

# Systems Thinking and Complexity

*A Comparative Case Study of Karenni  
Teacher Professional Development Systems*



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# Acknowledgements

The authors hope this research contributes to increased autonomy and community-based educational governance, while supporting Karenni education and teacher development programs that serve communities on both sides of the border. The study identified that both Seh Theh Foundation and the Karenni Education Department leverage elements of being designed for disruption, allowing them to continue operating despite ongoing instability. While such educational resilience shouldn't be necessary, we hope this work helps others better understand and value the commitment of Karenni teachers.

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The contents of this report are the responsibility of Gray Rinehart, Min Layi Chan, Greg Tyrosvoutis and do not necessarily reflect the views of TeacherFOCUS Education Consulting.



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# List of Acronyms

<b>CDM</b>	Civil disobedience Movement
<b>CoP</b>	Communities of practice
<b>EiE</b>	Education in emergencies
<b>FGD</b>	Focus group discussion
<b>INEE</b>	Inter-agency Network for Education in Emergencies
<b>KII</b>	Key informant interview
<b>KnED</b>	Karenni Education Department
<b>MEAL</b>	Monitoring, evaluation, accountability, and learning
<b>MTT</b>	Mobile teacher trainers
<b>NGO</b>	Non-governmental organization
<b>PLC</b>	Professional learning community
<b>STF</b>	Seh Theh Foundation
<b>ToT</b>	Training-of-trainers
<b>TPD</b>	Teacher Professional Development



# Key Terms Used Within this Report

The Myanmar and Thai-Myanmar border contexts represent dynamic settings where terms and categorizations are often contested and debated, with multiple perspectives shaping interpretations. Key terms are listed below to add clarity and help focus the research by highlighting the main ideas that will be explored.

**Teacher professional development (TPD)** - Refers to the policies, procedures, and provisions designed to equip in-service teachers with the knowledge, attitudes, behaviors, and skills they require to perform their tasks effectively in the classroom, school, and wider community. This includes both formal and informal training for teachers who are already within the profession. It does not include pre-service training for teachers who are immediately entering the profession and have yet to begin teaching.

**Times of conflict and crisis** - Refers to periods of time when an education system is affected by armed conflict events and their aftermath and/or humanitarian, environmental, economic and public health events and their aftermath, which causes disruption such that education systems are not able to conduct activities as originally envisioned.

**Parallel systems** - Refers to both education and TPD systems that exist alongside the state-run systems in Myanmar and Thailand. These systems largely provide educational services to populations that might otherwise be overlooked or marginalized, namely migrant, refugee, and ethnic and indigenous peoples.

**Myanmar** - One year following the 1988 pro-democracy uprising, the former military junta changed the country's name from 'The Union of Burma' to 'The Union of Myanmar.' This paper uses the term 'Myanmar' in acknowledgement that most peoples of the country use this term. However, the deception of inclusiveness and the historical process of coercion by the former State Peace and Development Council military regime into usage of 'Myanmar' rather than 'Burma' without the consent of the people is recognized and not forgotten (Progressive Voice, 2024).

**Karenni State** - In line with the statement from the Karenni State Consultative Council (2023), this paper uses the term 'Karenni State' in solidarity with the wider resistance movement and in opposition to the post-colonial hegemony perpetuated in Myanmar.

**Temporary shelter** - This paper uses both 'temporary shelter' and 'refugee camp' to describe where in Thailand those forcibly displaced from Myanmar reside. A result of Thailand's non-signatory status of the 1951 UN refugee convention is that the terms 'refugee' and 'refugee camp' cannot be used in official discourse. Instead, 'stateless migrant', 'displaced person' and 'temporary shelter' are the official nomenclature, which reflects the host country government's view that it is a transit country (i.e. only a temporary host for refugees), although the protracted nature of the context might suggest otherwise (Oh, 2010).



Shan State

Karenni State

Ban Mai Nai Soi Camp

Ban Mae Surin Camp

Thailand

Bago

Karen State



# Executive Summary

## Introduction to the Study

As global displacement reaches record highs - with over 122 million forcibly displaced people, and more than half of all refugees under the age of 18 - teacher professional development (TPD) must be recognized as a critical pillar of education in emergency contexts (UNHCR, 2024). In settings affected by conflict and crisis, teachers frequently take on responsibilities well beyond instruction, yet they face severe challenges, including limited access to qualifications, ongoing training, and professional support (Richardson et al., 2018).

This study contributes to the growing literature on TPD in crisis settings through a comparative case study approach of two Karenni TPD systems: (i) the Karenni Education Department (KnED), which oversees education in two temporary shelters in Thailand, and (ii) the Seh Theh Foundation (STF), which supports teachers across conflict-affected areas of Karenni State, Myanmar. The study offers descriptive and analytical insights into how these systems function under conditions of chronic disruption and resource scarcity. While both systems are under immense strain, they continue to adapt in response to instability.

In Thailand, more than 11,000 refugees live in temporary shelters where KnED administers education services (TBC, 2025). Despite strong community-led efforts, refugee teachers remain legally and professionally isolated from the Thai state, with limited recognition or pathways for professional advancement (Tyrosvoutis et al., 2024). In Myanmar's Karenni State, ongoing conflict has displaced up to 85% of the population (Wei, 2024; Mizzima, 2024). STF supports thousands of teachers working across a dispersed, under-resourced landscape. The collapse of Myanmar Ministry of Education provision and persistent conflict have led to a patchwork of schooling models, with many teachers new to the profession and working in areas with minimal infrastructure.

This study explores the design and dynamics of Karenni TPD systems in Thailand and in Myanmar through three core questions:

1. How do Karenni TPD systems operate?
2. Do they exhibit characteristics of complex adaptive systems?
3. How can they be more effectively supported?

Findings draw on evidence from 23 key informant interviews and focus group discussions with stakeholders across both contexts (27 participants from Thailand and 25 from Myanmar). The research was conducted between August and December 2024, with findings validated and deepened through a participatory workshop held with KnED and STF in May 2025.

The study applies systems thinking and complexity theory to better understand the two TPD systems. This framing informs the study's analysis of how Karenni TPD systems operate and how they might be more effectively supported.

Rather than viewing TPD as a fixed or input-driven intervention, systems thinking emphasizes the interconnectedness of key actors - such as teachers, trainers, and school leaders - and the ways their relationships and contexts shape how TPD functions. From this perspective, TPD systems are understood as dynamic and relational, shaped by local realities and feedback pathways rather than predictable outcomes.

Building on complexity science, the concept of complex adaptive systems offers a lens for analyzing TPD systems that adapt and evolve in response to disruption. Complex adaptive systems are characterized by distributed decision-making, emergent behaviors, and context-dependent outcomes. As such, they benefit from approaches centered on learning, experimentation, and flexibility rather than top-down planning.





## Findings: Karenni TPD in Thailand (KnED)

The KnED-managed TPD system in Thailand combines structured pre-term training with more localized in-term coaching. Pre-term coaching is conducted twice annually, is centrally planned, and targets both new and experienced teachers. In contrast, in-term coaching is decentralized and shaped by ongoing collaboration between school leaders, trainers, and teachers. Monthly classroom observations serve as entry points for responsive coaching, informed by some standardized tools and immediate feedback pathways. While coaching is typically scheduled, there is growing openness to on-demand support, especially as teachers begin to identify and communicate their own professional needs.

This dual structure - centralized pre-term training and decentralized in-term coaching - enables the system to maintain continuity amid broader uncertainty in the temporary shelters where it operates. Consequently, this model can be described as designed for disruption (Rinehart and Tyrosvoutis, 2023) in that it is adaptive and responsive to potential disruptions due to the tightness of feedback pathways. Regular interaction and proximity between trainers and teachers foster trust and reassure teachers that their needs will be recognized and, as much as possible, addressed.

The KnED system exhibits several hallmarks of a complex adaptive system: dynamic interactions among local actors, evolving expectations from increasingly experienced teachers, and significant impact potential from relatively small inputs. The proximity of trainers and schools facilitates more immediate and iterative problem-solving, while the absence of a formal teacher policy leaves room for experimentation. However, the system's capacity to adapt is bounded by upstream constraints, namely the availability of relevant content and trainer capacity, both of which depend on donor support. As teachers grow professionally, the expectations for coaching are likely to grow more nuanced, creating demand for more advanced training and differentiated support. Strengthening the trainer cadre and expanding relevant training materials will be essential for meeting this demand. In this context, targeted investments in coaching - especially those that support decentralized and school-embedded professional learning - have the potential to generate outsized returns.

## Findings: Karenni TPD in Thailand (KnED)

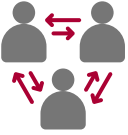


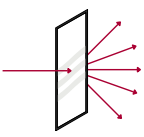


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## Teacher professional development as a complex adaptive system

Element	Description (related to Karenni contexts)	Implications
<b>Interconnected &amp; interdependent elements</b> 	<p>TPD systems consist of interrelated actors (e.g. teachers, trainers, leaders, donors), processes (e.g. feedback, planning), and intangible dimensions (e.g. beliefs, norms, relationships). These components continuously influence one another.</p>	<p>Actors at all levels should be aware of how changes in one part of the system may ripple across others. Coordination, reflection, and systems awareness should be promoted across the system.</p>
<b>System tightness vs looseness</b> 	<p>The TPD system in Thailand, due to geographic proximity and regular in-term contact, exhibits relatively tight coupling. In contrast, the system in Myanmar operates more loosely, with less frequent interaction due to conflict and physical distance.</p>	<p>Strategies should reflect the degree of system tightness. In Thailand, stronger coordination and rapid feedback pathways can be leveraged. In Myanmar, flexible structures and autonomous decision-making at the middle and local levels should be prioritized.</p>
<b>Emergence</b> 	<p>While the central level may aim for data-driven planning, delays in data collection and transmission can result in reactive (rather than proactive) decision-making. More actionable information is gathered at the middle and local levels during implementation.</p>	<p>Central-level actors should accommodate emergent and unpredictable conditions, while middle and local actors should be empowered to make timely, evidence-informed decisions in real time.</p>
<b>Nonlinearity and sensitivity to local conditions</b> 	<p>Small, well-placed interventions can have outsized effects in these resource-scarce and volatile settings. Outcomes may be unpredictable at times, but this should be embraced and learnt from, rather than avoided or viewed as failure.</p>	<p>Prioritize lower-cost, higher-leverage interventions. Monitor changes closely, keep an open mind for learnings, and be ready to scale successful local adaptations.</p>
<b>Self-organization</b> 	<p>Both TPD systems exhibit signs of spontaneous organization, such as teachers initiating peer support or field teams adapting training. These reflect a natural tendency towards decentralization and localized initiative.</p>	<p>Encourage and formalize locally driven TPD initiatives. Invest in mechanisms that allow schools to lead and adapt support to their own needs, with guidance rather than control from the central level.</p>
<b>Co-evolution</b> 	<p>As teachers develop professionally, their expectations and learning needs become more complex. TPD systems and those who support teachers must adapt in response to this evolving demand.</p>	<p>TPD design should be iterative. Regularly update content and delivery methods, and invest in ongoing professional development for trainers and other TPD staff to match evolving teacher capacities.</p>

## Supporting Karenni TPD: Collaborative Professionalism

Collaborative professionalism refers to networks of teachers, school leaders, trainers, and other middle- and local-level educational personnel working together in communities of practice (CoPs) or professional learning communities (PLCs). Collaborative professionalism aims to improve teaching through processes of open dialogue, mutual trust, and shared responsibility between educators and the professionals who support them. These networks function through horizontal (peer-to-peer) and vertical (teacher-to-leader/trainer) relationships, and they can operate within individual schools or across school clusters.

Effective facilitation by school leaders and trainers is essential, as is appropriate incentivization (whether intrinsic or extrinsic) to sustain engagement and leadership within these networks. International examples demonstrate that collaborative professionalism can be adopted to challenging contexts and yield meaningful improvements in teacher practice when supported by capable mid-level leaders.

In the Karenni TPD system in Thailand, strong foundations for collaborative professionalism already exist through the in-term coaching program. These can be deepened by introducing a cluster-based model to facilitate cross-school collaboration, and by formally establishing CoPs or PLCs supported by KnED trainers and school leaders. Investments by donors should focus on enhancing trainer capacity, resourcing regular convenings, and introducing new coaching and training content. While resource constraints limit large-scale TPD, localized approaches through collaborative professionalism can offer flexible and responsive alternatives that are cost-effective and impactful. Aligning collaborative efforts around a teacher competency framework could help balance the need for localized responsiveness with a desire for greater coherence of teacher professionalism and practice across schools.

In Myanmar, where STF's training provision remains infrequent and quite centralized, collaborative professionalism offers an opportunity to embed TPD more locally. School-based or cluster-based CoPs and PLCs led by STF trainers, headteachers, or other high-performing educators could help extend the reach of TPD between formal training events. This would require re-orienting trainer roles, improving their coaching capabilities, and ensuring sufficient resources for mobility and facilitation. Further consultations with STF are recommended to co-develop feasible models and align these efforts with existing field team structures and capacity.



## Supporting Karenni TPD: Endogenous Systems Leadership

Endogenous systems leadership emphasizes distributed leadership grounded in local realities and shared across three levels of an education system: local (teachers, students, parents); middle (trainers, headteachers, field teams); and central (policymakers, system leaders). This approach recognizes that local and middle-level actors often exhibit responsiveness and innovation - especially in conflict-affected settings - and seeks to empower them to shape and adapt implementation strategies. It fosters systems thinking, encourages flexible and decentralized decision-making, and promotes a culture of experimentation and adaptation rather than rigid adherence to central mandates.

This form of leadership is particularly suited to complex adaptive systems, which are inherently dynamic and nonlinear. By supporting multi-level participation, endogenous systems leadership enables the middle tier to act as both a relay and a driver of change by communicating needs upward, implementing policies downward, and facilitating localized responses. Evidence suggests that such leadership models thrive when mid-level actors are resourced, trusted, and granted sufficient autonomy. These same principles align closely with the conditions needed for collaborative professionalism to succeed, making the two approaches mutually reinforcing.

Within both Karenni TPD systems, headteachers, trainers, and field teams form the middle tier and are pivotal for data collection, policy enactment, coaching, and school-to-school collaboration. However, while KnED and STF express interest in teacher voice and localized decision-making, structural and cultural constraints often inhibit this. Middle and local actors may lack clarity, confidence, or authority to take initiative, while central leaders may struggle to establish efficient and effective feedback pathways. Addressing these constraints by strengthening mid-level capacities and legitimizing shared decision-making could unlock more responsive, resilient, and contextually grounded TPD systems.

A constructive tension exists between the complex adaptive nature of the TPD systems and the more centralized preferences that systems designers may have. While decentralization within the system may enhance its responsiveness, local and middle-tier actors may not have the confidence or capacity to assume increased responsibility around decision-making and initiative-taking. Similarly, central-level actors may be uncertain how to delegate authority effectively and with appropriate degrees of and protocols for accountability.

This tension can be reconciled through strategic investments in endogenous systems leadership by building capacity at all levels of the system. This research only begins to surface the tension and balance between decentralization and centralization within TPD systems. Further investigation is therefore recommended into how decentralized self-organization of the system can be better balanced with system-level oversight and ambition.



## Key Recommendations

The Karenni TPD systems in Thailand and in Myanmar operate under distinct yet equally challenging conditions shaped by protracted crisis and displacement. Strengthening these systems will most likely require approaches aligned with their adaptive nature. Two strategies - collaborative professionalism and endogenous systems leadership - are especially well-suited to enhance TPD as a complex adaptive system.

Key recommendations include:

- **Strengthen local data use for decision-making:** Empower school leaders, trainers, and field teams to collect and act on school-level data (such as classroom observations and need assessments) without over-reliance on central-level approval. Streamlined, digital tools (e.g. tablets and cloud storage) can support timely and usable information flows.
- **Pilot new, peer-driven TPD models:** Support the introduction of communities of practice and professional learning communities, ideally organized through school clusters. These models should be equipped with facilitation tools (e.g. coaching scripts, action plans) and adequately resourced with time, materials, and financial support. Facilitators should be incentivized through recognition or performance-based rewards.
- **Invest in the capacity of the middle tier:** Prioritize professional development for trainers, headteachers, and field teams through robust training of trainer programs. These should emphasize coaching and mentoring skills and include practical components led by experts familiar with the Karenni context. Strengthening their capacity in data collection and use should also be considered.
- **Use central-level policies to establish shared vision:** Develop and implement policies and frameworks (e.g. teacher competency standards frameworks, curriculum standards) that articulate a clear vision for TPD. These should serve as anchors for decentralized efforts while preserving local flexibility.
- **Avoid relying solely on linear planning tools:** Utilize alternative approaches such as outcome mapping, adaptive theories of change, or systems- and complexity-informed approaches when designing, monitoring, and evaluating TPD in complex adaptive systems.
- **Harmonize strategies and pool resources across actors:** Donors and development partners should coordinate efforts and pool resources to reduce duplication, address gaps, promote learning, and build synergies. In Myanmar, STF should explore strategic collaboration with other education providers in Karenni to maximize collective impact and leverage each actor's comparative advantage.



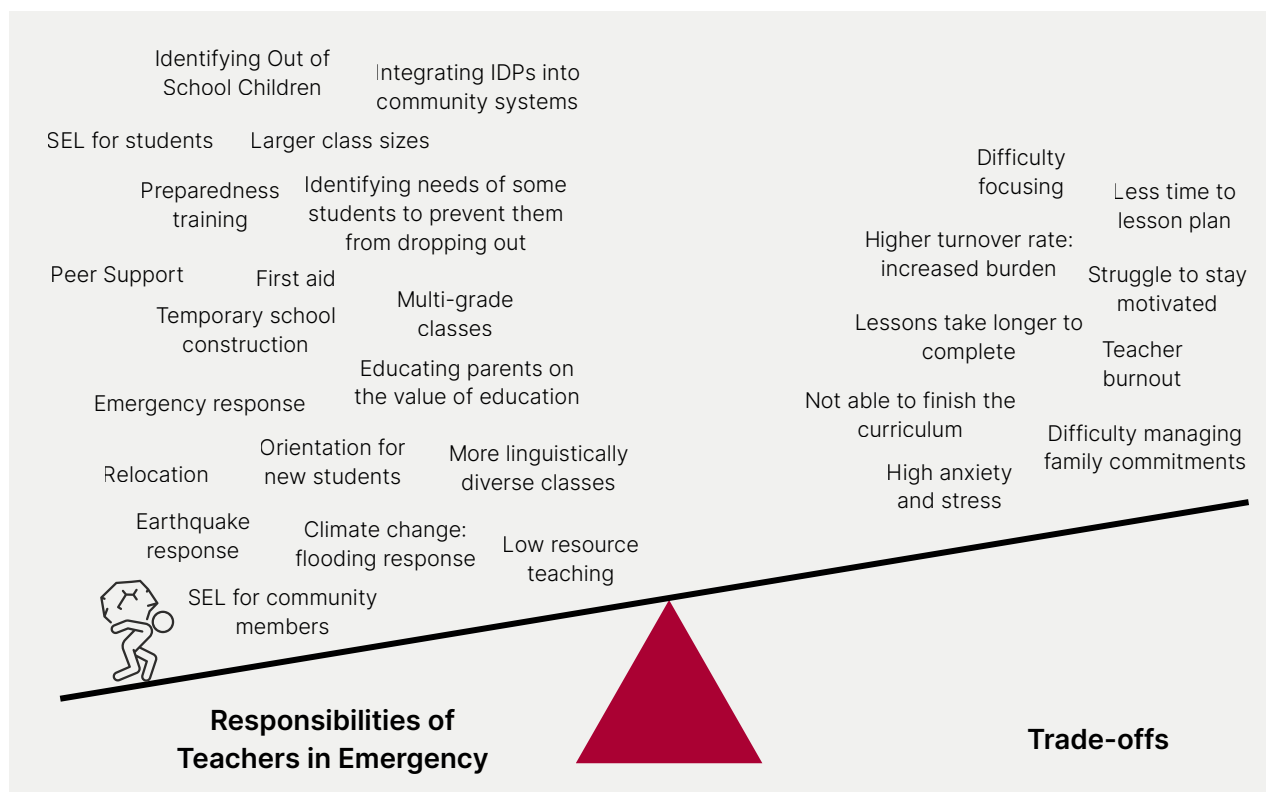
# I. Introduction

## 1.1 Teacher professional development in conflict and crisis

Endogenous systems leadership emphasizes distributed leadership grounded in local realities and shared across three levels of an education system: local (teachers, students, parents); middle (trainers, headteachers, field teams); and central (policymakers, system leaders). This approach recognizes that local and middle-level actors often exhibit responsiveness and innovation - especially in conflict-affected settings - and seeks to empower them to shape and adapt implementation strategies. It fosters systems thinking, encourages flexible and decentralized decision-making, and promotes a culture of experimentation and adaptation rather than rigid adherence to central mandates.

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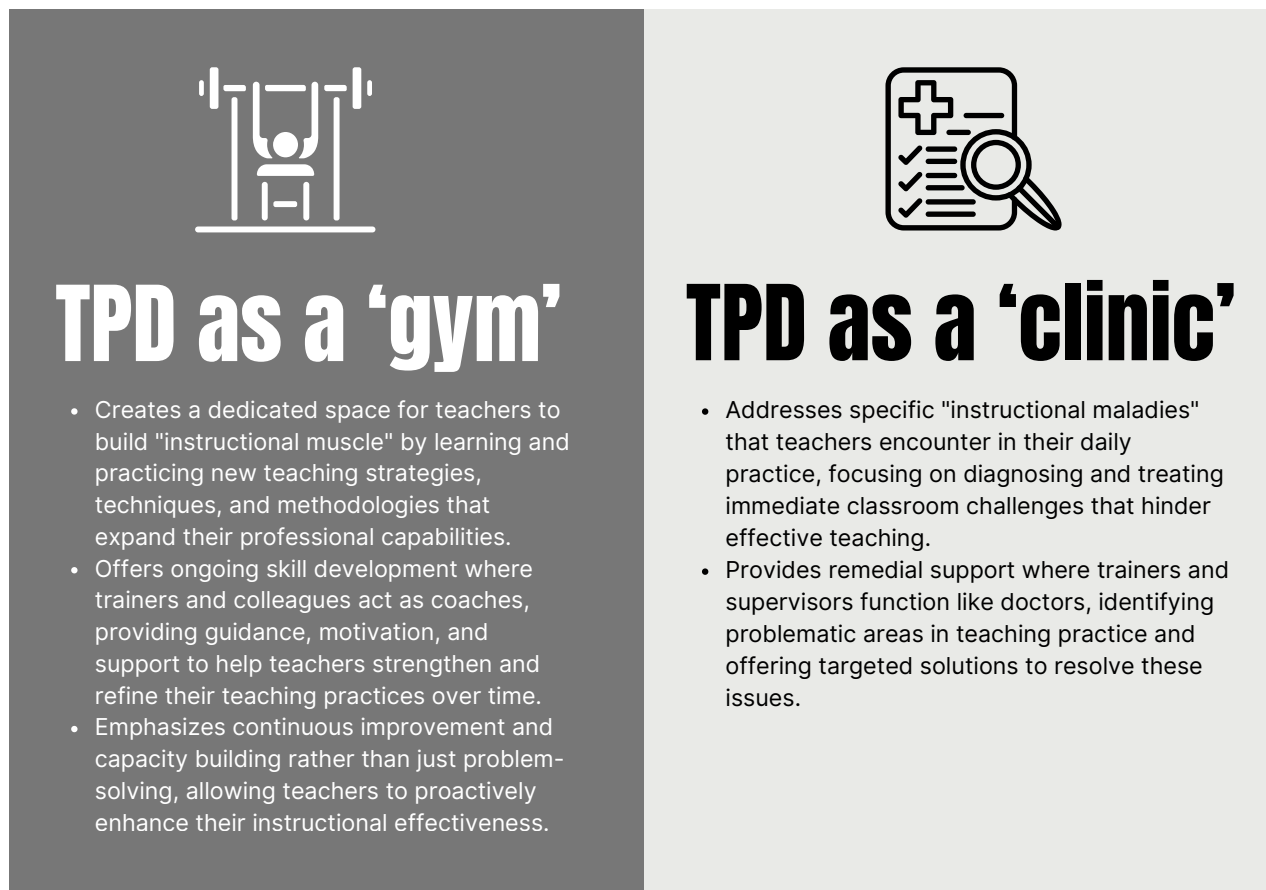
**Figure 1. Responsibilities and trade-offs of teachers in emergency settings**  
*(Adapted from Tyrosvoutis et al., 2025)*



It is well-documented that teachers working in such contexts face a range of intersecting challenges, including limited access to certification and professionalization opportunities, inequitable recruitment and management practices, and a lack of continuous TPD. These challenges are compounded by the physical and psychological risks teachers face in unstable environments. (Burns & Lawrie, 2015; Mendenhall et al., 2018).

The Inter-agency Network for Education in Emergencies (INEE) recognizes TPD as a core strategy within emergency education response. INEE’s guidance outlines that TPD in emergencies should be needs-based, contextually appropriate, inclusive of risk-prevention and risk mitigation content, delivered by qualified trainers, accredited by relevant authorities, and should incorporate peer collaboration (INEE, 2024). Despite these guidelines, research by Burde et al. (2019) highlights a significant gap in understanding: there has been minimal inquiry into the extent to which TPD in emergencies is actually tailored to the needs, qualifications, and lived experiences of teachers.

Figure 2. TPD: The clinic and the gym



TPD intends to serve a dual purpose:

1. to provide direct support in addressing the classroom challenges teachers face, thereby stabilizing and sustaining their instructional capacity; and
2. to introduce and share new pedagogical content knowledge, which can amplify and expand teachers' professional competencies.

In this sense, TPD can function as both a clinic and a gym. As a clinic, it addresses the 'instructional maladies' that teachers face - those day-to-day challenges that hinder effective practice. As a gym, it provides space to build 'instructional muscle' by introducing new strategies, techniques, and methodologies that enhance teaching capacity. In their roles within TPD provisions, trainers, supervisors, and teaching colleagues act like doctors (diagnosing and treating immediate problems) or gym coaches (guiding, motivating, and supporting skills development).

Ideally, TPD provisions will do both: resolve immediate problems and strengthen teachers' long-term competencies so they can perform their roles effectively in the classroom, school, and wider community.

What teachers need from TPD depends on a range of factors, including the curriculum and its demands, the teaching and learning resources available, the standards set by education authorities, and their own professional aspirations. Whenever possible, TPD should also support career progression, helping teachers to grow as educators and leaders.

## 1.2 The present study

The first study in the Designed for Disruption Research Series, *Adaptable by Design: Comparative insights into Karen teacher professional development* (Tyrosvoutis, 2025), examined TPD in two Karen contexts - one located in Thailand and the other in Myanmar. The present study contributes to the series and its previous exploration through case studies of Karenni TPD in Thailand and in Myanmar, each administered by a different educational organization. It aims to deepen understanding of these TPD systems by describing and characterizing their structure and operation. It is not an impact study and consequently does not assess the effectiveness of these systems in terms of equipping teachers with the knowledge, skills, and attitudes typically expected within the profession.

While the study draws on methodologies commonly used in comparative case studies (Vavrus and Barlett, 2022), it does not seek to normatively compare the distinct Karenni TPD systems in Thailand and in Myanmar. These systems differ substantially in their historical trajectories, organizational capacities, political contexts, and levels of available resources. Although the study offers recommendations informed by the authors' interpretations of the findings, its primary aim is to present what could be possible, rather than prescribe what should be done. In this sense, the study is intended to be descriptive and analytical, rather than evaluative.





## II. Contextual background

### 2.1 Thailand: Temporary Shelters

According to figures from The Border Consortium (2025), the population of the two Karenni temporary shelters exceeds 11,000 residents and has grown by more than 10% since January 2024. Within these camps, the KnED oversees approximately 205 teachers working across 12 schools.

Education in the camps is distinct in that it is organized and managed by refugee-led organizations, with international donors and development partners providing external support only. However, Thailand's legal stance as a host country results in the relative isolation of camp residents from Thai society and the public services and professional and educational opportunities therein (Tyrosvoutis et al., 2024). Schools teach the Karenni Education Department (KnED) curriculum, which is not formally recognized by the Thai government. Similarly, teacher qualifications are not officially acknowledged, which significantly limits access to professional development and higher education opportunities for refugee teachers.

The temporary shelters are indirectly affected by the ongoing conflict in Myanmar, most notably through the steady increase in refugee populations. This influx places significant strain on limited resources - particularly food rations - and has contributed to a reported rise in mental health and emotional challenges among people of all ages (Lovett, 2022; Mizzima, 2025). The shelters operate in a state of crisis, marked by uncertainty regarding the future of their residents, including the viability of third-country resettlement, potential entry (legal or otherwise) into Thailand, or return to Myanmar. The behavior of Thai authorities is reportedly inconsistent, which further contributes to this uncertainty. Moreover, there is uncertainty around international NGO commitments to the shelters due to a growing precarity in funding and external support for refugee social services, including education.

## 2.2 Myanmar: Karenni State

Following military losses by the Myanmar army, much of Karenni State is now under the control of resistance forces and the Karenni State Interim Executive Council. Years of armed conflict since 2021 have displaced up to 85% of the Karenni population - as many as 350,000 people - across 420 internally displaced persons camps and into the two Karenni temporary shelters in Thailand (Wei, 2024; Mizzima, 2024).

In areas now under the Interim Executive Council's authority, the Seh Theh Foundation (STF) supports approximately 4,623 teachers across 528 schools. Of these teachers, around 200 may annually receive TPD or other technical support, with all teachers likely receiving some material or financial support, such as in the form of stipends. Alongside other civil society and international NGO actors, STF has played a crucial role in filling gaps in education service delivery following the widespread closure of Ministry of Education schools across the state (The Irrawaddy, 2023). Many schools operate in resource-constrained environments and are staffed largely by new teachers who entered the profession after 2021 (Fishbein and Lusan, 2022). The education landscape in Karenni is a patchwork of schools offering different curricula - typically either the national Myanmar curriculum or a Karenni curriculum (Kayah and Paku textbooks) - and facing varying levels of material and human resourcing.

Education provision remains highly affected by the ongoing conflict. Civilians continue to face serious risks, including armed clashes, landmines, and aerial bombardment and shelling by the Myanmar military (Network Media Group, 2025). The collapse of the Myanmar Ministry of Education's system has driven massive demand for new forms of schooling, which strains education financing and delivery systems. Many displaced communities now reside in remote areas with little to no access to telecommunications infrastructure. Education in Karenni remains directly affected by conflict incidents, which include firefights between armed actors, landmines, and aerial bombing and shelling by the Myanmar army (Network Media Group, 2025). The massive demand for new forms of schooling following the closure of Ministry of Education schools across the region has put significant strain on education financing and resourcing. Furthermore, many areas where populations now live following displacement due to conflict are remote, and much of Karenni state lacks reliable, if any, access to telecommunication networks, including the internet.





## III. Conceptual frameworks: Thinking in Systems

### 3.1 Systems thinking

In the context of TPD, systems thinking draws attention to the relationships among key agents - including teachers, trainers, school leaders, and policymakers - and the significance of context in shaping TPD planning, delivery, and outcomes. Ultimately, systems thinking reframes TPD as a dynamic, relational, and context-sensitive process rather than a static and input-driven intervention.

Systems thinking offers a holistic way of looking at how things are, how they work, and how they might be improved. Rather than isolating individual components, it focuses on how elements interact, how these interactions influence outcomes, and how change is often nonlinear and context-specific. As Faul and Savage (2023, p.8) succinctly define:

A system is a group of interconnected components with shared purpose that together achieve more than the sum of their parts...It is not possible to predict or change an entire system. However, it is possible to identify the levers through which to encourage change within a system.

Systems thinking requires consideration of:

- The material and intangible elements of the system;
- The structure of the system and the subsystems within;
- The relationships among these elements and subsystems;
- The functions they serve; and
- The overall function of the system.

This stands in contrast to linear or cause-and-effect thinking by acknowledging interdependencies and the diverse ways in which components of a system can influence one another. The overall health of a system is determined by how effectively these components function and interact (Ndaruhutse, Jones, and Riggall, 2019).

## 3.2 Complex adaptive systems

Over the past decade, complexity theory has increasingly been applied to the study of TPD as a lens for examining processes of adaptation and system evolution (Cochran Smith et al., 2014; Ell et al., 2019; la Velle, 2020; Mitchell et al., 2022). Within the literature, adaptation is often framed as a strength that enables TPD systems to adjust their delivery modalities (e.g. from face-to-face to remote) as well as the content and curricula (eg. based on educational needs) in response to changing conditions. This is often observed to be catalyzed through feedback pathways and bottom-up dynamics (Cilliers; 2008; Ell et al., 2017).

With roots in complexity science, the theory of complex adaptive systems offers a lens through which to understand systems that consist of interacting agents that continuously adapt and evolve in response to their environment and each other (Miller and Page, 2007). Unlike traditional systems, complex adaptive systems are neither centralized nor hierarchical. Their behavior is emergent and largely unpredictable, shaped by dynamic interactions among agents rather than by linear, cause-and-effect relationships.

As a result, outcomes in complex adaptive systems tend to be uncertain, diverse, and highly dependent on context, in contrast to the more predictable and measurable outcomes typically associated with traditional systems. This implies that problem-solving in complex adaptive systems requires an emphasis on learning, experimentation, and flexibility, whereas traditional systems tend to prioritize planning, prediction, and control.


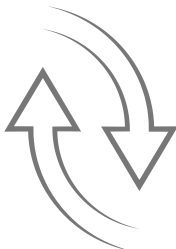

Ramalingam and Jones (2008) offer a valuable framework for understanding ten characteristics typically found in complex adaptive systems, organized into three domains (Table 1).

The first domain, complexity and systems, focuses on the structure features that define complexity within a system. This examines the interconnections and dependencies among system elements, the role of feedback pathways in driving system behavior, and the emergence of new, often unpredictable, patterns that arise from these interactions.

The second domain, complexity and change, explores how change occurs within complex systems. This ponders the possibilities for and predictability of change, such as the extent to which an input within the system may lead to particular outcomes.

The third domain, complexity and agency, considers the role and behaviors of individuals and organizations within the system. This considers the extent to which agents act without centralized control and adapt and evolve in response to the system's changing dynamics, which contributes to the system's ongoing evolution.

**Table 1. Characteristics of complex adaptive systems (Ramalingam and Jones, 2008)**

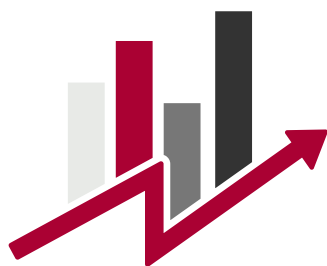
Characteristic	Definition
<b>Complexity and Systems</b>	
 <p>Interconnected and interdependent elements and dimensions</p>	Systems consist of multiple elements and dimensions that are connected and mutually influence each other
Feedback processes	Positive (amplifying) and negative (balancing) feedback loops affect how change happens and how systems evolve over time
Emergence	System-level properties, patterns and behaviors arise (often unpredictably) from local interactions and are not attributable to individual components alone
<b>Complexity and Change</b>	
 <p>Nonlinearity</p>	Small changes can lead to disproportionately large effects; outcomes are not always proportional to inputs
Sensitivity to initial conditions	Small differences at the outset can lead to vastly different system trajectories over time
Phase space	The conceptual space of all possible system states; helps visualize how systems evolve
Chaos and edge of chaos	Systems gravitate toward certain patterns (attractors); complex behaviour often sits between full order and chaos
<b>Complexity and Agency</b>	
 <p>Adaptive agents</p>	Individuals or organizations that learn and adapt based on their interactions with the system and each other
Self-organization	Patterns and structures emerge from interactions among system elements without central control (decentralization)
Co-evolution	Agents and the systems they inhabit evolve in tandem through mutual adaptation

## Box.1 How TPD can operate as a complex adaptive system?

Teacher professional development (TPD) systems can be understood as complex adaptive systems when they are dynamic, decentralized, and shaped by continuous interactions among diverse actors, policies, and contexts. In contrast to linear models, TPD systems - particularly in low-resource or crisis-affected contexts - often evolve through feedback, adaptation, and emergent practice. As such, standardized TPD approaches may frequently fail to deliver sustained improvement, whereas flexible and responsive models are more likely to generate meaningful change.

### 1 INTERCONNECTEDNESS AND INTERDEPENDENCE OF ELEMENTS

In TPD, the effectiveness of training is often linked to curriculum frameworks, school leadership, classroom assessments, teacher deployment policies, and community expectations. For example, a shift in curriculum (e.g. toward inquiry-based learning or multilingual education) may require new pedagogical strategies, which prompts school leaders to adapt how they support teachers and influences what TPD must emphasize. The interconnectedness and interdependence of elements means that system-level change in one area reverberates throughout the TPD environment.

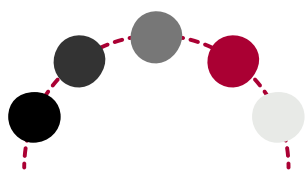


### 2 FEEDBACK PROCESSES

In adaptive TPD systems, feedback processes may take the form of classroom observations, teacher reflection, or monitoring data from training programs. For instance, a training officer might modify a coaching model based on teacher feedback about its relevance and workload. Crucially, feedback must be timely and credible to support system responsiveness.

### 3 EMERGENCE

Emergence is evident when local actors create new practices that are not dictated by top-down policy. For example, teachers may adapt centrally provided training to their specific classroom needs by co-developing context-appropriate strategies, which can later become institutionalized. Bottom-up solutions cannot always be predicted or planned, but they demonstrate how new system behaviors emerge through local interactions.



### 4 NONLINEARITY AND SENSITIVITY TO LOCAL CONDITIONS

TPD systems often exhibit nonlinearity, when a small change has a disproportionate effect, and with a sensitivity to local conditions. Consequently, identical interventions in two different regions may yield very different results due to contextual differences. Moreover, a small and intentional intervention in one part of the TPD system (e.g. a workshop on gender-responsive pedagogy) may have large, significant effects elsewhere or across the system.

### 5 PHASE SPACE

There may be a range of outcomes and trajectories (phase space) available to a TPD system, while a TPD system may balance order and flexibility (edge of chaos). Effective TPD programs tend to create structured opportunities for experimentation and learning from new experiences.



## Box 2. How TPD can operate as a complex adaptive system

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The **adaptive agency** of actors is central to how TPD systems evolve. Educational personnel regularly adjust their strategies in response to shifting needs, resource constraints, or emerging challenges. For example, during the COVID pandemic, many teachers rapidly adapted their instructional methods and trainers modified delivery modalities.

In many contexts, TPD practices arise without centralized control (**self-organization**). When formal programs fall short, bottom-up initiatives (e.g. informal peer learning networks, school-based mentoring arrangements) often prove more durable and context-responsive than externally imposed programs.

Finally, as teachers innovate in practice, the TPD system may adapt its content, delivery methods, or priorities in response. In turn, these changes influence future teacher behavior, creating a cycle of **co-evolution**.



## IV. Research Design

### 4.1 Research questions

The study is driven by the following overarching research questions:

What are the operations and behaviors of Karenni teacher professional development (TPD) systems in Thailand and in Myanmar?

In what ways, if any, do Karenni TPD systems in Thailand and in Myanmar exhibit characteristics of complex adaptive systems?

How can the development of Karenni TPD be effectively supported?

The first question focuses on describing and mapping the structure and functioning of Karenni TPD systems using a systems thinking approach. The second question assesses whether and how these systems demonstrate properties of complex adaptive systems. The third question aims to identify leverage points and potential pathways of change that could enhance the functionality and responsiveness of Karenni TPD systems in achieving their intended outcomes.

Together, these questions are designed to provide policymakers, practitioners and other key stakeholders with insights into how Karenni TPD is designed, how TPD behaves in contexts marked by disruption, and how TPD can be more effectively supported with targeted policy and practice interventions.

## 4.1 Research strategy

This qualitative study draws on key informant interviews (KIIs) and focus group discussions (FGDs), and is informed in part by Vavrus and Bartlett’s (2022) comparative case study methodological approach. Participants were purposively selected from five stakeholder groups across three levels of social position (see Table 2). In total, there were 52 participants: 27 from the Karenni TPD context in Thailand and 25 from the context in Myanmar.

Most of the 23 KIIs and FGDs were conducted as semi-structured interviews in English or Burmese by the study’s principal investigators, either in person or via videoconferencing. While the original intention was to conduct all research in person, security concerns and travel constraints necessitated the use of remote methods in some cases.

The six FGDs with teachers and school leaders from Myanmar were conducted in-person by a Karenni research assistant and carried out in Kayah language, using a structured interview format. All KIIs and FGDs were conducted from August to December of 2024.

**Table 1. KII and FGD participants**

	Micro level			Meso level		Macro level	Total
	Teacher	School Leaders	Teacher Trainers	Training Managers	Org Leaders	Donors & Development Partners	
Temporary Shelters (Thailand) Participants							
FGDs/KIIs	6	8	8	2	1	2	27
	2	3	3	1	1	1	11
Karenni State (Myanmar) Participants							
FGDs/KIIS	9	8	4	1	2	1	25
	3	3	2	1	2	1	12

Descriptions of the KII and FGD participants are provided in Appendix 1. The majority of teachers and teacher trainers were female, while school leaders, training managers, and organization leaders were more evenly split by gender. Most KnED representatives had held their current roles for at least three years, with many having over five years of experience. By contrast, most STF representatives - excluding organization leaders - had two years or less experience in their positions. Consequently, KnED participants were able to speak to a longer timeframe or institutional experience compared to STF participants.

Transcripts of all KIIs and FGDs were produced in English and analyzed using a two-stage coding process. In the first stage, transcripts were coded through an iterative process that combined the development of emic codes (grounded in the participants’ language and perspectives) with etic codes (drawn from existing literature on systems thinking and complex adaptive systems) (Creswell and Creswell, 2022; Saldaña, 2015). In the second stage, thematic memos were developed by code or relevant combination of codes. These memos served as the basis for deeper analysis of patterns and relationships emerging across the qualitative data.

A two-day consultation workshop was held in May 2025 in Thailand with selected representatives from KnED and STF. The purpose of this workshop was threefold: to validate preliminary findings related to the first research question (descriptive mapping of each TPD system), to engage in further reflection and evidence-generation on the second question (characterization of TPD systems as complex adaptive), and to explore aspirations for the third question (opportunities for TPD system development). KnED was represented by seven teacher trainers and training managers, while STF participants included four training managers and office staff. The participatory sessions facilitated structured discussion, with insights documented through field notes collaboratively written by the principal investigators and research participants. Field notes from the workshops were similarly coded using the same analytical framework and were synthesized alongside data from the KIIs and FGDs to inform the overall findings.

At first, a selected set of etic codes related to complex adaptive systems, derived from the authors’ previous work (Rinehart and Tyrosvoutis, 2023; Tyrosvoutis, 2025), guided the analysis. However, due to limited findings from the KIIs and FGDs concerning the second research question additional etic codes were incorporated. These were drawn from the framework developed by Ramalingam and Jones (2008) to enrich the analytical lens (see Box 2 for a description of how TPD can operate as a complex adaptive system).

**Table 3. Etic codes used from the literature on complex adaptive systems**

KII and FGD Codes	Consultation Workshop Codes
1. Adaptation	1. Interconnected and interdependent elements and dimensions
2. Feedback processes	2. Feedback processes
3. Emergence	3. Emergence
4. Decentralization and interdependence	4. Nonlinearity
	5. Sensitivity to initial conditions
	6. Phase space
	7. Chaos and edge of chaos
	8. Adaptive agents
	9. Self-organization
	10. Co-evolution



## V. Finding: Two case studies

This section presents robust case studies of each TPD system, drawing on descriptive findings related to the study's first research question and analytical findings addressing the second. Using a systems thinking lens, we identify and describe the key agents (individual and collective actors), intangible elements (information flows, beliefs and norms), and functions that are found within distinct pathways in each TPD system. In both systems, TPD procedures are found to serve the dual purpose of clinic and gym (see Box 1), helping teachers address the challenges they face in their classroom while also working towards developing teachers' overall competency through the input of new pedagogical approaches.

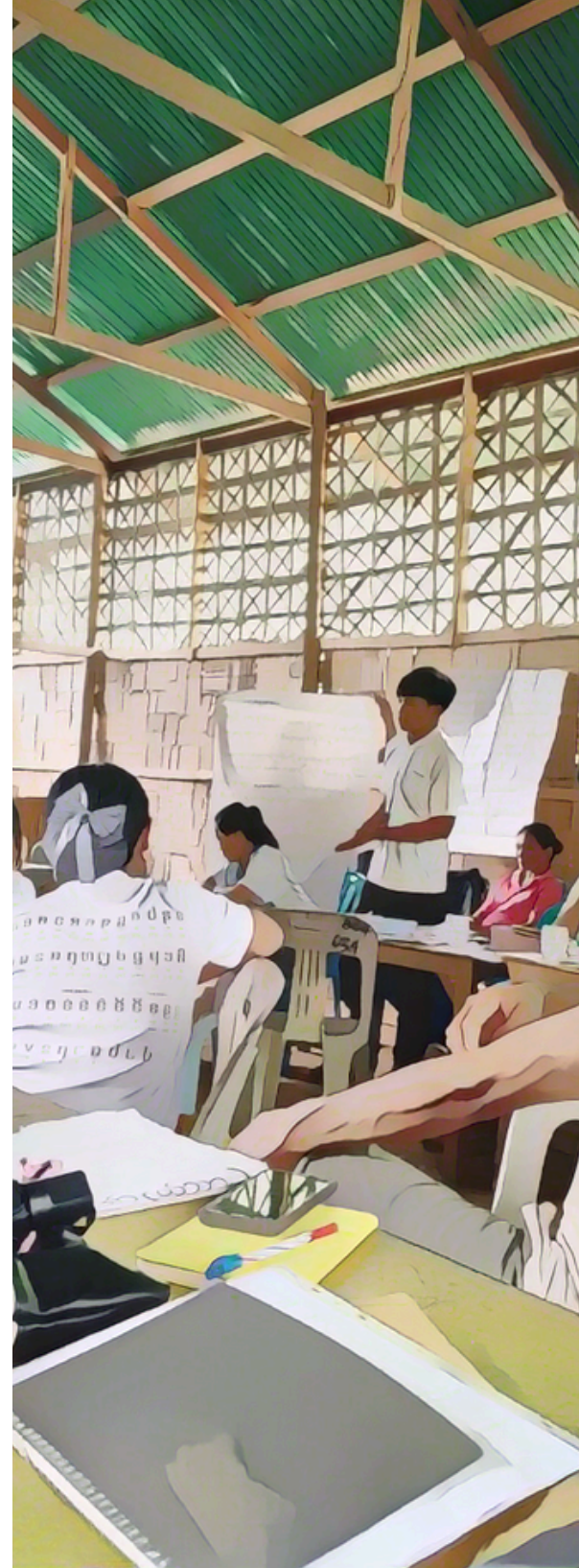
Conclusions are interpreted through the lens of the 'designed for disruption' concept introduced by the authors in prior research (Rinehart and Tyrosvoutis, 2023), to explore how TPD systems may intentionally or unintentionally be shaped to operate in complex adaptive ways amid conditions of conflict- and crisis-induced disturbances.

## 5.1 Karenni TPD in Thailand - Designed for disruption

In the Karenni TPD system in Thailand managed by KnED, pre-term training<sup>1</sup> is conducted twice annually - each session lasting five days - prior to the start of each academic semester. These sessions target both new and experienced teachers. Due a restructuring of the academic year in addition to funding precarity, the frequency of pre-term training has been reduced to twice annually and the length has been halved from ten days to five. During the academic year, in-term coaching is provided within schools on an as-needed basis and through monthly observations. While pre-term training is delivered by KnED trainers, in-term coaching may be led by school leaders or trainers. Trainers are selected on the basis of having at least two years of teaching experience and a proven ability to teach. They are hired on annual contracts and there is minimal yearly turnover.

Planning for pre-term training takes place at the central level within KnED, involving trainers, training managers, and senior leaders. In contrast, planning for in-term coaching is more localized, occurring either within schools - through collaboration between teachers and school leaders - or just beyond the school level, with trainers also participating. The development of new training content occurs in consultation with KnED's principal donor and development partner.

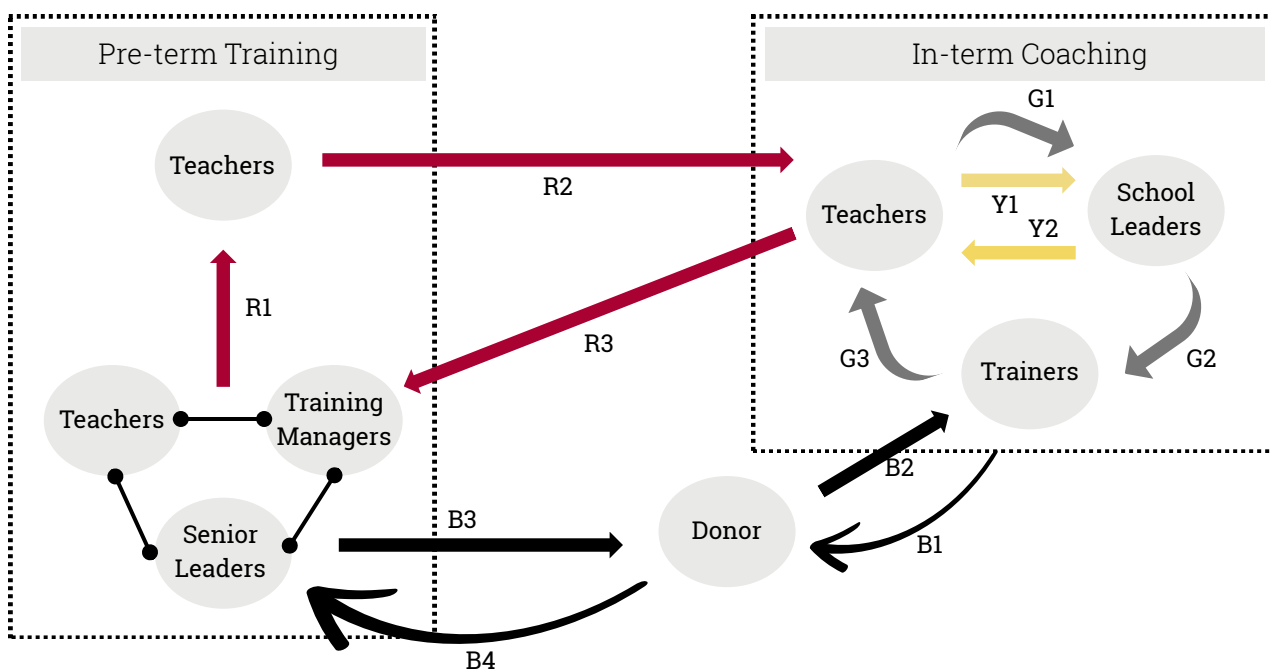
Due to challenges in outsiders accessing the two temporary shelters in Thailand where KnED operates, there is a strong inter-camp reliance on teacher education. The relatively concentrated geography within the camps allows for frequent interaction between schools and trainers during academic semesters.



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<sup>1</sup>This paper adopts the terms pre-term and in-term - rather than the more commonly used pre-service and in-service - to specify the timing of TPD opportunities in the KnED system. Pre-term refers to TPD activities (primarily training sessions) that take place prior to the start of a KnED academic semester. These sessions are attended by both new and experienced teachers. In-term refers to TPD activities (primarily coaching) that occur during the academic semester and are intended for all teachers, regardless of their level of teaching experience.

Figure 2. System map of Karenni TPD in Thailand



Pathway	Description
<p><b>Red</b></p> <p>Pre-term training</p>	<p>R1: Pre-term training (decided by central level) is provided to teachers</p> <p>R2: Teachers take new learnings into their schools and classrooms</p> <p>R3: Teachers' experiences (in schools and classrooms) influence decisions about pre-term training by central level</p>
<p><b>Yellow</b></p> <p>In-term coaching with school leader</p>	<p>Y1: Needs of teachers are communicated to school leaders</p> <p>Y2: School leaders provide coaching to teachers</p>
<p><b>Gray</b></p> <p>In-term coaching with trainer</p>	<p>G1: Needs of teachers are communicated to school leaders</p> <p>G2: School leaders request support from trainers</p> <p>G3: Trainers provide coaching to teachers</p>
<p><b>Black</b></p> <p>Training content development and trainer capacity development</p>	<p>B1: Trainers communicate training content and trainer capacity development needs to donor</p> <p>O2: Donor supports capacity development of trainers and development of new training content</p> <p>O3: Central level communicates training content and trainer capacity development needs to donor</p> <p>O4: Donor supports capacity development of trainers and development of new training content</p>

Before the beginning of the academic year, the first pre-term training focuses on general teaching skills and is relatively standardized to meet the immediate needs of new teachers. The second pre-term training includes more subject-specific training and is shaped by the needs and priorities identified during the preceding semester. The development of new training content, as well as the capacity development of trainers, is typically handled by KnED's main donors serving as development partners.

During the academic year, lesson observations are conducted approximately once per month by trainers and school leaders. These observations involve reviewing lesson plans, assessing teaching methods and student engagement, and providing feedback using a standardized scoring system. As a training manager explained:

" If we find any deficiencies during our assessment, then we provide additional training. Some teachers make changes based on the comments given [following observations] and others make efforts to improve on their own... When they face difficulties with lessons during assessment, they ask us questions and we can provide immediate answers.

Training Manager, KII 1

A trainer further elaborated on the in-term coaching process:

" Our trainers are assigned to schools where they guide and lead the teachers. They have the authority to evaluate how a teacher teaches and give scores... Then, I can suggest what improvements are needed and can make such recommendations. During [coaching] sessions, we also identify which areas need enhancement and can work on those improvements.

Trainer, FGD 1

These observations are often linked to the application of skills introduced during pre-term training:

" We provide training in subjects and teaching methods [in pre-term training]. Then, we monitor at schools to see whether [the teachers] practically apply what they have learned. We also monitor the classrooms where they teach, and since we have the authority to do so, we do this every month.

Trainer, FGD 1

We first conduct an observation of the school, then look at the weaknesses of the teachers. Subject-specific trainers observe how teachers teach and report to the school principal. If weaknesses are found, we hold meetings with the teachers. If the situation improves, then it's done. If it doesn't, we discuss further as a team and make additional decisions.

Trainer, FGD 3

In-term coaching often involves school leaders, who may initially support teachers themselves. If additional assistance is required, they call upon trainers. One school leader noted, “We can call the trainer to give coaching to our teachers... We know who to communicate [with] and how to reach out to them” [School Leader, FGD 3].

A trainer echoed this collaborative process:

“If a teacher shows weakness in some areas, they are provided with [additional] coaching. They meet with their school principal. If that teacher still cannot improve, our team makes a further decision. We regularly consider whether additional training should be provided.

Trainer, FGD 3

Although there is no formal mentorship program, mentorship may often occur informally through joint teaching between senior teachers or trainers with classroom teachers. At the school level, decision-making appears to be collaborative. As one school leader emphasized, “We cannot complete our work without collaboration; we must do it all together” [School Leader, FGD 2].

Headteachers play a pivotal role within the system. In addition to their administrative responsibilities, they often serve as substitute teachers, instructional coaches, and de facto monitoring and evaluation officers. This multiplicity of roles reflects a critical function as intermediaries between central and local levels of the overall education system. Their dual engagement in teaching and leadership highlights the system’s reliance on mid-level actors to maintain continuity, support adaptability, and provide instructional guidance.

Overall, in-term coaching appears highly valued by teachers and school leaders for its responsiveness to individual teachers’ needs and its ability to provide more tailored and practical support. This value likely stems from the immediacy of the coaching pathways, which are characterized by direct and active information flows as well as shared beliefs and norms surrounding teaching, improvement, authority, and collaboration (Table 4).



**Table 4. Intangible elements of KnED’s in-term coaching**

Element	Description
<b>Information flows</b>	
Feedback mechanisms	Observations generate structured feedback using standardized scoring, which informs follow-up training and coaching
Communication channels	There is a clear understanding of whom to contact and how to do so for coaching support
Monitoring and reporting	Trainers monitor classroom implementation and report teacher performance to school leaders, which triggers meetings and decision-making
<b>Beliefs and norms</b>	
Continuous improvement	There is a shared expectation that teachers will improve based on feedback and coaching, and that ongoing development is essential
Trust in authority of trainers	Trainers are advisors and evaluators with recognized authority to score and recommend improvements
Collaboration	Responsibility is shared between school leaders, trainers, and teachers.
Adaptability and responsiveness	Responsive support is based on real-time needs and is valued through the emphasis on in-term coaching

While decision-making for pre-term training involves the central level of KnED, in-school coaching is highly decentralized and shaped by the direct interactions between teachers, school leaders, and trainers. These interactions typically occur during monthly monitoring visits. As explained by trainers:

“When we go for monitoring at schools, [decisions] depend on what areas a particular teacher needs help with. Once we identify what a teacher needs, we consult with the school leader that the teacher needs help in this area.”  
Trainer, FGD 2

“When it comes to training our teachers, we have the authority to decide [for ourselves]. We have the decision-making power on what kind of training to provide to teachers...how to prepare teaching methods and such things.”  
Trainer, FGD 1



The tightness of these pathways contributes to a notable degree of TPD responsiveness. Proximity and regular interaction - particularly during in-term coaching - reassure teachers that their needs will be recognized and, as much as possible, addressed. The ability of key agents in the system to work side-by-side at the school level plays a critical role in facilitating this responsiveness.

KnED currently does not have a formal teacher policy<sup>2</sup>, which allows for a range of possibilities for how individual teachers may be supported through TPD. On the one hand, this creates space for experimentation and adaptability. On the other hand, it may complicate efforts to assess whether TPD is achieving its intended outcomes. As a senior leader acknowledged:

“ We still don't have a teacher policy...We've been thinking about starting [this]...but there's so much to do that we don't know how to begin...Without specific policies, when implementing our work, we are afraid to decide whether something is right or wrong.

Senior Leader, KII 1


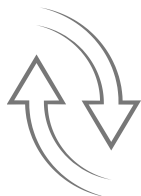

Despite these uncertainties, TPD is valued by teachers and trainers - particularly when new content areas, such as social and emotional learning or peace and reconciliation, are introduced through the support of their donor. The combined provision of pre-term training and in-term coaching likely signals to teachers that they are recognized as professionals and that KnED is committed to supporting their ongoing development, even in the absence of high salaries and teacher accreditation.

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<sup>2</sup>A teacher policy typically articulates an education system's vision, goals, and strategic actions to develop and support a high-quality teaching workforce. It often encompasses the full career lifecycle of teachers - from recruitment and training to retention and professional growth.

However, the potential for innovation within and evolution of the TPD system appears closely tied to the level of support the donor is able to provide. Resource constraints affect the extent to which the donor is able to offer technical and material assistance. While trainers express some confidence in their work, many also report a need for further capacity development to more effectively respond to the expectations for TPD support from teachers and schools. As more foundational support is established, the expectations of teachers and schools are likely to become increasingly nuanced and sophisticated; attention may shift toward more complex-specific needs such as differentiated professional development, subject-specific pedagogy, inclusive education, or psychosocial support.

**Table 5. Karenni TPD in Thailand as a complex adaptive system**

Element	Presence	Description
<b>Complexity &amp; Systems</b> 	High	<p>Ongoing TPD through in-term coaching relies on strong connections between teachers, school leaders, and trainers and less on central level decision-making</p> <p>In-term coaching may mostly occur through planned monitoring visits rather than as spontaneous events</p>
<b>Complexity &amp; Change</b> 	High	<p>The introduction of new training content spurs new appreciations for education and TPD</p> <p>Due to scarcity of resources (educational materials) and scarcity of opportunities (number of trainings), new inputs (training content, capacity development for trainers) into the system can lead to big changes</p>
<b>Complexity &amp; Agency</b> 	Medium	<p>There is a well-established procedure for local-level problem-solving to support teachers through in-term coaching</p> <p>Experimentation and innovation may depend on greater capacity development for trainers</p>

We conclude that the Karenni TPD in Thailand demonstrates features of being designed for disruption at the school level, where in-term coaching can continue even amid broader instability. This is largely due to the decentralized nature of in-term coaching, which relies on the close and ongoing interactions between teachers, school leaders, and trainers operating in geographic proximity. In contrast, pre-term training - while certainly important - has been truncated due to resource shortages within the overall system.

In-term coaching draws upon locally generated and exchanged information, and school leaders and trainers are able to adapt their support to meet teachers' differentiated needs. However, the effectiveness of this localized adaptation may be shaped by upstream factors: chiefly, the availability of training and coaching content, and the capacity of trainers. These are developed further up the system, often through pathways involving the donor in its role as a key development partner.

Consequently, as teachers gain experience and develop greater competence, their expectations for in-term coaching are liable to evolve and become more sophisticated. This progression necessitates the development of more advanced training and coaching content. In-term coaching thus holds potential to serve as a dynamic component of the TPD system - one that must evolve in parallel with teachers' professional growth and emerging needs. This, in turn, implies that both the content of training and coaching, as well as the capacity of trainers, must be continuously strengthened to meet rising expectations and ensure sustained relevance and impact.

At present, in-term coaching appears to follow a largely scheduled format. However, there is emerging potential for it to be accepted and utilized by teachers and schools on a more on-demand or spontaneous basis as well, provided that trainers are available. Given the strong interest in in-term coaching as a means of delivering ongoing TPD in resource-constrained settings, targeted investments in coaching are likely to yield outsized impact.



## 5.2 Karenni TPD in Myanmar - Designing during disruption

The Karenni TPD system in Myanmar managed by STF is one of at least three large systems operating in areas under the governance of the Karenni State Interim Executive Council, alongside those managed by other development actors and teacher unions affiliated with the Civil Disobedience Movement. While many schools in Karenni reportedly engage with multiple TPD providers, this study focuses exclusively on the TPD delivered by STF. Although coordination and complementarities between all systems would likely be beneficial, exploring this falls outside the scope of the present study.

STF's TPD provision occurs irregularly and is contingent on its capacity to convene training sessions, which may take place twice per year across three to four locations. Since 2021, the length of sessions has been reduced from fifteen days to five. The scheduling and location of training varies according to security dynamics. To the extent possible, training is informed by teacher needs, with field teams collecting data through tools such as teacher profiles and needs assessments.

Generally, schools are allowed to nominate one or two teachers to attend a training, who are then expected to return to the school and cascade what was learnt to their colleagues. STF estimates that around 200 teachers receive TPD annually through training. Training was described during consultation as 'ad hoc' and dependent on budget availability. It is not uncommon for teachers with different levels of experience to attend the same training, meaning the audience for each training can be quite diverse.

All TPD is delivered by STF trainers - numbering around five - who are normally based at offices in Myanmar. Attending training often requires flexibility from attendees. As one school leader reflected:

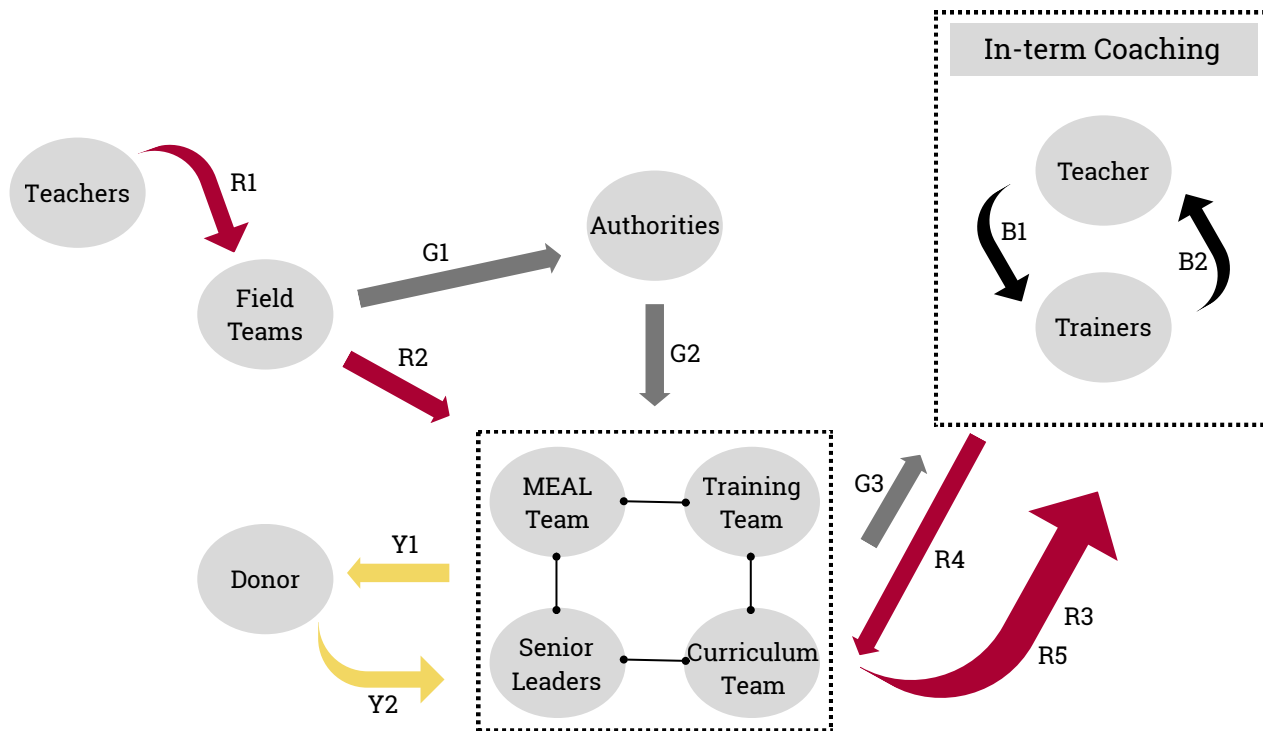
“ Sometimes we have had to sleep at the training location, and sometimes we have had to cancel [our attendance at] the training due to difficulties in transportation.

Senior Leader, FGD 2

Decision-making regarding TPD design occurs at the STF central level, which includes a training team, a curriculum team, a monitoring, evaluation, accountability, and learning (MEAL) team, and senior leadership. This structure requires that data from field sites be relayed across great physical distances to inform evidence-based training design. However, limited telecommunications and internet connectivity in Karenni pose a significant challenge. Of the six field offices STF maintains, only three are reportedly easy for the central level to regularly contact.

The STF central level works with its donor in the development of its TPD system. This relationship is STF-led: STF identifies and communicates specific requests to the donor, which in turn provides technical assistance as feasible. A recent outcome of this collaboration is the successful development of a six-month pre-service training module, which has since been adapted for use in shorter in-service training formats.

Figure 3. Systems map of Karenni TPD in Myanmar



Pathway	Description
<b>Red</b> Responding to teachers' needs	R1: Needs of teachers (in schools) are communicated to field teams R2: Field teams report needs to central level R3: Central level incorporates needs into in-service training R4: Needs of teachers (during training) are communicated to central level (after training) R5: Central level incorporates needs into in-service training
<b>Gray</b> Security planning	G1: Field teams provide security data to authorities G2: Authorities provide security and logistics recommendations to central level G3: Central level organizes logistics of in-service training
<b>Yellow</b> Training content development	Y1: Central level communicates training content needs to donor Y1: Donor supports development of new training content
<b>Black</b> In-service training	B1: Needs of teachers are communicated to trainers B2: Trainers address needs of teachers during in-service training

The overall planning of TPD under STF depends on decisions made at the central level, in coordination with various local authorities in Karenni, particularly regarding the security conditions for holding training events. However, data availability to support evidence-based decision-making at the central level can at times be limited. As a training manager noted:

In some regions we cannot work with precise data...We encounter challenges during [our] discussions when trying to identify which areas are weak and what specific issues exist.

Training Manager, KII 1

Although planning is ultimately quite centralized, STF trainers are encouraged to adapt during in-service training based on their own assessments and teacher feedback. As the same manager explained:

During training sessions, [trainers] can determine what actions to take...as they have obtained data regarding teachers' capacity.

Training Manager, KII 1

Trainers also elaborated on having some independence to modify training delivery:

We first need to make our own decisions, then consult senior staff...Once we agree on training modules, we can deliver them according to our own agenda.

Trainer, FGD 1

We ask about the teachers' situations [during training sessions]...If they say they need certain things more, we adjust the training accordingly

Trainer, FGD 2

As much as possible, trainers' decisions are also informed by data collected and shared by STF field teams, as trainers themselves often lack time for direct data collection. These teams help identify underserved regions and schools, and their interactions with teachers and school leaders - such as through the completion of teacher profiles - supports identification of the most suitable training topics. Additional data is gathered by trainers during and after training events, when teachers can share their additional needs and priorities for future training.



While teacher training is clearly valued, security remains paramount. As one senior leader described:

" We follow local authorities' recommendations on location and timing. Even if a site is remote, we travel there if it's considered safe...Because of security risks, we cannot gather a big group of people and cannot gather large numbers of teachers like before. So we have to split into smaller groups and conduct training at different sites to reduce the risk.

Senior Leader, KII 2

Distance between teachers, trainers, and central level decision-makers introduces a level of uncertainty and unknowns into the TPD system. As the training manager reflected:

" We don't fully know which capacities teachers have and what their long-term goals are, but training [nonetheless] continues to be provided.

Training Manager, KII 1



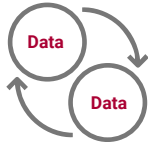




This uncertainty complicated forward planning, as a senior leader emphasized:

" We try to make our best decisions during difficult times. It's difficult to plan ahead when we don't know what will happen. We try to make decisions for teacher education using the data and situational analysis we have. I'm not sure how we could make better decisions under these conditions.

Senior Leader, KII 1

The TPD led by STF remains in its early stages, and the conflict conditions in the Karenni region make training intermittent and relatively brief. While evidence-based decision-making is valued at the central level, there is also a strong sense of pragmatism that enables trainers to adapt training content and delivery at the local level. Overall, there is a clear commitment to delivering teacher training that is as data-informed as possible, shaped by information flows and shared beliefs and norms around teacher voice, security, situational uncertainty, and continuous provision (Table 6).

**Table 6. Intangible elements of STF’s teacher training**

Element	Description
<b>Information flows</b>	
	<p>Upward data flows</p> <p>Field teams relay teacher profiles and needs assessments to the central level to inform training planning</p>
	<p>Training-time feedback and data collection</p> <p>Trainers gather feedback from teachers during training events, adjust content accordingly, and identify future training needs</p>
	<p>Delayed or imprecise data transmission</p> <p>Telecommunications challenges and insecurity cause delays and imprecision in some communication between Karenni and the Thai-based central office</p>
<b>Beliefs and norms</b>	
	<p>Value of teacher voice</p> <p>Trainers and central level decision-makers want to know and respond to teachers’ situations and needs</p>
	<p>Local authority and security context</p> <p>STF defers to authorities for decisions on when and where training can safely occur</p>
	<p>Recognition of situational uncertainty</p> <p>Planning is often cautious and adaptive in the face of constraints, with decisions being made despite uncertainty and limited data, and real-time adaptations welcomed</p>
	<p>Continuous provision even amid gaps</p> <p>Despite not knowing teacher capacities or long-term goals, training is seen as necessary and ongoing, even if irregular</p>

The STF central level engages with two main pathways for receiving information about teachers and making decisions around TPD. The first pathway - through which information flows from teachers via field teams - is acknowledged to be relatively loose and unstable, due to communication delays caused by field-level conditions that are unlikely to improve in the near term. In contrast, the second pathway - through which information is gathered by trainers during the delivery of training - is more direct and structured. This tighter connection involves data generated through training events, such as in-training assessments and post-training recommendations. However, it is limited by the infrequency of training events, which occur only a few times per year at most. As a senior leader explained:

" [We try] to make decisions based on the changing situation. Much of the time, trainers get feedback from the teachers during training, and then we see the situation...In different regions, there will be different needs. But usually our trainers have connections with the local teachers and [field staff] there. They contact [them] to have consultations or discussions, so we rely on these connections.

Senior Leader, KI1 1

Overall, the central level finds it significantly more difficult to obtain timely and relevant data on teachers' TPD needs than more basic descriptive information such as the number of schools, teachers, or school locations. Nevertheless, these two pathways provide a partial foundation for evidence-based decision-making.

A tension exists between the aspiration to make data-informed decisions at the central level and the difficulty of accessing actionable evidence in a timely manner. In practice, much of what occurs during TPD appears to depend less on centrally coordinated plans (excepting the arrangement of logistics) and more on the field-level responsiveness of schools (who nominate teachers to attend) and reflexivity of trainers (who can adapt training content as needed). As one trainer described:

" Since we cannot make decisions by ourselves, we have to go and consult with our senior management...[but] when we provide training, based on what's really happening 'on the ground,' we have to review things like this is how things are and this is what needs to be done and make adjustments accordingly.

Trainer, FGD 1




Despite the self-acknowledged challenges in providing TPD, when it is provided it has reportedly fostered a renewed commitment to education in difficult circumstances. It has helped raise awareness of the importance of sustaining educational services, empowered inexperienced teachers to believe in themselves, and encouraged more experienced teachers to assume greater leadership roles. As one trainer noted:

" When we provide teacher training, children who couldn't attend school can now attend school. Teachers who may not have wanted to teach become interested in teaching...[parents] also become interested in education. They support us much more, and work with us much more.

Trainer, FGD 2

Given the emergence of these impacts, requests for additional training are common. But increasing the frequency or duration of training remains highly uncertain due to resource limitations. The central level remains open-minded about what possibilities may present themselves, and what new strategies and modalities for TPD could surface through experimentation.

**Table 7. Karenni TPD in Myanmar as a complex adaptive system**

Element	Presence	Description
<b>Complexity and Systems</b> 	Medium	TPD relies on information being shared through multiple pathways by multiple agents, though decisions ultimately appear held at the central level
<b>Complexity and Change</b> 	Medium	<p>Many possibilities appear present although operating conditions may not be anticipated to change</p> <p>TPD engenders beliefs in and commitments to education among teachers, schools, and communities</p>
<b>Complexity and Agency</b> 	Medium	<p>Key agents - especially at central level - appear open to adaptation, although change may be dependent on originating from 'above'</p> <p>Ongoing reflections around 'strategy' development at central level, with implications trickling down to local levels</p>

We conclude that the Karenni TPD system in Myanmar exhibits characteristics suggesting designing during disruption. In other words, the TPD system is still actively undergoing a process of design - one that is shaped by the ongoing disruption in which it operates. This design process is unfolding partly through the more deliberate and controlled actions of STF leadership, and partly through the system's own messier, more emergent self-organization as it adapts to unpredictable and uncontrollable conditions on the ground.

While STF articulates a desire to build a more uniform and systematic TPD model, the conflict-affected realities of the Karenni regions likely pose substantial challenges to centralized, evidence-based decision-making. Resource constraints further hinder the regular convening of large-scale training events, which has resulted in a limited volume of teacher training delivered annually. The TPD system remains in its early stages, and the trajectory of its design could proceed in various directions depending on factors such as the operational environment and the availability of human, material, and financial resources. However, the ongoing disruptions caused by conflict and crisis are likely to make systematic and long-term planning very challenging, especially if the system itself prefers to self-organize around more local levels.

In this context, it is understandable that the central level of STF would seek to retain as much control as possible over system design and delivery, particularly as centralized oversight may be assumed to enhance security coordination. Nonetheless, this approach may also limit the TPD system's potential to evolve more organically in response to the fluid and unpredictable conditions in Karenni. The TPD system may be approaching a 'tipping point' for change, as the current approach has struggled to train a sufficient number of teachers. This signals an opportunity to explore - and experiment with - alternative strategies, methods, and modalities for delivering TPD, which may be better suited to the system's evolving demands and constraints amidst disruption.





## VI. Implications for support

This section addresses the third research question by presenting two potential interventions, each targeting a specific lever for encouraging change within the Karenni TPD systems: local-level coaching interactions in Thailand, and field team engagement with teachers in Myanmar. These interventions are framed in relation to a shared outcome for TPD articulated during stakeholder consultations:

Context-contingent TPD that enhances (i) teacher practice, (ii) teacher wellbeing, and (iii) teacher-community relations.

Albeit in varying degrees, KnED and STF both face higher-than-desired rates of annual teacher attrition, largely attributed to relatively low teacher remuneration. There is widespread agreement that if teachers in these two systems have their basic needs met - most especially in terms of receiving a salary that they feel is adequate - they will be significantly more likely to remain in the profession. While TPD alone cannot resolve structural issues of teacher compensation, it may help to mitigate them by strengthening intrinsic motivation, reinforcing teachers' professional identity, and increasing their commitment to teaching as a long-term career.

## 6.1 Collaborative professionalism

The first proposed intervention draws from the work of Jones et al. (2023) on collaborative professionalism, which is described as:

Professionals (teachers, headteachers, and other local level agents) working together in networks to enhance educational outcomes, with an emphasis on trust, open dialogue, peer accountability, and shared purpose.

The strength of collaborative professionalism lies in its ability to leverage collective understanding and action, with teachers working together alongside school leaders and, as much as possible, trainers. Collaborative professionalism is most often operationalized through structured yet flexible professional networks established at the school level. These networks are commonly referred to as ‘communities of practice’ (CoPs) or ‘professional learning communities’ (PLCs). They are intended to serve the dual purpose of TPD, functioning as both clinic and gym (see Box 1), with members taking on appropriate roles and responsibilities.

CoPs and PLCs may be initiated and maintained by teachers, but often involve school leaders and trainers operating in close proximity. Collaborative professionalism functions best through horizontal (teacher-to-teacher) and vertical (teacher-leader-trainer) interactions. It can be located within a single school or function across schools, so long as members from different schools are able to regularly interact with each other.

A culture of open dialogue is foundational to these networks, which allows for any topic to be discussed openly and without fear of judgment. Mutual trust is essential because it enables teachers, school leaders, and trainers to freely exchange insights and experiences through reflective dialogue. Members of CoPs and PLCs are encouraged to collaboratively analyse classroom experiences, critically reflect on teaching practices, and work together to develop solutions to shared educational challenges.

**Table 8. Establishing collaborative professionalism** (adapted from Jones et al. 2023)

Group relationships based on ...	Allowing all members to ...
Trust and openness	<ul style="list-style-type: none"> <li>• Share problems and discuss issue freely and without penalty</li> </ul>
Dialogue and inquiry	<ul style="list-style-type: none"> <li>• Engage in reflection when sharing experiences, and seek alternatives as solutions for trialing</li> </ul>
Shared purpose	<ul style="list-style-type: none"> <li>• Identify common concerns and priorities, alongside shared focus and expectations</li> </ul>
Peer challenge and accountability	<ul style="list-style-type: none"> <li>• Work together and share responsibility for implementing changes</li> </ul>
Collaborative leadership	<ul style="list-style-type: none"> <li>• Decide what style of leadership best benefits the network</li> </ul>

Because these networks are peer-driven, they cultivate a strong sense of shared purpose and collective responsibility within the school and at the local level. This can motivate participants to commit to improvement and follow through on action points. Though the focus is on enhancing the practices of teachers, effective facilitation by school leaders and trainers is often critical to sustaining engagement and guiding reflection toward meaningful outcomes.

It is important for those facilitating CoPs or PLCs to be appropriately incentivized to sustain their engagement and the overall effectiveness of collaborative professionalism. Incentives may be rooted in intrinsic motivation; for example, the sense of pride associated with taking on a leadership role or contributing to the professional development of peers. In some cases, extrinsic incentives may also be necessary. These could include income performance-based salary increases, stipends, or other forms of recognition and support to acknowledge the additional responsibilities facilitators undertake.

### **Box 3. Case studies of collaborative professionalism**

ones et al. (2023) highlight three success stories where collaborative professionalism was leveraged to strengthen TPD in challenging contexts.

In Kenya, the Let Our Girls Succeed program (funded by the UK and implemented by the Education Development Trust) established CoPs of five schools together in one cluster. Each cluster was facilitated by an instructional coach and supported by the schools' headteachers. Within the cluster, the coach led discussions based on data from classroom observations and the teachers' own expressed needs. The CoP emphasized teachers working together to solve shared teaching challenges and disseminating effective practices with other school clusters.

In Rwanda, the Building Learning Foundations program (funded by the UK and implemented in partnership with the Rwandan government and the Education Development Trust) identified 480 high performing headteachers to lead PLCs for other headteachers. These headteachers then supported school-based CoPs for the teachers at their respective schools, through which they monitored teacher performance and led collaborative planning and targeted problem-solving to address school- and classroom-specific challenges.

In India, the SiTR program established teacher networks across schools. This involved school-based teacher development coordinators working alongside mentor teachers, who were responsible for working within several schools in the network. Together, the teacher development coordinator and mentor teacher facilitated coaching workshops with less experienced colleagues on a school-by-school basis. The mentor teacher was able to take what was learned in one school and share it with other schools in the same network, while the teacher development coordinator stayed within their school to ensure ongoing support for teachers.

Mid-level leaders play a pivotal role in enabling and sustaining networks of collaborative professionalism. These individuals - usually trainers, instructional coaches, headteachers, teacher development coordinators, or mentor teachers - support networks within a single school or across a cluster of schools.

1



Mid-level leaders must be capable of offering expert input. This entails having a confident level of teaching expertise and the ability to provide constructive feedback. They should also be willing to share external perspectives and model effective teaching practices.

2



Mid-level leaders must be able to guide collaborative efforts. This involves setting clear expectations within groups, fostering individual and collective teacher empowerment, facilitating inclusive participation during events, and nurturing an atmosphere of trust and openness within the network.

3



Mid-level leaders are accountable for ensuring the continuity and effectiveness of the network. This requires organizing regular activities - such as meetings, workshops, and classroom observations - and following up to ensure that agreed-upon actions are implemented by members of the network.

Within the Karenni TPD system in Thailand, there are strong foundations for collaborative professionalism, particularly evident in the in-term coaching program. The interactions that occur in these pathways seem especially valued and warrant strengthening, to the extent possible. As one KnED teacher succinctly said:

"We would like more frequent close interactions, similar to the monthly observations."

Teacher, FGD 2

These foundations - which include the monthly observations - could be further strengthened through the introduction of a cluster-based model to facilitate cross-school collaboration; for example, organizing clusters of four schools coordinated by trainers or jointly managed by trainers and school leaders. CoPs or PLCs could be formally established that involve all of the teachers at the school engaging in in-term coaching together. The development of the in-term coaching program and any introduction of new mechanisms should be supported through targeted investment from donors and development partners. This support might include funding for regular convenings, the introduction of new training or coaching content, and capacity-building for trainers and school leaders, ideally through more robust training-of-trainers (ToT) programs led by external experts.

Importantly, the TPD system led by KnED is characterized by a high degree of responsiveness to inputs. As such, relatively modest investments, if strategically and purposefully directed, have the potential to generate disproportionately large impacts. As one trainer noted:

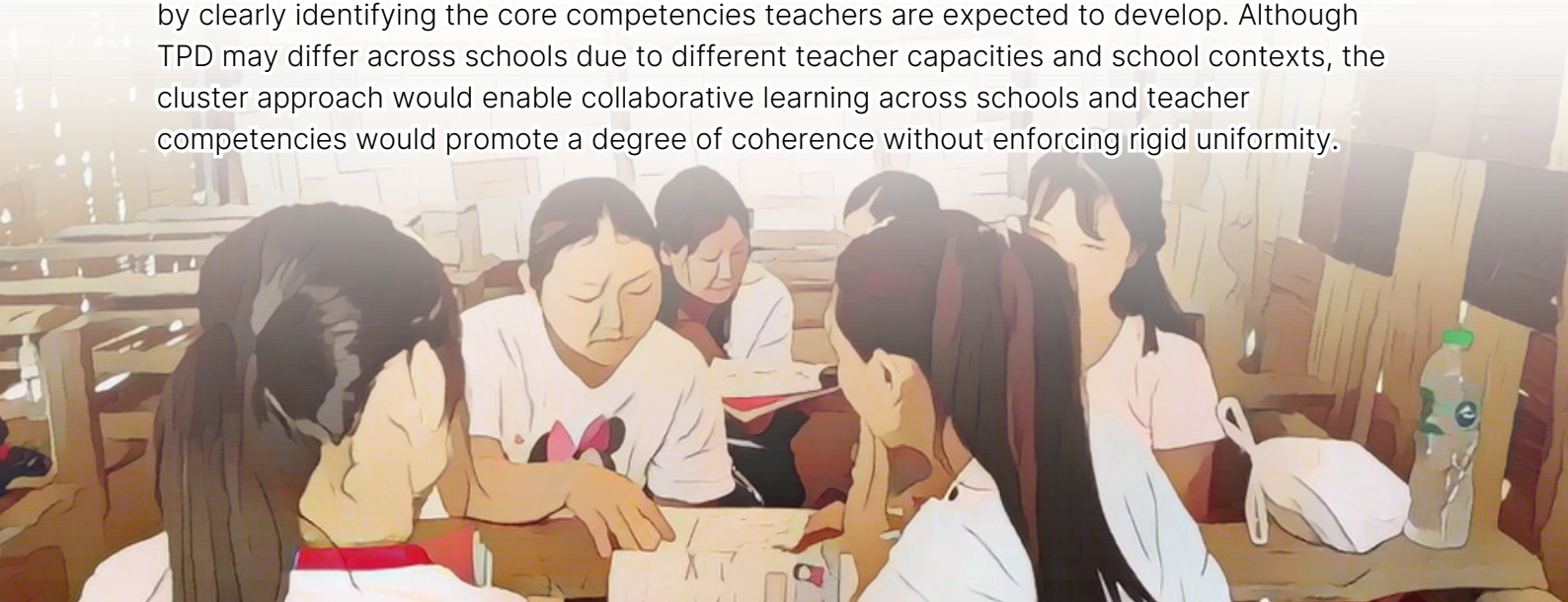
“ Since the camp is remote, we really depend on what opportunities and resources others can bring into the camp to share with us. What [donors and development partners] can give us, we are able to share back throughout the camp. Any resources we receive greatly helps our trainers and our education system.

Trainer, FGD 3

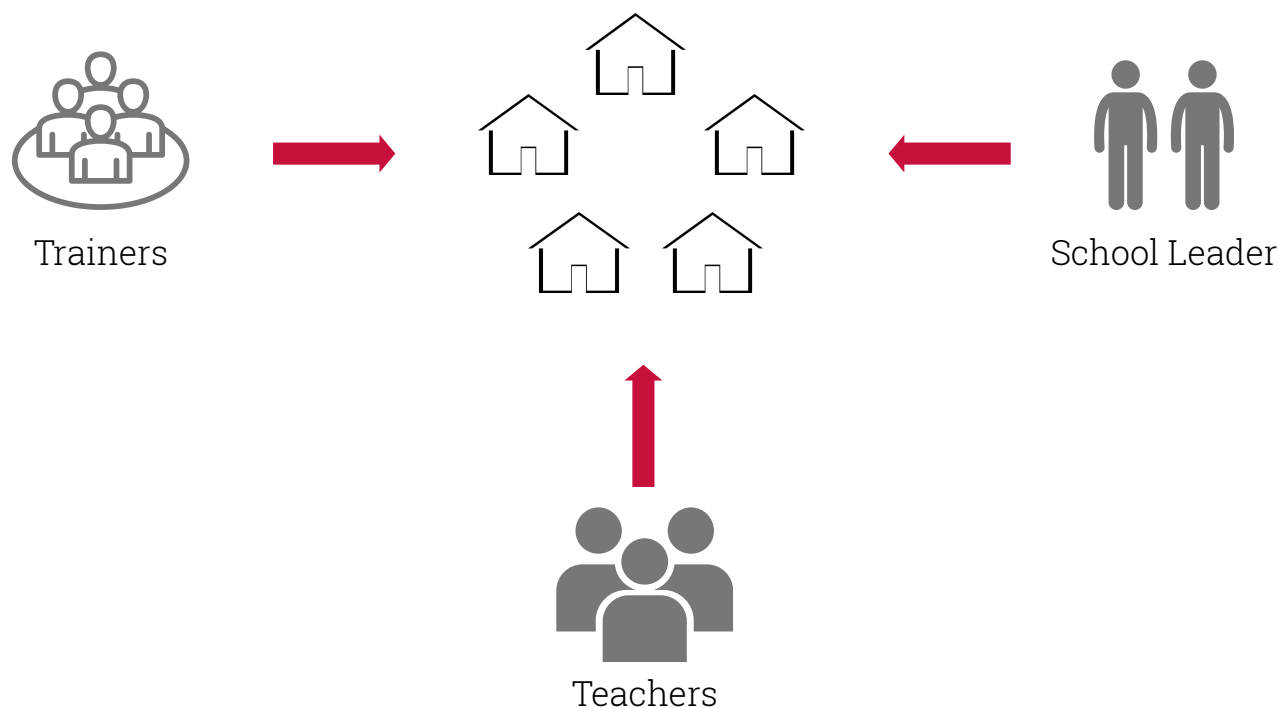
It is therefore recommended that donors and development partners prioritize introducing external expertise into the KnED system, in the form of knowledge (i.e. training content) and skills (i.e. capacity development). Developing the capacity of KnED trainers is critical, as several teachers indicated that challenges sometimes arise when trainers lack confidence in the material they are delivering. Trainer capacity development may be an overlooked area within the current system, and additional investment in upskilling trainers is strongly recommended. However, delays in submitting data to donors can hinder the timely identification and resolution of emerging issues.

Although KnED's senior leadership has expressed a preference for more robust, multi-month pre-service and in-service training programs, such models are likely unattainable given current resource constraints. In this context, it is both practical and strategic to further leverage local-level TPD efforts, which can be more flexible, responsive, and cost-effective.

A degree of tension exists between the decentralization preferred in collaborative professionalism - where TPD is more tailored to the specific needs of individual schools and their teachers - and the desire among some KnED stakeholders for greater standardization or uniformity across classrooms in the two temporary shelters. Introducing a cluster-based model and aligning CoP or PLC visions around a shared teacher competency standards framework could offer potential resolutions for this tension. Clusters would allow schools to share practices and learning with one another while still responding to localized needs. An agreed-upon competency standards framework would establish a consistent goal for TPD by clearly identifying the core competencies teachers are expected to develop. Although TPD may differ across schools due to different teacher capacities and school contexts, the cluster approach would enable collaborative learning across schools and teacher competencies would promote a degree of coherence without enforcing rigid uniformity.



**Figure 4. Example cluster-based CoP with five schools** (adapted from Jones et al. 2023, p.55)



In Myanmar, there is some potential to introduce CoPs or PLCs either within individual schools or across school clusters located in close geographic proximity. Such a model could help address the limited frequency of annual training sessions by embedding TPD at the local school level. It would also allow for greater self-organization of TPD modalities within the system, ideally aligned around a shared vision articulated through existing or newly developed policies and teacher competency standards. As the training manager reflected, there is already precedent for teachers leading their own learning opportunities:

Teachers are beginning to analyze their teaching weaknesses and identifying how they can improve their teaching through self-reflection...some have started doing self-study, and there have been improvements in [their] teaching methods.

*Training Manager, KII 1*

Collaborative professionalism could be led by high-performing school leaders, STF trainers, external professionals (including actors from other TPD systems operating in Karenni), or a combination of these. Multiple design options exist and should be explored with attention to contextual feasibility and alignment with local capacity. Ideally, these efforts would leverage the roles of field teams for data collection and sharing, and position trainers, headteachers, or high-performing teachers (such as those who have finished robust pre-service teacher training) as key TPD facilitators. However, further consultations with STF are needed to explore these possibilities and ensure alignment with organizational priorities and on-the-ground realities.

One possibility would be to re-orient the existing five trainers to serve as mobile teacher trainers, within them conducting more frequent field visits and facilitating school- or cluster-based TPD through a combination of training, coaching, and mentoring. Donors and development partners would likely need to support STF with the financial, material (i.e. training and coaching content), and human resources (i.e. capacity development) needed to achieve this redesign. In particular, improving the capabilities of trainers to work independently with confidence, such as through suggested lesson observation and coaching protocols, would provide a common framework. As reflected at the STF central level:

“ Since the camp is remote, we really depend on what opportunities and resources others can bring into the camp to share with us. What [donors and development partners] can give us, we are able to share back throughout the camp. Any resources we receive greatly helps our trainers and our education system.

Training Manager, KII 1

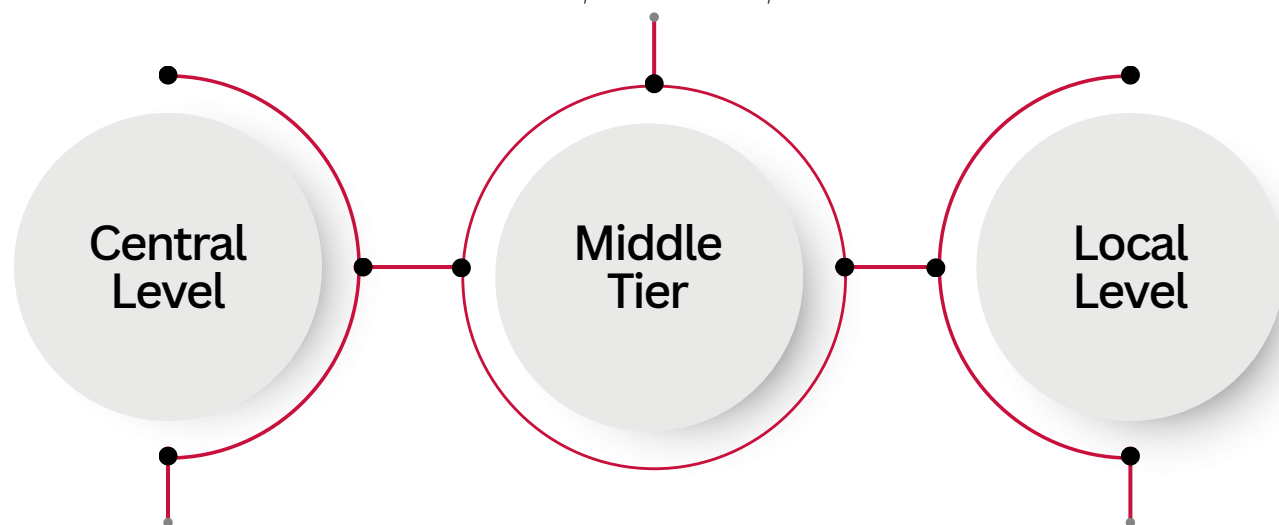


## 6.2 Endogenous systems leadership

The second proposed intervention draws on the work of Mitchell et al. (2022) on endogenous ('inner-driven') systems leadership, which is defined as

Distributed leadership grounded in local realities, involving multiple levels (local, middle, and central) within the education system.

Bridging these two levels is the **middle tier**, which consists of actors who serve as intermediaries between schools and central authorities: field teams, field offices, regional education officers, headteachers, and trainers.



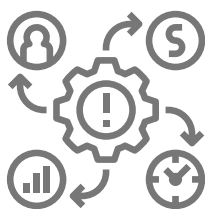

The **central level** comprises those bodies and persons holding the greatest formal authority within the education system: policymakers, education ministries, and other national bodies.

The **local level** refers to community members directly involved in teaching and learning: students, teachers, parents, and other local stakeholders.

Endogenous systems leadership depends on active participation from all three levels, with each level drawing upon its unique experiences, capacities, perspectives, and contextual realities to inform decision-making and shape collective action within the system.



**Table 9. Establishing endogenous systems leadership (adapted from Mitchell et al., 2022)**

Element	Description	Application
<p><b>System thinking</b></p> 	<p>Recognizing and accepting that systems are nonlinear and unpredictable based on the interactions of different elements within the system</p> <p>Seeking to understand how a system operates overall</p>	<p>Develop shared commitments and visions across the three levels</p> <p>Ensure policies are developed through participation across the three levels and reflect the realities of local and middle levels</p> <p>Ensure different policies complement each other within education and across sectors</p> <p>Align interests and priorities of the three levels with the agendas of donors</p>
<p><b>Strengthening system capacities and learning</b></p> 	<p>Developing new (likely untested) practices and improvised solutions</p> <p>Allowing solutions to be developed and tested at the local and middle levels without being centrally mandated</p>	<p>Enable an environment for flexibility, experimentation, and innovation at the local and middle levels</p> <p>Ensure multi-directional information-sharing to the extent possible across all levels</p> <p>Allow for the local and middle levels to operate with greater autonomy from central level (with reporting back to central level to the extent possible)</p>

In contexts affected by conflict and crisis, it is not uncommon for agents at the local and middle levels to demonstrate responsiveness and ingenuity in organizing and providing educational services under challenging conditions. Endogenous systems leadership actively supports and leverages this responsiveness and ingenuity. Rather than viewing problems merely as obstacles, it frames them as opportunities for innovation.

Moreover, endogenous systems leadership values diversity of practices and perspectives. It does not insist upon uniformity or complete consensus; instead, it recognizes that actions may differ across contexts, provided there is alignment on overall visions and commitments. This leadership approach anticipates and embraces the unexpected. It aims to foster flexibility and openness to experimentation and learning, rather than adherence to the status quo.

Endogenous systems leadership is well-suited for complex adaptive systems because of their inherently dynamic, emergent, and context-dependent nature. Complex adaptive systems involve numerous interacting agents, and endogenous systems leadership aligns with this characteristic by distributing authority and responsibility. Consequently, leadership becomes a social practice rather than a hierarchical position. This promotes responsiveness and flexibility within diverse local contexts, which is critical to navigating complexity.

#### **Box 4. Findings from studies on endogenous systems leadership**

Mitchel et al.'s (2022) research reflects on endogenous systems leadership in crisis-affected low- and middle-income countries: Burkina Faso, Jordan, and Kenya. Their findings highlight a set of strategies that are observed to be most effective in building and sustaining systems leadership:

- A central level that understands the operations and behaviors of the overall system, the key agents involved, and the nature of interactions within the system
- A central level that empowers the middle tier to contextualize and adapt implementation strategies in alignment with overarching goals and strategies
- A middle tier with the autonomy to make decisions in collaboration with the local level, without requiring prior approval from central authorities
- Straightforward and effective data systems and communication protocols for the middle tier to report information upward to the central level
- Clear and consistent communication from the central level to the middle tier
- Timely and appropriate resource allocation to both the middle and local levels
- Capacity development aimed at strengthening local school leadership and management
- Greater emphasis on coordination between the middle and local levels than between the central and middle levels
- An overarching commitment to decentralized management and decision-making structures

Endogenous systems leadership complements collaborative professionalism through its emphasis on strengthening and empowering mid-level actors (the middle tier). Systems leadership focuses on empowering mid-level actors with the authority, resources, and flexibility to act, and collaborative professionalism relies on these same actors to convene, support, and sustain meaningful TPD.

Within the Karenni TPD systems, this middle tier consists of headteachers, trainers, and field teams. These personnel are critical intermediaries between the central and local levels. They can gather and transmit data up the central level, and they can also support and enact policy and programming with the local level. In addition, they can provide coaching or mentorship in CoPs or PLCs, and facilitate school-to-school collaboration, such as through cluster-based models.

Collaborative professionalism flourishes in environments where local and middle-level agents are empowered to take initiative, share leadership, and pursue collective improvement. An endogenous systems leadership approach provides the legitimacy and structural support needed to enable decentralized decision-making and collaborative growth. However, this style of leadership may at present appear foreign to the middle and local levels of each system. On the one hand, there is a strong desire to receive more insights from the local level, as expressed by one STF leader:

“ We want to hear the teachers’ voices. But we do not have a formal procedure for doing this. I feel trainers are busy providing training and their capacity is limited. If we could more regularly monitor or check in with the teachers, this would be best.

Senior Leader, KII 1

On the other hand, there may be reluctance at the local or middle levels to take initiative with decisions. As a different STF leader reflected:

“ When we try to introduce bottom-up approaches to decision-making, they [middle and local levels] prefer to wait for the top level to make a decision and give them instructions, which they then follow...But it should be their responsibility to contribute to decisions and lead. This kind of confusion still occurs in many places.

Senior Leader, KII 2

## VII. Conclusion and Key Recommendations

Ultimately, the design of a TPD system - encompassing policies, procedures, and provisions - should aim to (i) provide direct support to help teachers address classroom challenges, thereby sustaining their instructional capacity, and (ii) introduce new pedagogical content knowledge to enhance and expand their professional competencies.

Unless otherwise specified, the following recommendations are intended to provide broad guidance for supporting the continued development of the Karenni TPD systems in Thailand and in Myanmar. While these systems operate in distinct contexts, we believe that promoting collaborative professionalism and endogenous leadership practices within each will yield significant benefits. These approaches align with the ways in which both systems already exhibit characteristics of complex adaptive systems and can help strengthen their capacity to respond to evolving needs, challenges and disruptions.

**Generate and utilize locally-driven data for middle-tier decision-making and response.** Strengthen data generation at the school level and empower the middle level agents to act on this information directly, thereby reducing any overreliance on the central level. Practical tools such as classroom observations (using structured rubrics), teacher profiles, and simple needs assessments should be introduced or scaled up to support the collection of relevant evidence during site visits. Storage of data should be straightforward, such as on tablets, with data shared through cloud networks, when available. As is feasible, transitioning from paper-based systems to digital and connected platforms can help streamline and expedite the sharing of important information and data across the TPD system. Decision-making protocols should be streamlined so that school leaders, trainers, and field teams at the middle level know how to use the data and can use the data directly without awaiting central-level validation.



**Experiment with new TPD designs and relevant tools.** Encourage adaptive experimentation by piloting new models of TPD such as communities of practice and professional learning communities. Where feasible, school-based clusters can be used to facilitate cross-school learning and collaboration, which would reinforce the decentralization and peer-led learning that underpins collaborative professionalism. Relevant tools will need to be created or scaled up to support the facilitation of new TPD designs by mid-level leaders. This may include action plans, coaching scripts, and guidelines for collaborative professionalism. Communities of practice and professional learning communities will require adequate resourcing to be sustained over time. This includes financial, material, human and time resources to support regular convenings and meaningful engagement. Appropriate incentives - such as performance-based pay, additional material support, or recognition and commendation - should be provided to those who take on facilitation roles in TPD structures.



**Table 9. Estimated Costs for Establishing a Community of Practice (CoP) or a Professional Learning Community (PLC)**

Cost Component	Estimated Annual Expenses (Baht)	Estimated Annual Expenses (USD)
Facilitator Stipend (per facilitator)	42,000-48,000 THB	\$1,300-\$1,500
Transportation, Training materials, Refreshment	120,000-150,000 THB	\$3,700-\$4,600
Capacity Building	100,000-140,000 THB	\$3,100-\$4,300
Incentives & Recognition	15,000-20,000 THB	\$500-\$600
<b>Estimated Total</b>	<b>277,000-358,000 THB</b>	<b>\$8,600-\$11,000</b>

The proposed annual budget can host weekly sessions throughout the year. Each section will accommodate 24-30 teachers.





**Introduce low-tech, context-appropriate TPD inputs.** TPD systems should incorporate content and delivery mechanisms suited to low-resource and unpredictable environments. Existing TPD materials should be adapted to the contexts of the temporary shelters and Karenni State. New TPD content should be developed in response to known, emerging, and anticipated teacher needs. Content development should ideally happen through collaboration with external technical experts. New modalities for content sharing can be explored, including the use of largely offline digital platforms, such as MoodleBoxes (or similar) or tablets preloaded with relevant content. Paper-based alternatives when electricity and internet access are limited should also be considered, although these may be more resource-intensive than digital options.

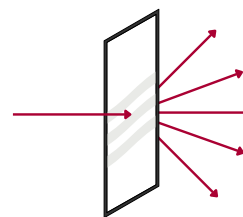
**Invest in the capacity of the middle tier (trainers, headteachers, field teams).** A core investment priority should be the professional development of trainers (and headteachers and field teams, as is relevant) through robust training-of-trainers programs. These should include practicum components, ideally led by external experts with contextual knowledge of the Karenni TPD systems in Thailand and Myanmar. A specific emphasis should be placed on developing coaching and mentoring competencies. Capacity building in data collection for headteachers and field teams may also be a relevant priority.



**Use central-level policies and frameworks to establish shared vision.** Policies and frameworks developed at the central level should provide a cohesive vision for teacher development across the system. This includes teacher policies, competency frameworks, curriculum standards, and broader education strategic plans. These tools can help align decentralized efforts, but they should also preserve flexibility at the middle and local levels.



**Avoid relying solely on linear theories of change.** In complex adaptive systems, outcomes often emerge unpredictably from interactions among diverse actors and elements. Linear models - such as logframes - assume predictability and leave little room for adaptive learning. Instead, complement or replace them with systems-aware and iterative approaches that embrace uncertainty, value learning over control, and support emergent change. Recommended alternatives or complements include outcome mapping (Earl, Carden, and Smutylo, 2001), adaptive theories of change (Borel, Brett, and Bryld, 2021), and systems- and complexity-informed MEAL approaches (Gates, Walton, and Vidueira, 2021).



**Harmonize strategies and pool resources across actors.** Donors and development partners should coordinate strategies and pool resources wherever possible when supporting the same education system. It is generally recommended that donors and development partners provide to the extent possible the financial, material, and human resources needed to experiment within the system. STF may want to explore closer collaboration with other education actors operating across Karenni State to reduce duplication of efforts, share knowledge, and build synergies across TPD initiatives. In Karenni, it is essential for all education actors to leverage their comparative advantage to maximize efficiency and effectiveness in delivering TPD support.



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## IX. Appendices

Table 11. Demographics of KII and FGD sample

	Temporary Shelters	Karenni State (Myanmar)
<b>Teachers</b>	n=6	n=9
Gender		
Male	0.17	0.00
Female	0.83	0.88
Not identified	0.00	0.12
Experience		
2 years or fewer	0.00	0.44
3-5 years	0.33	0.22
6-9 years	0.33	0.11
10 years or more	0.33	0.22
Level		
Primary	1.00	0.66
Middle	0.00	0.22
High	0.00	0.11
<b>School Leaders</b>	n=8	n=8
Gender		
Male	0.00	0.50
Female	0.00	0.50
Not identified	1.00	0.00
Experience		
2 years or fewer	0.00	0.37
3-5 years	0.25	0.37
6-9 years	0.50	0.00
10 years or more	0.25	0.25
<b>Teacher Trainers</b>	n=8	n=4
Gender		
Male	0.37	0.25
Female	0.62	0.75
Not identified	0.00	0.00
Experience		
2 years or fewer	0.12	0.50
3-5 years	0.37	0.25
6-9 years	0.37	0.25
10 years or more	0.12	0.00

	Temporary Shelters	Karenni State (Myanmar)
<b>Training Managers</b>	n=2	n=1
Gender		
Male	0.50	1.00
Female	0.50	0.00
Not identified	0.00	0.00
Experience		
2 years or fewer	0.00	1.00
3-5 years	1.00	0.00
6-9 years	0.00	0.00
10 years or more	0.00	0.00
<b>Org Leaders</b>	n=1	n=2
Gender		
Male	1.00	0.50
Female	0.00	0.50
Not identified	0.00	0.00
Experience		
2 years or fewer	0.00	0.00
3-5 years	0.00	0.50
6-9 years	0.00	0.00
10 years or more	1.00	0.50



When we provide teacher training, children who couldn't attend school can now attend school. Teachers who may not have wanted to teach become interested in teaching... [parents] also become interested in education. They support us much more, and work with us much more.