecting the correlations observed across variables. Similarly, De Guzman (2024) highlighted that collaborative structures enhanced teacher innovation, reinforcing the present study's insight that collaboration supported not only idea generation and exploration but also the realization and sustainability of innovations in schools adopting transdisciplinary leadership approaches.

Challenges Experienced by Schools in Applying Leadership Approaches

This section presents the challenges faced by schools in applying transdisciplinary leadership approaches. It identifies barriers that schools experience in applying transdisciplinary leadership approaches along adaptive and empowering leadership, knowledge integration and support, and values-driven complexity management.

Adaptive and Empowering Leadership. This section presents the challenges experienced by schools in applying transdisciplinary leadership approaches along adaptive and empowering leadership. It includes challenges related to teachers' struggles to take initiative, difficulties adapting leadership strategies, resistance to change, limited recognition of teachers' strengths, and a lack of collaboration across grade levels.

Table 17 shows that the overall weighted mean for challenges in applying adaptive and empowering leadership is 1.34, interpreted as "Never", indicating that these challenges are rarely encountered. The highestrated challenges, each with a weighted mean of 1.35, interpreted as "Never", include teachers struggling to take initiative and make independent decisions due to unclear expectations or fear of making mistakes, difficulty in adapting leadership strategies effectively to meet diverse teacher and student needs, resistance to change, and limited recognition and support for teachers' strengths hindering empowerment and motivation. The lowest-rated challenge is lack of collaboration across grade levels and subjects due to insufficient leadership encouragement, with a weighted mean of 1.32, also interpreted as "Never", indicating that leadership support for cross-level collaboration remains sufficient.

The data suggested that elementary schools generally did not face significant challenges in applying adaptive and empowering leadership approaches. Teachers felt supported in taking initiative, and leadership strategies were seen as responsive and adaptable to diverse needs. The low scores across all indicators suggested an empowered teaching environment where collaboration was encouraged.

Table 17 Challenges Experienced by Schools in Applying Transdisciplinary LeadershipApproach along Adaptive and Empowering Leadership

Indicators	Weighted Mean	Interpretation
1. Teachers struggle to take initiative and make independent decisions due to unclear expectations or fear of making mistakes. Difficulty empowering teachers arises from unclear expectations and the fear of making mistakes.	1.35	Never
2. Difficulty in adapting leadership strategies effectively to meet diverse teacher and student needs.	1.35	Never

3. Resistance to change makes it challenging to implement flexible and responsive leadership approaches.	1.35	Never
4. Limited recognition and support for teachers' strengths hinder empowerment and motivation.	1.35	Never
5. Lack of collaboration across grade levels and subjects due to insufficient leadership encouragement.	1.32	Never
Overall Weighted Mean	1.34	Never

Rating Scale: 3.25-4.00 = Always, 2.50-3.24 = Often, 1.75-2.49 = Sometimes, 1.00-1.74 = Never

This was evident in the common practices of public elementary school heads who regularly assigned leadership roles to teachers, such as designating them as LAC leaders, grade-level coordinators, or focal persons for subject areas. These roles allowed teachers to make independent decisions in planning and implementation.

Additionally, school heads conducted regular classroom observations followed by constructive postconference sessions to tailor support to individual teacher needs. They also adapted leadership responses during major policy shifts like the implementation of the MATATAG Curriculum, further demonstrating flexibility. Recognition was institutionalized through merit-based awards and acknowledgment during flag ceremonies or school activities. Collaboration was actively promoted through cross-grade level learning groups and schoolwide projects such as Brigada Eskwela or literacy and numeracy initiatives that involved different teaching teams.

The present study's findings were confirmed by De Jong et al. (2023), highlighting that effective leadership fostered a supportive, trust-based environment where teachers felt empowered to take initiative and collaborate across teams, reflecting the observed lack of resistance to change and strong leadership adaptability. Similarly, Jakavonytė-Staškuvienė and Barkauskienė (2023) emphasized that transdisciplinary leadership nurtured teacher autonomy and innovation by recognizing individual strengths and promoting flexible leadership strategies, reinforcing the present study's insight that limited recognition and difficulty adapting leadership were rarely encountered, suggesting an already resilient and responsive leadership culture.

Knowledge Integration and Support. This section presents the challenges experienced by schools in applying transdisciplinary leadership approaches along knowledge integration and support. It includes challenges such as limited opportunities for interdisciplinary knowledge-sharing, time constraints affecting interdisciplinary projects, insufficient professional development, restricted access to resources, and difficulty integrating diverse viewpoints in decision-making.

Table 18 shows that the overall weighted mean for challenges in applying knowledge integration and support is 1.33, interpreted as "Never", indicating that these challenges are rarely encountered. The highest-rated challenge is limited opportunities for teachers to share knowledge and expertise across different disciplines, with a weighted mean of 1.35, interpreted as "Never", suggesting that schools effectively facilitate interdisciplinary collaboration. The lowest-rated challenges, both with a weighted mean of 1.32 and interpreted as "Never", are insufficient professional development opportunities that promote cross-disciplinary collaboration and difficulty in integrating diverse viewpoints in decision-making, leading to resistance in applying new ideas, indicating that schools provide opportunities for professional growth and value diverse perspectives.

Table 18 Challenges Experienced by Schools in Applying Transdisciplinary Leadership Approach along Knowledge Integration and Support

Indicators	Weighted Mean	Interpretation
1. Limited opportunities for teachers to share knowledge and expertise across different disciplines.	1.35	Never
2. Difficulty in implementing interdisciplinary projects due to time constraints and curriculum demands.	1.34	Never
3. Insufficient professional development opportunities that promote cross-disciplinary collaboration.	1.32	Never
4. Limited access to information, resources, and platforms for effective knowledge-sharing.	1.33	Never
5. Difficulty in integrating diverse viewpoints in decision-making, leading to resistance in applying new ideas.	1.32	Never
Overall Weighted Mean	1.33	Never

Rating Scale: 3.25-4.00 = Always, 2.50-3.24 = Often, 1.75-2.49 = Sometimes, 1.00-1.74 = Never

The low ratings across all indicators implied that schools offered sufficient time, resources, and platforms for teachers to engage in transdisciplinary projects and exchange ideas. Furthermore, the low rating for resistance to diverse viewpoints indicated that teachers were open to incorporating varied perspectives, fostering a more collaborative and inclusive learning environment. This openness was demonstrated in the participatory crafting of School Improvement Plans (SIPs), where teachers from various grade levels and subject areas contributed to identifying and addressing learning gaps.

The present study's findings were supported by Gaikwad et al. (2022), emphasizing that transdisciplinary learning environments thrived when schools facilitated cross-disciplinary collaboration and provided structured opportunities for teachers to share expertise, reflecting the observed ease in supporting transdisciplinary projects and integrating diverse viewpoints. Similarly, Rodelas and Puse (2024) highlighted that transdisciplinary leadership fostered inclusive decision-making by valuing varied perspectives and ensuring access to diverse resources, reinforcing the present study's insight that challenges like limited professional development and restricted knowledge-sharing platforms were rarely encountered, suggesting a well-established collaborative culture.

Values-Driven Complexity Management. This section presents the challenges experienced by schools in applying transdisciplinary leadership approaches along values-driven complexity management. It includes difficulties in using core values to guide complex decisions, inconsistent communication of values, ethical dilemmas in decision-making, resource constraints, and transparency issues affecting trust and stakeholder confidence.

Table 19 shows that the overall weighted mean for challenges in applying values-driven complexity management is 1.35, interpreted as "Never", indicating that these challenges are rarely encountered. The highestrated challenge is inconsistent communication of the school's values, leading to misalignment among staff, with a weighted mean of 1.36, interpreted as "Never", suggesting that schools maintain strong, consistent messaging around core values. The lowest-rated challenge is ethical dilemmas in decision-making create conflicts in balancing priorities and standards, with a weighted mean of 1.34, also interpreted as "Never", indicating that schools manage ethical considerations effectively without significant conflict.

Table 19 Challenges Experienced by Schools in Applying Transdisciplinary LeadershipApproach along Values-Driven Complexity Management

Indicators	Weighted Mean	Interpretation
1. Difficulty in using core values as a guiding principle when managing complex situations.	1.35	Never
2. Inconsistent communication of the school's values, leading to misalignment among staff.	1.36	Never
3. Ethical dilemmas in decision-making create conflicts in balancing priorities and standards.	1.34	Never
4. Resource constraints make it challenging to implement valuedriven leadership approaches.	1.35	Never
5. Transparency and trust issues arise when addressing difficult situations, affecting stakeholder confidence.	1.35	Never
Overall Weighted Mean	1.35	Never

Rating Scale: 3.25-4.00 = Always, 2.50-3.24 = Often, 1.75-2.49 = Sometimes, 1.00-1.74 = Never

The data suggested that schools effectively upheld and communicated core values, minimizing misalignment and ethical conflicts. In public elementary schools, values were reinforced during flag ceremonies, classroom routines, and through the integration of the Department of Education's core values into lesson plans and school activities. School heads conducted values reorientation sessions during school-based INSETs and utilized faculty meetings to reiterate the school's vision, mission, and core principles. Decision-making processes such as allocating resources or handling student discipline were often guided by established policies anchored on these values. Teachers and staff participated in consultative meetings or feedback forums when complex situations arose, ensuring transparency and inclusivity in addressing concerns.

The low scores across all indicators implied that resource constraints, transparency issues, and complex decision-making scenarios were managed in ways that aligned with the school's values. Transparency was maintained through active involvement of stakeholders in the School Governing Council (SGC) and the Bids and Awards Committee (BAC), where decisions related to school resources, projects, or procurement were discussed. Moreover, the presence of designated bookkeepers and the use of School MOOE (Maintenance and Other Operating Expenses) monitoring tools helped ensure that resource management aligned with ethical standards.

The present study's findings were corroborated by Jakavonytė-Staškuvienė and Barkauskienė (2023), emphasizing that effective leadership fostered an ethical, values-based culture that supported decision-making and minimized conflicts, reflecting the observed success in managing ethical dilemmas and maintaining transparency. Similarly, Perez (2023) highlighted that effective leadership in schools requires balancing priorities while upholding moral integrity and stakeholder trust. This reinforced the present study's insight that resource constraints and transparency issues were rarely encountered, suggesting that schools sustained a strong, valuesdriven leadership framework.

Proposed Intervention to Enhance the Transdisciplinary Leadership Approaches of School Heads

Based on the findings of the study, the proposed intervention to enhance the transdisciplinary leadership approaches of school heads is Project LEAD–Listening to feedback, Empowering resources, Aligning with ethics, and Driving change (see Appendix A). The results of the study revealed that while school heads

consistently demonstrate strong leadership practices across the domains of adaptive and empowering leadership, knowledge integration and support, and values-driven complexity management, there are specific indicators and subtle challenges that require focused development. Project LEAD addresses these gaps through a three-day seminar integrated into the Mercedes District School Heads Meeting, focusing on adaptive and empowering leadership, knowledge integration and support, and values-driven complexity management.

One of the core components of the intervention is the topic on Knowledge Integration and Support: Facilitation of cross-curricular information and resource access. This aims to strengthen the ability of school heads to promote effective sharing of information and instructional materials across subject areas. Although interdisciplinary collaboration was observed to be evident in schools, some practices showed limited accessibility and underutilization of available platforms and tools. Through this component, school heads will explore strategies to widen access to teaching resources, promote shared planning across disciplines, and establish structures that encourage regular knowledge exchange among teachers.

Another focus of the intervention is Values-Driven Complexity Management: Integration of ethical principles in decision-making for complex issues. While schools generally uphold ethical standards and communicate their values, there remains a need to deepen school heads' capacity to manage difficult leadership scenarios through a clear, values-based framework. This session aims to equip school leaders with decisionmaking tools that emphasize transparency, moral reasoning, and inclusive consultation when addressing complex challenges. It also reinforces the importance of aligning leadership decisions with institutional values to foster a culture of integrity and trust.

The third component is Adaptive and Empowering Leadership: Responsiveness to feedback and subsequent adjustments in leadership approaches. While school heads encourage teacher participation and ideasharing, the study revealed that translating feedback into actionable changes is an area for further improvement. This training seeks to develop school leaders' competence in actively listening to feedback, identifying patterns in teacher input, and adjusting leadership styles or school practices accordingly. By improving responsiveness, school heads can strengthen teacher engagement, foster shared accountability, and build a more collaborative school climate.

Aligned with the Philippine Professional Standards for School Heads, the intervention aims to equip school heads with practical strategies to support collaboration and innovation. Through structured evaluation and support from the PSDS, the intervention is expected to strengthen school heads' leadership effectiveness, thereby fostering a more collaborative and innovative school culture.

CONCLUSION

The conclusions drawn from the study's findings were as follows:

1. School heads consistently apply transdisciplinary leadership approaches that promote collaboration and innovation. However, there are areas that require enhancement particularly in translating teacher feedback into leadership actions, increasing access to interdisciplinary resources, and strengthening ethical decisionmaking in complex situations.
2. Teachers in schools implementing transdisciplinary leadership approaches consistently exhibit a very high level of collaboration across all domains, particularly in reflective lesson planning, teamwork, and professional learning communities. However, opportunities remain to enhance structured sharing of expertise, peer-driven feedback, and teacher leadership.
3. Teachers in schools implementing transdisciplinary leadership approaches demonstrate a consistently very high level of innovation across all domains. However, there remains a need to strengthen collaborative mechanisms, support early-stage implementation, and institutionalize innovations to ensure long-term sustainability and systemic improvement.

4. There is a strong and statistically significant relationship between transdisciplinary leadership approaches and the level of teacher collaboration in schools, implying that effective leadership fosters a more collaborative, engaged, and professionally interactive teaching environment.
5. There is a significant and positive relationship between transdisciplinary leadership approaches and the level of teacher innovation, implying that empowering, collaborative, and ethically grounded leadership enhances teachers' creative capacities and implementation of innovative teaching practices.
6. There is a significant and positive relationship between teacher collaboration and teacher innovation, suggesting that collaborative environments strengthen teachers' ability to explore, generate, implement, and sustain innovative instructional practices.
7. Schools experience minimal to no challenges in applying transdisciplinary leadership approaches, suggesting that school heads maintain a responsive, collaborative, and ethically grounded leadership environment that supports teachers effectively.
8. Project LEAD is a relevant and timely intervention that directly addresses identified leadership gaps and supports continuous development among school heads. It aims to sustain a culture of collaboration, innovation, and ethical decision-making in schools.

RECOMMENDATIONS

Based on the conclusions, the following recommendations were proposed:

1. To further enhance their transdisciplinary leadership, school heads may participate in targeted capacity-building programs such as Project LEAD, which aims to improve responsiveness to feedback, support interdisciplinary collaboration, and strengthen values-based decision-making.
2. To sustain and further strengthen teacher collaboration, school heads may consider developing structured systems and professional development sessions that promote knowledge-sharing, effective feedback practices, and teacher leadership in professional learning communities.
3. To further enhance teacher innovation, school heads may consider implementing structured systems for collaborative innovation, including dedicated sessions for idea sharing, mentorship for implementing new strategies, and policies for embedding successful innovations into regular teaching practices.
4. School heads may consider enhancing their leadership practices by focusing on adaptability, interdisciplinary collaboration, and ethical decision-making, as these areas are strongly linked to improved teacher collaboration across planning, teamwork, reflection, and professional learning communities.
5. To further enhance teacher innovation, school heads may strengthen their transdisciplinary leadership by prioritizing initiatives that empower teachers, foster interdisciplinary collaboration, and support sustained, values-driven innovation across all stages of instructional improvement.
6. School heads may sustain and enhance teacher innovation by fostering structured collaborative practices, such as cross-disciplinary planning, reflective dialogue, and active professional learning communities, to further support the development and longevity of innovative teaching strategies.
7. School heads may continue reinforcing these leadership practices by offering ongoing professional development in adaptive leadership, interdisciplinary collaboration, and ethical decision-making to sustain and strengthen a resilient and values-driven school culture.
8. Public Schools District Supervisor may implement the Project LEAD as a professional development initiative within the district to enhance school heads' capacity to respond to teacher feedback, promote interdisciplinary collaboration, and lead with ethical clarity in managing complex educational challenges.
9. Future researchers may consider expanding the scope of this study by including a comparative analysis across different school levels to examine how transdisciplinary leadership approaches vary in diverse contexts. They may also employ mixed-method designs to capture not only the quantitative measures of collaboration and innovation but also the lived experiences of teachers and school heads through interviews or focus group discussions.

ACKNOWLEDGMENT

The researcher gratefully acknowledges the Almighty God for the strength and wisdom to complete this study. Deep appreciation is extended to her adviser, Consuelo R. Saenz, EdD, for her invaluable guidance, and to the Dean of the Graduate School, Sonia S. Carbonell, PhD, together with the panel members Anicia S. Madarang, EdD, Daryl I. Quinito, PhD, and Jennifer S. Rubio, PhD, as well as the panel secretary, Jamila M. Macapundag, MLL, MAED, for their insightful comments and recommendations. Sincere thanks are also given to Public Schools District Supervisor Ruel T. Dominguez, PhD, and the school heads and teachers of San Vicente for their cooperation during validation and pilot testing, as well as to District In-Charge Marcelino A. Ortua, EdD, and the school heads and teachers of the mainland of Mercedes District for their support and active participation in the data gathering. Finally, heartfelt gratitude is extended to all who contributed their time, guidance, and encouragement, without which this study would not have been possible.

REFERENCES

1. Ayoub, A. E. A. H., Almahamid, S. M., and Al Salah, L. (2023). Innovative work behavior scale:
2. development and validation of psychometric properties in higher education in the GCC countries. European Journal of Innovation Management, 26(1), 119–133. https://doi.org/10.1108/EJIM0420210176
3. De Guzman, M. (2024). Leadership Competence, Teacher Collaboration, and Parental Engagement in
4. Public Basic Educational Institutions: Basis for School Improvement Plan. International Journal of
5. Research Publications, 149(1), 28–38. https://doi.org/10.47119/ijrp1001491520246467
6. De Jong, W. A., de Kleijn, R. A. M., Lockhorst, D., Brouwer, J., Noordegraaf, M., and van Tartwijk, J.
7. W. F. (2023). Collaborative spirit: Understanding distributed leadership practices in and around teacher teams. Teaching and Teacher Education, 123, 103977. https://doi.org/10.1016/j.tate.2022. 103977
8. Deped Order No. 24, s. 2020 “National Adoption and Implementation of the Philippine Professional Standards for School Heads.” (2020). Department of Education. https://www.deped.gov.ph/wpcontent/uploads/2020/09/DO_ s2020_024-.pdf
9. Gabutan, J. Jr., Parpa, J., and Du, E. (2024). School Heads’ Leadership Quality, Organizational Climate, and Learning Environment as Predictors of Teachers’ Innovativeness. Journal of Interdisciplinary Perspectives, 2(8), 125–136. https://doi.org/10.69569/jip.2024.0274
10. Gaikwad, R., Choukade, G., and Sonawane, S. (2022). Transdisciplinary Learning Approach for Teacher Education Program. Scholarly Research Journal for Interdisciplinary Studies, 10(73), 17688–17695. https://doi.org/10.21922/ srjis.v10i73.11671
11. Jakavonytė-Staškuvienė, D., and Barkauskienė, A. (2023). Transformative teacher leadership experiences in schools in creating an innovative educational culture: The case of Lithuania. Cogent Education, 10(1). https://doi.org/ 10.1080/2331186x.2023.2196239
12. Juanico, M. (2021). The Long Road to Transdisciplinarity. In V. Miralao and J. Agbisit (Eds.), Philippine Social Sciences: Capacities, Directions, and Challenges (pp. 216–234). Philippine Social
13. Science Council. https://pssc.org.ph/wp-content/pssc-
14. archives/Philippine%20Social%20Science%20Review/The%20Long%20Road%20to%20Transdisciplinarity.pdf
15. Kilag, O. K., Malbas, M., Nengasca, M. K., Longakit, L. J., Celin, L., Pasigui, R., and Valenzona, M. A.
16. V. (2024). Transformational Leadership and Educational Innovation. European Journal of Higher
17. Education and Academic Advancement, 1(2), 103–109. https://doi.org/10.61796/ejheaa.v1 i2.107
18. Laduca, B., Hayford, M., Ausdenmoore, A., Yorke, J. O., Hallinan, K. P., Blust, R. P., Crecelius, A. R., Kubi, P. A., Katz-Buonconintro, J., Bennett, J. M., Arnold, J. M., Bowman, C. L., and Sweet, C. (2019).
19. A transdisciplinary collaboration and innovation education model and experience. Research in Higher Education Journal, 37. https://files.eric.ed.gov/fulltext/EJ1233129. pdf
20. Ma, X., and Marion, R. (2024). How does leadership affect teacher collaboration? Evidence from teachers in US schools. School Effectiveness and School Improvement, 35(2), 1–26. https://doi.org/10.1080/09243453.2024.233053 3
21. Perez, E. (2023). Navigating Educational Leadership Challenges: Transformations and Policy
22. Implications for Filipino Principals. The Asian Journal of Education and Human Development (AJEHD), 4(1). https://doi.org/10.6956 6/ajehd.v4i1.75

23. Reynolds, E. (2021). Transdisciplinary Leaders, Leading and Leadership Towards Planetary, Developmental and Regenerative Communities, Cultures and Civilizations. Linkedin.com. https://www.linkedin.com/pulse/transdisciplinary-leaders-leading-leadership-towards-reynolds-phd
24. Rodelas, S., and Puse, N. (2024). Transdisciplinary Leadership in Modelling Curriculum Innovation and Reform. International Journal of Research Publications, 147(1), 318–334. https://doi.org/10.47119/ijrp1001471420246 311