Applying the Problem-Driven Iterative Adaptation (PDIA) Approach to Address Teacher Absenteeism and Improve Early Childhood Learning Quality in Pegunungan Arfak, West Papua

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ABSTRACT

Teacher absenteeism remains a major challenge in remote and underdeveloped regions of Indonesia, particularly in the highlands of West Papua. The phenomenon has significant implications for the quality of early childhood and primary education. Drawing on findings from the Strategic Action Workshop on Reducing Teacher Absenteeism held in Pegunungan Arfak (UNIMUDA–UNICEF Partnership, 2025), this study analyzes the effectiveness of the Problem-Driven Iterative Adaptation (PDIA) approach in identifying root causes and designing locally relevant solutions. Using qualitative descriptive methods, data were collected through Gallery Walk observations, focus group discussions, and iterative reflections with participants. Results show that teacher absenteeism in Pegunungan Arfak is influenced by geographic inaccessibility, socio-cultural norms, and weak institutional coordination between education authorities and customary leaders. The most significant outcome of the PDIA process was the increase in teacher attendance that emerged after participants co-created feasible actions rooted in local conditions. Through PDIA, participants developed solutions such as customary education forums, teacher support groups, and community-based monitoring systems. This study offers practical guidance for district officials, school leaders, and community stakeholders seeking to strengthen accountability and improve learning continuity in remote education settings.

INTRODUCTION

Teacher absenteeism remains one of the most persistent barriers to providing equitable and high-quality education in Indonesia's 3T regions. These areas face difficult terrain, limited infrastructure, and weak governance, which together hinder consistent teacher presence (UNICEF, 2022). In Papua, attendance rates can fall to around 40 percent on certain school days, creating long gaps in teaching, disrupting the learning process, and lowering student achievement. Absenteeism also affects children's motivation, as many rely heavily on school as their main learning environment (Chaudhury et al., 2006).

The issue is especially critical in early childhood and primary education, where steady teacher engagement supports literacy, numeracy, social development, and early learning habits. In Pegunungan Arfak, observations from the UNICEF–UNIMUDA Partnership (2025) showed that many young learners struggle with basic reading and numeracy, and that community participation in school life is low. These conditions reveal gaps in instructional delivery and weak support systems surrounding children's learning. Limited interaction between schools, parents, and community leaders also reduces children's opportunities to practice early literacy and numeracy skills at home.

Findings from the Pegunungan Arfak workshop indicate that absenteeism is shaped by multiple interacting factors. Teachers face unsafe or distant housing, long and difficult travel routes, and seasonal weather conditions that limit mobility. Cultural duties such as family ceremonies and customary obligations may take teachers away from school for extended periods. Weak coordination between education authorities, school leaders, and customary institutions makes it harder to address persistent absences (INOVASI, 2024). Local norms that emphasize respect toward traditional leaders often discourage strict sanctions, limiting accountability. Low morale, insufficient recognition, and delayed allowances further contribute to irregular attendance (DFAT, 2024).

Existing studies confirm that absenteeism in remote areas is strongly linked to socio-cultural and institutional conditions, and that strict administrative interventions produce limited outcomes (Kremer et al., 2005; Chaudhury et al., 2006). Attendance monitoring systems, sanctions, or penalties rarely address deeper issues such as motivation, cultural responsibility, and local governance constraints. This pattern highlights the need for an approach that supports local problem-solving, strengthens shared responsibility, and adapts to community realities.

The Problem-Driven Iterative Adaptation (PDIA) framework offers such an approach. PDIA focuses on locally defined problems, experimentation, and continuous learning (Andrews, Pritchett, & Woolcock, 2017). Rather than imposing

fixed solutions, PDIA encourages teachers, community leaders, and local officials to diagnose challenges together, test small changes, learn from early results, and adjust strategies based on feedback. This approach is well suited to Papua, where formal structures operate alongside strong customary systems that shape decision-making and local authority (Ostrom, 1996).

In Pegunungan Arfak, stakeholders used PDIA to shift from a compliance-based mindset toward collaborative problem-solving. Through repeated cycles of dialogue, diagnosis, and small-scale actions, the community worked to uncover why absenteeism persists, what prevents improvement, and what changes are possible with available resources. This shared process helped build stronger coordination among district officials, school leaders, teachers, and customary actors.

Despite the growing interest in adaptive approaches, there is limited research on how PDIA operates within remote Indonesian education systems, particularly in culturally complex areas like Papua. Few studies examine how PDIA can reduce teacher absenteeism, strengthen community involvement, and improve local governance at the same time. This study fills that gap by analyzing how PDIA supports locally grounded solutions, builds collaboration, and enhances institutional learning in Pegunungan Arfak. PDIA offers a pathway to strengthen educational governance in remote contexts and turn chronic absenteeism into an opportunity for collective improvement. By focusing on what communities can change and learn together, PDIA opens space for sustainable and culturally grounded strategies to improve education in regions like Pegunungan Arfak.

LITERATURE REVIEW

The Problem-Driven Iterative Adaptation (PDIA) framework has emerged as an influential approach for promoting adaptive, context-sensitive reform in complex governance systems. Rooted in complexity theory, PDIA challenges linear and standardized models of institutional change that often fail in diverse environments (Andrews, Pritchett, & Woolcock, 2017). This critique is especially relevant for Pegunungan Arfak, where imported "best practices" have historically overlooked the region's cultural norms, geographic constraints, and dual governance structure involving both state officials and customary leaders. As Andrews et al. (2017) note, reforms that are not grounded in local realities risk becoming "isomorphic mimicry," a pattern evident in teacher management policies that look complete on paper but remain ineffective in practice.

PDIA views institutional change as a non-linear and emergent process an idea that aligns closely with the education context in Pegunungan Arfak, where absenteeism results from dynamic interactions between geography, socio-cultural expectations, and administrative limitations. Snowden and Boone's (2007) Cynefin Framework reinforces this perspective by explaining that complex problems require experimentation and feedback rather than strict control. This mirrors the daily

reality in highland schools, where unpredictable weather, long travel distances, and community obligations shape teacher behavior. Likewise, Heifetz, Grashow, and Linsky's (2009) concept of adaptive leadership is relevant because education stakeholders in Pegunungan Arfak must navigate difficult conversations about cultural duties, resource constraints, and expectations for teachers.

Within this theoretical foundation, PDIA offers four guiding principles that directly apply to the challenges in Pegunungan Arfak. Problem-driven focus encourages stakeholders to define absenteeism based on their lived experiences, rather than relying on generic national indicators (Sen, 1999). In Pegunungan Arfak, this helps communities articulate how terrain, family duties, and customary norms contribute to inconsistent attendance. Iterative learning supports small-scale experimentation, which is essential in remote contexts where conditions change quickly and solutions must be tested in real time (Kolb, 1984; Argyris & Schön, 1996). Local ownership and legitimacy align closely with Papua's polycentric governance, where customary leaders hold significant moral authority (Ostrom, 1996). Teacher attendance initiatives are more effective when adat leaders are part of the decision-making process. Incremental functionality fits the limited capacity of the district education system, enabling gradual improvements that build confidence and capability over time (Lindblom, 1959; North, 1990). Together, these principles make PDIA well suited to address teacher absenteeism in fragile and remote education systems like Pegunungan Arfak. The framework transforms reform into a continuous learning process, where feedback from communities and teachers informs each step. This learning-by-doing approach not only supports innovation but also strengthens trust between schools, districts, and customary institutions.

PDIA and Education Reform in Developing Contexts

Recent studies show that education reforms often fail when they focus on technical inputs without addressing deeper cultural or organizational barriers (Pritchett, 2018; Honig, 2018). This pattern is visible in Pegunungan Arfak, where providing training or new policies has not resolved absenteeism because underlying issues—such as weak accountability structures and strong customary obligations—remain unaddressed. PDIA helps bridge these gaps by creating space for dialogue among district officials, teachers, and adat leaders, allowing each group to contribute to problem diagnosis and solution-building. PDIA's emphasis on community involvement also connects well with participatory education models (World Bank, 2016). In Pegunungan Arfak, communities have historically played a major role in monitoring schools, especially through churches and village meetings. This aligns with evidence showing that local monitoring and culturally appropriate incentives can improve teacher presence (Banerjee & Duflo, 2011; Reinikka & Svensson, 2004).

Integration with the Nurturing Care Framework

PDIA's adaptive logic parallels the Nurturing Care Framework (WHO, 2018), which highlights the need for coordinated and responsive early childhood systems. This is particularly relevant for Pegunungan Arfak, where children's development depends on the combined support of families, health workers, churches, and schools. Integrating PDIA principles can strengthen collaboration among these actors, helping them respond to challenges such as absenteeism, learning delays, and low parental involvement. While NCF focuses on what children need, PDIA provides tools for institutions to adapt and deliver that support effectively.

Relevance to Indonesia's Education Decentralization

Indonesia's decentralized system gives local governments authority over education management, but variations in capacity lead to uneven implementation. The West Papua Education Profile (Kemdikbudristek, 2023) shows that remote districts like Pegunungan Arfak struggle with teacher deployment, supervision, and community participation. PDIA directly addresses these issues by helping district offices build problem-solving skills, improve coordination, and respond to local conditions rather than relying on national directives. PDIA's gradual and flexible approach also aligns with the *Merdeka Belajar* policy, which encourages schools and districts to innovate based on local needs. In Pegunungan Arfak, embedding PDIA cycles into school planning could help shift attitudes from compliance-driven routines toward proactive and context-sensitive decision-making.

Although PDIA has been applied in various governance and development contexts, there is limited research on how the framework operates within remote and culturally diverse education systems such as Pegunungan Arfak. Existing studies focus either on absenteeism or on adaptive governance, but rarely on how PDIA can bring together teachers, customary leaders, and district officials to co-create solutions. This study addresses that gap by examining how PDIA supports locally grounded problem diagnosis, shared ownership, and practical experimentation to reduce teacher absenteeism in a highland Papua district.

METHOD

Design and Sample

This study used a qualitative descriptive design integrated into a Problem-Driven Iterative Adaptation (PDIA) workshop. This design allowed the researchers to capture how local actors understood teacher absenteeism and how they generated solutions in real time. The qualitative approach was appropriate for exploring the social, cultural, and institutional conditions in Pegunungan Arfak, where lived experience strongly shapes education challenges (Creswell & Poth, 2018).

The workshop was held at SD Inpres 05 Susi in Anggi Subdistrict on 11–12 August 2025. The site was selected because it represents the geographical and administrative challenges common in the district, such as steep terrain, limited transport, and scattered schools. A total of 19 participants joined the workshop. The sample included officials from the District Education Office and Bappeda, school supervisors, principals, early childhood and primary teachers, and representatives from UNICEF, INOVASI, DFAT, and UNIMUDA Sorong. Selection criteria were applied to ensure reliable representation:

a. Participants had direct roles in school management, teaching, or district-level education planning.
b. They had experience working in remote or highland areas of Pegunungan Arfak.
c. They were recommended by their institutions as individuals knowledgeable about absenteeism issues.

These criteria ensured that the data reflected perspectives from multiple governance levels and community structures.

Instruments and Procedures

Data were collected through three workshop activities designed to support the PDIA cycle of identifying, analyzing, and addressing local problems. Each activity generated different forms of data that directly shaped the study's findings. The first activity was the Gallery Walk Observation, where participants reviewed visual displays of existing information on teacher attendance, learning outcomes, and community participation. As they moved through the displays, they added notes and reflections based on their own experiences. This activity provided early insight into how participants perceived the absenteeism problem and produced annotations and group comments that helped validate and enrich the baseline data available for analysis.

The second activity consisted of Focus Group Discussions (FGDs). Participants worked in groups to map the causes of teacher absenteeism using Fishbone Diagrams, followed by the "Five Whys" technique to investigate deeper root causes. These discussions generated detailed explanations of structural, cultural, and motivational factors influencing absenteeism. The visual maps and discussion transcripts produced during this stage formed a substantial part of the data coded for recurring themes in the analysis.

The final activity was the Change Space Analysis (3A Framework), where participants examined potential solutions by assessing Authority, Acceptance, and Ability. Through this process, groups identified which actions were feasible for immediate implementation and which would require broader institutional or policy support. This stage clarified the practicality of proposed interventions and provided structured decision-making data that informed the first PDIA iteration plan.

All three activities were guided by the PDIA framework, which ensured that the sequence of problem identification, exploration, and solution planning aligned with the study's analytical goals. The combination of observations, group discussions, and structured analysis allowed the data collection process to support both reflection and action.

Data Analysis

Data were analyzed using qualitative thematic analysis (Braun & Clarke, 2006), combined with iterative learning loops consistent with PDIA. Notes, visual diagrams, and FGD transcripts were coded inductively to identify themes related to problem causes, actor roles, and potential interventions. The analysis followed three stages:

1. Problem Deconstruction. Breaking down absenteeism into smaller components using Fishbone and Five Whys outputs.
2. Iterative Reflection. Revisiting and refining interpretations after each workshop activity.
3. Adaptive Synthesis. Combining insights to develop practical strategies for the PDIA action cycle.

Triangulation was achieved by comparing data across groups and validating interpretations in plenary sessions. This ensured that findings were grounded in shared understanding rather than individual opinions. Ethical procedures included informed consent, confidentiality, and anonymization of participants. Because the workshop functioned as both an intervention and a data source, contributions were treated as co-created knowledge rather than responses from research subjects.

RESULT AND DISCUSSION

1. Root Causes of Teacher Absenteeism

The PDIA workshop showed that teacher absenteeism in Pegunungan Arfak is shaped by multiple factors interacting across school, community, and district levels. One teacher explained, "Even when we want to stay in the village, the house is not safe, and we must walk far through the forest." This reflects how absenteeism is driven by structural conditions rather than personal reluctance.

a. School-Level Factors

Teachers described challenges linked to housing, transportation, and leadership. In many villages, teachers do not have permanent accommodation and often sleep in classrooms or church buildings. A participant stated, "When it rains, the path becomes too slippery, and it's dangerous to walk alone." Weak leadership also contributed, as some principals felt constrained by kinship ties. One principal admitted, "I hesitate to warn a teacher because they are part of my clan."

These examples illustrate how cultural relationships influence professional decisions. While earlier studies (Kremer et al., 2005; Chaudhury et al., 2006) identify weak infrastructure and supervision as key factors, the Pegunungan Arfak case adds a new dimension: kinship-based leadership constraints, which are not widely documented in other PDIA-based absenteeism studies.

b. District-Level Factors

District-level issues included delayed allowance disbursement, cultural obligations, and limited willingness to enforce sanctions. A district officer shared, "If we punish a teacher, we risk upsetting the clan, so we avoid strong action." Teachers also mentioned that family ceremonies can last several days, taking precedence over school duties. These insights reveal how adat expectations override administrative demands, a factor that reinforces absenteeism in the highlands. These findings align with INOVASI (2024) and DFAT (2024) but highlight a unique point: formal sanctions are ineffective unless they align with customary authority structures.

2. Application of PDIA Stages

The workshop used PDIA tools to break down absenteeism and identify actionable entry points. Using the Fishbone Diagram and Five Whys, participants grouped problems into dimensions such as resources, policy, environment, leadership, and community engagement. One participant reflected, "After asking 'why' many times, we saw that the real issues are deeper than just attendance records." The Change Space (3A) analysis then helped participants prioritize feasible actions based on existing authority, acceptance, and ability. This process allowed groups to identify what could be done immediately and what required district or provincial support.

Dimension	Example of Change Space	Local Actor(s)
Authority	Empowering school heads and customary leaders (Ondoafi/Adat Councils) to monitor teacher attendance	District Education Office, Traditional Councils
Acceptance	Promoting community dialogue on educational responsibilities and co-ownership	School Committees, Church Leaders, Parent Associations
Ability	Forming peer-based Teacher Support Groups to share transport and teaching strategies	Local Teachers, Facilitators, Headmasters

The Pegunungan Arfak case adds an important insight to PDIA literature: traditional leaders can serve as parallel authorities that expand the "change space," allowing reforms to gain cultural legitimacy.

3. Locally Rooted Solutions

Through PDIA cycles, participants developed three innovations that were feasible and culturally grounded.

Customary Education Agreements

These agreements brought together school leaders and adat elders. One elder said, "We will call the teacher to the adat house first if they are often absent." This shows how customary accountability can reinforce attendance more effectively than formal letters of warning.

Teacher Support Circles

Teachers created groups to coordinate travel and share teaching materials. A teacher mentioned, "Walking together gives us courage, and we remind each other to come on time." This strengthened morale and built collective responsibility.

Community-Based Monitoring Systems

Attendance boards were displayed at school entrances and discussed during church gatherings. A parent noted, "Seeing the board every Sunday makes us feel the school belongs to us."

These solutions illustrate PDIA's learning-by-doing approach and demonstrate that small, culturally aligned adjustments can produce meaningful behavioral change.

4. Iterative Learning and Adaptive Progress

Participants implemented the first PDIA iteration and monitored results over three months. The improvements are shown in your original table:

Indicator	Baseline (Before PDIA)	After 3 Months	Change
Average Teacher Attendance	58%	73%	+15%
Parent Participation in School Meetings	45%	60%	+15%
On-time Submission of Teaching Reports	40%	65%	+25%

Teachers shared that they felt more supported. One teacher said, "This is the first time I feel the community is with us, not blaming us." School committees also expressed stronger ownership of learning outcomes. These results provide a valuable contribution to PDIA literature: in fragile, remote settings, PDIA strengthens social cohesion and shared responsibility before improving technical

indicators. This sequence social trust first, technical improvement second is a notable insight rarely highlighted in previous PDIA cases.

The Pegunungan Arfak case reinforces findings that adaptive, iterative reform is more effective than top-down mandates (Honig, 2018; Pritchett, 2018). However, the case offers two new theoretical insights. Customary institutions can expand PDIA's "acceptance" and "authority" space, making reforms culturally legitimate in highland Papua. Peer-based support groups can serve as micro-level adaptive units, enabling teachers to self-organize even in isolated schools. The process also illustrates how small interventions produced emergent collaboration and accountability behaviors typical of complex adaptive systems. The Pegunungan Arfak experience shows that PDIA can activate self-organization and local problem-solving even in the most geographically constrained communities, adding to global evidence on its relevance for remote education governance.

CONCLUSION

This study shows that reducing teacher absenteeism in a geographically and culturally complex district like Pegunungan Arfak requires more than administrative measures or financial incentives. It calls for an adaptive, locally grounded, and participatory approach that recognizes the realities of remote schooling. Through the use of the Problem-Driven Iterative Adaptation (PDIA) framework, education stakeholders were able to shift from compliance-based routines to genuine collective problem-solving. Teachers, principals, parents, customary leaders, and government officials worked together to identify the underlying causes of absenteeism, test small-scale solutions, and refine their strategies through continuous reflection. The PDIA workshop and subsequent iterations demonstrated that progress is possible when reform is rooted in local legitimacy and guided by iterative learning. Within three months, the district recorded a 15 percent increase in teacher attendance, along with higher parental involvement and stronger school–community relationships. These results highlight PDIA's value as a learning-by-doing approach that builds institutional capability through action rather than formal directives.

The Pegunungan Arfak case also offers three key insights for education governance in remote regions. First, integrating cultural norms into formal governance strengthens legitimacy and accountability, as seen in the use of Customary Education Agreements. Second, small iterative actions such as Teacher Support Circles and community-based monitoring generate steady learning and long-term change. Third, when communities lead the reform process, they develop a stronger sense of ownership and resilience that extends beyond project timelines. Overall, PDIA proved effective not only as a method for analyzing absenteeism but also as a catalyst for institutional transformation in a fragile education system. The approach aligns with Indonesia's Merdeka Belajar vision, which encourages flexibility, local adaptation, and inclusive decision-making. Future research can build on this study by examining how PDIA cycles can be scaled and embedded in district planning processes across other 3T regions. The experience from

Pegunungan Arfak ultimately underscores that meaningful education reform grows from within. Empowering local actors to learn, adapt, and lead change in their own context is essential reflecting the core principle at the heart of PDIA.

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