Teachers-in-the-Lead: Insights from Three Sandboxes

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Author: Flic Burgess

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AI Observatory

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EdTech Hub's AI Observatory and Action Lab exists to help drive greater equity in learning outcomes in the age of AI. The AI Observatory scans global trends, uses a hypothesis-driven approach to test practical applications, leads innovative pilots, and distils practical insights to support decision-makers in low- and middle-income countries.

Our goal is to ensure AI is integrated effectively and equitably, improving education systems and learning outcomes for all. EdTech Hub's AI Observatory is made possible with the support of the UK's Foreign, Commonwealth and Development Office.
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Contents

Abbreviations and acronyms

AI	Artificial Intelligence
AKF	Aga Khan Foundation
CoL	Community of Learning
FCDO	Foreign, Commonwealth and Development Office
FLN	Foundational literacy and numeracy
HCD	Human-Centred Design
LLM	Large Language Model
LMIC	Low- and middle-income country
MEWAKA	Mafunzo Endelevu kwa Walimu Kazini (Tanzania TPD programme)
RAISE	Rwanda AI Innovation for Schools and Education
TPD	Teacher professional development

1. Introduction

Why this work matters

For decades, teachers have played a vital role in unlocking learners' potential. It is thanks to the knowledge, experience, talent, and dedication of millions of teachers around the world that children have been able to read, write, and develop the social and emotional skills needed to lead a fulfilling life. Without doubt, teachers are at the heart of our collective ambition to achieve the United Nations' Sustainable Development Goal 4 (SDG 4) of inclusive and equitable quality education (↑United Nations, 2025).

We are at a point in history where we know more about how children learn than ever before. Progress in cognitive science, combined with the leaps in the science of reading (↑Alvarez Marinelli et al., 2025) and numeracy (↑Lutfeali et al., 2021), should put us in a strong position to improve education in the age of artificial intelligence (AI). However, inequity is among the most entrenched features of global education: learning outcomes remain stagnant and are significantly lower among the poorest and most marginalised learners (↑Pedro Azevedo et al., 2022). Moreover, a significant digital divide exists, leaving many of the world's learners without access to digital infrastructure or digital literacy. (↑UNESCO, 2023). This combination means that, unfortunately, AI is likely to widen this learning divide unless we design alternatives now (↑Luz & Simpson, 2025).

AI offers a genuine opportunity to transform education systems by automating administrative burdens, enabling more personalised support, and freeing up time for the high-quality instruction that drives learning. But realising this potential depends both on the technology itself and the people using it. While much of the current debate focuses on what new advances in technology can and cannot do, it often overlooks the crucial role teachers should play in defining how this technology is used. The International Task Force on Teachers for Education 2030 is clear on this point: AI's benefits in education largely depend upon the expertise and ethical judgement of teachers (↑Teacher Task Force, 2025). Without them, effective implementation is simply not possible.

Involving teachers meaningfully in the use and development of AI in ways that build agency without adding to their existing workload requires

careful design. While education systems are not new to continuous improvement, and the role of teachers has always evolved, the current pace of change is faster than ever before. As AI capabilities accelerate, the window for getting design decisions right is narrow, and education systems must be able to test, learn, and adapt in order to meet today's challenges. Learning at pace means building the conditions in which teachers can engage critically rather than simply deploying more tools and hoping for the best.

It is this hypothesis, that teacher engagement is not a courtesy but a condition for impact, that drives the Teachers-in-the-Lead initiative: a portfolio of sandboxes focused on centring teacher voices in the design and implementation process of AI-enabled tools meant for them. This report presents results from these three case studies, which together test the hypothesis in the box below.

> *If teachers are meaningfully engaged in shaping how AI is used, we will unlock more effective, equitable, and grounded approaches that improve teacher well-being, enhance the quality of teaching, and strengthen student learning outcomes.*

Report outline

Following this general introduction, the report is structured as follows.

Section 2: Introduction to the sandboxes

In this section, we take a broad look at the importance of empowering teachers in the age of AI and introduce the Teachers-in-the-Lead Sandboxes. We explain our sandbox methodology, which offers a practical and rigorous route to rapid testing of learning and iterating on AI-enabled solutions.

Section 3: Sandbox case studies

In this section, we share insights from the three Teacher-in-the-Lead Sandboxes. Taleemabad,[1] a Pakistani EdTech Platform, Rising Academies,[2] an education organisation in West and East Africa, and the international

[1] See https://taleemabad.com/. Retrieved 26 May 2026.

[2] See https://www.risingacademies.com/. Retrieved 26 May 2026.

development agency, the Aga Khan Foundation[3] ran sandboxes in Pakistan, Rwanda, and Tanzania, respectively, to explore the same underlying question: How might we meaningfully engage teachers in shaping how AI is used?

Section 4: Key learnings

Finally, we share what we learnt across all three sandboxes regarding promising teacher use cases in the age of AI, and the value and challenges of centring teachers in the design process. We also provide recommendations for those looking to bring teachers into the lead in the AI product development chain.

[3] See https://akf.org/. Retrieved 26 May 2026.

2. Introduction to the sandboxes

How we think about teachers in the age of AI

With so many ways to integrate AI into teaching and learning, knowing where to start is itself a challenge. A Theoretical Framework, developed by EdTech Hub's AI Observatory, offers a useful way in. The framework describes three distinct horizons of change: upgrading current practice with AI, disrupting existing structures, and transforming the role of teachers altogether (↑Luz & Simpson, 2025). Building on this framework, the AI Observatory and Action Lab developed a series of learning briefs, which synthesised the evidence of teacher-facing use cases across these three horizons (↑Adam & Lester, 2025; ↑ 2026); ↑Adam, 2026). Table 1 below summarises this analysis, tracing use cases from incremental workflow improvements through to fundamental reimaginings of the teacher's role.

Table 1. *The Three Horizons Framework for empowering teachers*

	Horizon 1	Horizon 2	Horizon 3
The shift	Change happens incrementally within existing structures.	Turbulent space of innovation as society shifts from the status quo to a new paradigm	Radical new visions of the future compete to be the future dominant system
What this means for teachers	**Upgrade:** Early integration of AI into teachers' roles, where some existing tasks and processes become streamlined or enhanced, while new demands emerge around oversight, adaptation, and judgement.	**Disrupt:** AI use becomes more formally evaluated and embedded in teaching, addressing some early identified issues and disrupting aspects of teachers' roles in ways that shift their practice or time allocation.	**Transform:** The role of teachers is fundamentally changed, with AI being a core facet of the teaching and learning experience in novel ways.
Use cases	AI for lesson planning AI for administrative tasks AI for assessments and feedback AI for professional development	AI-powered digital personalised learning AI tutor chatbots AI teaching assistants AI-powered inclusive education and language accessibility	"Teacherless" classrooms Teacher-AI complementarity and hybrid intelligence

This framework is useful because it helps map how change is happening and identify where the evidence is thin. While transformative use cases are beginning to emerge, most teachers need support with more immediate, practical integration. This is the horizon where the Teacher-in-the-Lead Sandboxes operate.

From ‘in the loop’ to ‘in the lead’

Recent work on strengthening teacher agency in the age of AI has underscored the importance of placing teachers’ voices, creativity, and professional judgement at the heart of decision-making (↑Teacher Task Force, 2025).

In particular, ↑Hau (2025) argues that, in education, the ‘human-in-the-loop’ metaphor, borrowed from engineering, is dangerous and risks positioning AI as the primary actor and teachers as secondary safeguards. Hau’s solution is to move beyond the loop entirely to ‘pedagogy-first design’. In this approach, defining what good teaching and learning look like comes first, before you decide if and how AI fits, not the other way around.

To understand where teachers’ energy and curiosity about AI currently sit, EdTech Hub conducted a pulse survey before launching the Teacher-in-Lead Sandboxes. In the survey, over 800 teachers from 29 low- and middle-income countries (LMICs) shared how AI is already influencing their work.

Four unmet needs emerged from the survey. Teachers asked for:

1. **A greater emphasis on professional growth.** Teachers want AI to help guide better pedagogical approaches, not just save time.
2. **Protection of student cognition.** Teachers want frameworks for critical reflection and evidence-informed debate about how, when, and where AI supports meaningful learning.
3. **Formal guidance**. Teachers want to build confidence to explore AI safely and responsibly.
4. **Accessible training and resources**. Teachers want inclusive, teacher-led support for all, especially for teachers who feel left behind.

Also evident from the Teacher-in-the-Loop pulse survey is that teachers do not wait for perfect conditions before beginning to experiment. Even

though only 45% of survey participants have reliable access to electricity, the internet, and devices at school, 82% of teachers reported already using AI. Most common use cases were 'as an aid for subject research' and 'information gathering' (↑EdTech Hub, 2025).

How we generate evidence with sandboxes

To respond to these insights, EdTech Hub supported three Teacher-in-the-Lead Sandboxes. Over four months, the three implementing partners, Taleemabad, Rising Academies, and Aga Khan Foundation, each identified a specific challenge and then explored how AI-enabled tools might help address it. The goal was not just to improve the tools, but to generate evidence on what works (and what doesn't) in genuinely bringing teachers into the lead.

Each sandbox was designed around the same core logic:

1. Start with what teachers are already doing and the challenges they already face.
2. Co-design tools with teachers, not for them.
3. Test and iterate based on real classroom use.
4. Document the process as carefully as the outcome.

Importantly, the sandboxes were not only focused on the conventional success of AI tools. They were learning exercises that helped test specific components of a new solution under real-world conditions. Failure was expected and valued as learning.

What is a sandbox?

A sandbox[4] provides a space to test and grow ideas in conditions of uncertainty. At EdTech Hub, we break down sandboxes into short sprints, learning and iterating as we go, each sprint informing changes and new ideas for the next.

The goal is to generate real-time evidence that directly informs implementation. We draw on lean impact and user-centred design to get to learning as fast as possible and make interventions as robust as possible. In practice, this means running small-scale experiments, gathering feedback, and adapting quickly based on what actually happens.

[4] See https://edtechhub.org/the-sandbox-method/. Retrieved 1 June 2026.

In the Teacher-in-the-Lead Sandboxes, teachers were not just end users of the tools being tested, but active participants in shaping them. A sprint structure gave partners a disciplined way to involve teachers in making decisions about what to build, what to change, and what practices or features to discontinue. Across the three sandboxes, we set out to understand the added value of each AI tool and the benefits of bringing teachers into the design and development process.

How we selected partners

We selected partners who were already driving innovation in education and working closely with teachers. The selection process identified organisations meeting the following evaluation criteria:

- Demonstrated experience working directly with teachers on AI-enabled or EdTech initiatives;
- Strong AI readiness within the team and/or existing AI initiatives that could be accelerated through co-design with teachers;
- Commitment to embedding within schools to understand real teacher challenges before building solutions;
- Diversity of geography, context, and educational focus.

The sandboxes were designed to build on existing momentum. Table 2 (below) provides key details about our sandbox portfolio.

Table 2. *The Teachers-in-the-Lead Sandboxes at a glance*

	Taleemabad	Rising Academies	AFK (Schools 2030)
Country	Pakistan	Rwanda	Tanzania
Challenge	Multi-grade teaching demands planning support that doesn't exist.	Teachers need better support to prepare and deliver lessons effectively and reduce workload.	Professional development does not consistently reach all teachers.
Focus AI use case	AI-powered lesson planning for multi-grade classrooms	AI for teacher instructional support	AI to strengthen professional development & peer-to-peer learning
AI tool	Lesson Genie (WhatsApp chatbot)	Tari (WhatsApp chatbot)	Teacher-developed prototypes
Language	Urdu + English	Kinyarwanda + English	Kiwahili + English
Teachers leading in the sandbox	200+ teachers.	13 teachers and 4 school leaders across 2 primary schools	28 lead teachers across 4 primary schools
School type	Public–private partnership schools	Government schools	Government schools

How the sandboxes built on existing evidence

It's important to note that these sandboxes are a small carve-out within existing programmes that already have evidence of effectiveness. Taleemabad, Rising Academies, and Aga Khan Foundation all have a proven track record of improving foundational literacy and numeracy learning outcomes in their contexts. Both Tari and Lesson Genie are designed to slot into structured pedagogy programmes, building on the strong body of evidence suggesting that this kind of intervention (a package that includes structured lesson plans, learning materials, and ongoing teacher support) is a cost-effective way to improve learning. (↕Akeyampong et al., 2023). By embedding AI tools within existing

programmes, the sandboxes are seeking to accelerate and strengthen what is already working.

These sandboxes also draw on existing evidence around technology use for teacher professional development in LMICs. In particular, this body of evidence suggests that teacher professional development tends to be more successful when designed with teachers rather than imposed (↑Hennessy et al., 2022).

3. Sandbox case studies

In this section, we provide summaries of each of our Teachers-in-the-Lead sandboxes. Each case study covers three parts: the challenge and the AI-enabled solution built to address it; how teachers led the design process; and what was learnt as a result.

Sandbox 1: AI to improve multi-grade lesson planning

Region, country	Islamabad, Pakistan
Implementing partner	Taleemabad
AI use case	Lesson planning
AI tool	Lesson Genie: WhatsApp tool
What the team set out to learn	If teachers co-design AI tools with developers (rather than having tools designed for them), might we see higher uptake rates and improved outcomes?

The challenge and the AI-enabled solution

Most primary school teachers in Pakistan work in multi-grade classrooms, sometimes managing two, three, or even five grades in a single room. Over 85% of schools in Punjab, for instance, use multi-grade teaching (↑I-SAPS, 2024). Lesson plans need to account for multiple curricula simultaneously. However, teachers have had little to no dedicated pedagogical support to help them do this. Teachers in this sandbox reported spending over an hour each day on planning alone. They felt pressure to cover the syllabus but lacked the tools to do so efficiently.

Taleemabad works with teachers across public schools and public–private partnerships in both rural and urban settings. Yet, multi-grade teaching is not unique to Pakistan; it is a widespread reality in many LMICs, and excessive planning burdens are a documented driver of teacher attrition (↑UNESCO & International Task Force on Teachers for Education 2030, 2024). Addressing this represents a meaningful opportunity for teacher workforces across LMICs.

The tool: Lesson Genie

Lesson Genie is a bilingual WhatsApp AI chatbot that generates instant, textbook-aligned lesson plans for primary school teachers. Teachers enter information about the grades they teach (Prep to Grade 5), the subject (maths, English, or Urdu), and the topic or page range from the government-approved textbook. Lesson Genie then generates a structured plan adapted to the multi-grade context, including timing guidance.

Each plan follows five components: opening, teacher explanation, guided and pair practice, independent practice, and conclusion. The tool generates responses in both English and Urdu, and works offline after download.

How Taleemabad brought teachers into the lead

Immersive scoping of teacher challenges

Before building anything, the Taleemabad development team spent one month embedded in schools. Rather than merely observing from a distance to understand the teachers' reality firsthand, Taleemabad's Learning Design Team closely shadowed teachers and also actually performed the full range of tasks teachers do every day: for example, taking attendance registers, planning lessons, and calling parents. Through this process, the team noticed that planning multi-grade lessons was the biggest pain point for teachers, and so this emerged as the clearest priority. During this time, the Design Team also had many conversations with teachers. Teachers showed the team that they were already improvising, using WhatsApp and ChatGPT to generate ideas for classroom activities. This directly shaped the decision to build on WhatsApp because it was a tool teachers were already using and familiar with. This immersive experience stopped the Design Team from assuming they knew what teachers needed.

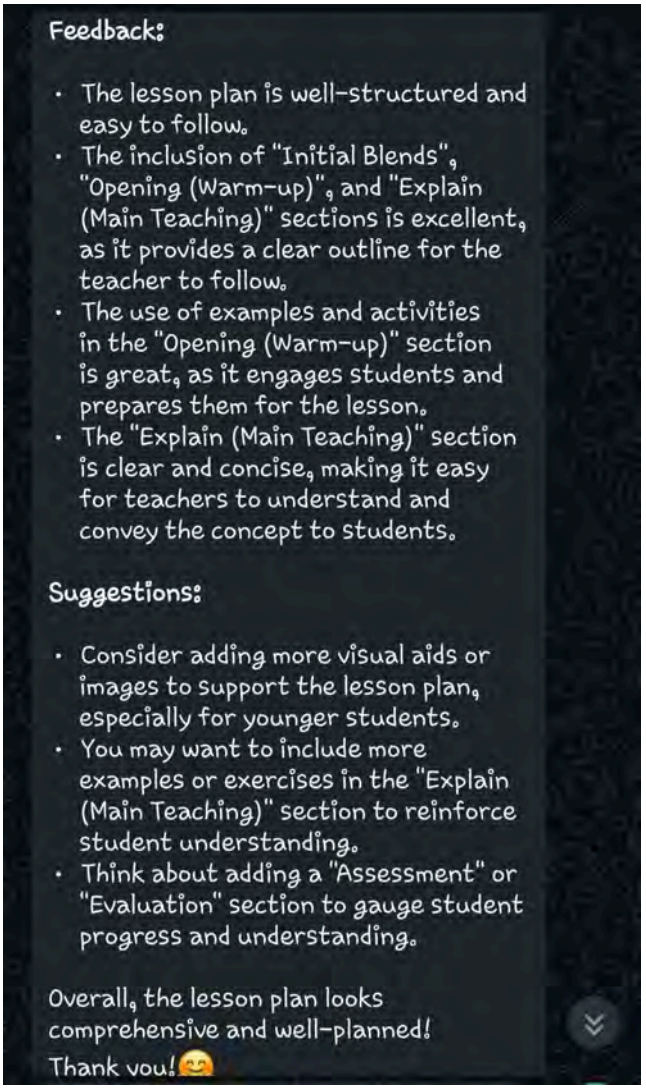
Ongoing co-design during iteration

Once LessonGenie was live, teachers stayed in the lead through several mechanisms:

- A WhatsApp onboarding group with 17 head teachers, which provided a trusted channel for organic feedback and connected headteachers directly with the Taleemabad design team and academic lead. This channel captured unsolicited, real-time

responses to Lesson Genie, including screenshots of lesson plans that teachers had used.

Figure 1. *Teacher submitting real-time feedback into the WhatsApp Group*



- An in-bot feedback survey prompt after each lesson plan, capturing ratings and suggestions. The survey collected both quantitative ratings and open qualitative responses, and results were tracked through a dedicated feedback dashboard. This was then reviewed by the Design Team, including academic team members and product developers.
- Weekly co-design sessions with cluster groups gave teachers a space to share progress, raise challenges, and shape the development of the tools. For example, in these sessions, teachers flagged that the OCR exam board textbook they were using sometimes had different

page references, which meant Lesson Genie would at times generate the wrong lesson plan. So Taleemabad added a page-verification feature to make Lesson Genie more accurate in aligning with the textbooks teachers were using.

- Usage patterns were tracked continuously via PostHog (a product analytics tool), giving the development team real-time visibility into how teachers engaged with the tool, including which features were used and how often they returned.

What Taleemabad discovered

Teachers saved significant time on lesson planning

Over approximately 100 days during the sandbox, Lesson Genie generated 514 lesson plans across 200 teachers, with 36 daily active users and 107 weekly active users. Lesson planning time dropped from around an hour (based on teachers' self-reports gathered during the pre-build immersion phase) to one to two minutes, with teachers then able to review and adapt the lesson plan before teaching. In this way, Lesson Genie generated a structured lesson plan which shifted teachers' time from planning and administration to reviewing and refining content for their specific learners. Teachers rated the tool 3.8 out of 5 overall and 4.2 out of 5 specifically for the multi-grade features, based on feedback surveys completed via an in-bot rating prompt that was triggered automatically after each lesson plan was generated.

Building on WhatsApp, not a custom app, supported uptake

Teachers were already using WhatsApp. This meant the team did not need to create a lengthy onboarding manual or invest in coaching time to help teachers understand how to use it. Importantly, low data requirements and a familiar interface removed barriers that a new platform may have created.

Teachers who shaped the tool became its champions

Co-design appeared to build ownership of Lesson Genie, and the team noticed that teachers who had shaped the tool later became its advocates. Peer-to-peer sharing drove adoption more quickly than a previous, more top-down tech rollout led by Taleemabad. In this sandbox, scaling from 17 to 200 teachers happened organically through peer-to-peer sharing, without any top-down pressure from the Taleemabad central team.

Teachers were also seen using the tool unprompted during the winter school holidays, which may indicate that teachers found it useful rather than signalling compliance.

Taking time to dive deep into the teacher experience paid dividends

Starting with immersion stopped the team from building something teachers did not need. For example, before the sandbox began, the team had initially assumed most teachers worked in single-grade classrooms; it was only by spending a full month embedded in schools that they discovered teachers were managing two, three, or even all five grades simultaneously, which became the central design challenge.

Taleemabad treated iteration cycles as the core of the work, which allowed Lesson Genie to continue improving. A launch-and-train model was unlikely to achieve the same results because every feature in Lesson Genie that teachers value most can be traced back to something a teacher said. Here are some examples from this sandbox:

- **Bilingual output in English and Urdu.** During the initial 17-teacher pilot, teachers requested that lesson plans be generated in both English and Urdu, as English-only output didn't reflect how they actually worked.
- **Textbook page verification.** In Week 2, after teachers flagged that the bot was referencing incorrect pages, a photo-verification feature was added so they could confirm textbook alignment themselves.
- **Per-section time breakdowns.** In Week 3, following the teacher's requests for clearer time guidance, the tool was updated to show the duration of each activity in the lesson plan.
- **Pedagogically structured lesson format.** Teacher and academic team feedback that early outputs felt generic led to plans being restructured around the concrete-pictorial-abstract approach for maths and a four-skills (listening, speaking, reading, writing) framework for literacy.
- **Revision plans ahead of exams.** Through ongoing feedback channels, teachers flagged a need for exam-focused revision plans, which were added as a feature.

Sandbox 2: Instructional guidance using AI in Rwanda

Region, country	Kigali, Rwanda
Implementing partner	Rising Academies
AI use case	Real-time instructional support
AI tool	Tari: WhatsApp teacher support
What the team set out to learn	If teachers have access to an instructional support tool that reduces planning time, will they spend more time on instruction and improve teaching quality?

The challenge and the AI-enabled solution

Founded in Sierra Leone, Rising Academies has over a decade of experience supporting teachers across East and West Africa, including 3 years working on foundational literacy and numeracy programmes in Rwanda. They provide structured pedagogy teacher guides, training, and in-school coaching aligned with Rwanda's competency-based curriculum. Through the Rwanda AI Innovation for Schools and Education (RAISE) initiative, Rising Academies are piloting AI-powered tools with teachers in government-funded schools.

Rwanda's language of instruction policy has shifted repeatedly since independence, creating a challenging environment for teachers and learners (↑Trudell, 2016) (see Table 3 below). Since 2019, English has been the mandated medium of instruction across all primary grades, yet many teachers were trained under the Francophone system and adopted English only during tertiary training (↑Makonye & Mudhumo, 2023). A 2018 study found that just 38 per cent of teachers likely to be affected by the most recent change had a working knowledge of English (as reported in ↑Makonye & Mudhumo, 2023). As the Rising Academies sandbox revealed, this context shaped how teachers actually used the Tari AI tool.

Table 3. *Evolution of Language of Instruction Policy in Rwandan Primary Education.* Sources: ↑Makonye & Mudhumo, 2023; ↑Ministry of Education, Rwanda, 2019; ↑Samuelson & Freedman, 2010; ↑Trudell, 2016

Year	Lower Primary (Grades 1–3)	Upper Primary (Grades 4–6)
Pre-2008	Kinyarwanda	French
2008–2018	Kinyarwanda	English
2019–present	English	English

Across many LMICs, teachers are routinely expected to deliver instruction in a language that is not their mother tongue, and the evidence consistently shows this places significant burdens on both teachers and learners (↑Trudell, 2016). Addressing this represents a meaningful opportunity not just for Rwanda, but for teacher workforces across the many LMICs navigating similar tensions between language policy and classroom reality

The tool: Tari

Tari[5] is an AI-powered teacher support tool available on WhatsApp. Teachers can message Tari for support via a conversational interface. In this way, Tari provides on-demand guidance for teachers, offering real-time support with curriculum-aligned lesson planning, pedagogy, and student assessments. Rising Academies had already launched Tari in Sierra Leone and Liberia within their own schools, but deployment in Rwanda marked the first time they were focusing on government teachers. Adapting the tool locally implied doing this in alignment with Rwanda's competency-based curriculum.

How Rising Academies brought teachers into the lead

Surfacing teachers' needs

Using a baseline survey of 40 teachers, the programme team quickly identified headline challenges, such as heavy lesson-preparation workloads and limited internet connectivity.

[5] See https://www.risingacademies.com/tari. Retrieved 26 May 2026.

The academic and product managers also spent time listening to teachers during school visits, going beyond what a survey could capture. These visits proved essential for building a sense of safety, which allowed teachers to speak openly about the challenges of planning and teaching lessons in English. The product team could also witness the language barrier directly in conversations with teachers, observing first-hand the uncertainty that came with being expected to teach in English. This insight directly shaped Tari's design priorities for use in Rwanda's government schools.

Ongoing co-design during iteration

Once Tari was live, teachers stayed in the lead through several mechanisms:

- Sprint planning cycles always began with a structured 'download' of teacher feedback, ensuring that developers could connect any feature changes to what was happening in the classroom. This mechanism ensured that teachers' priorities directly led every product development cycle.
- Weekly feedback huddles where the academic and product teams synthesised teacher insights and observations.
- WhatsApp groups connected teachers directly with the academic teams and school leaders.
- Continuous validation loops using backend data. For example, the data showed teachers switched from English to Kinyarwanda when interacting with Tari. Because Rwanda's government mandates English as the medium of instruction, this had not been anticipated in the tool's original design. Rather than acting on data alone, the academic team went back to schools to validate what they were seeing. Some teachers were privately using Tari to rehearse pronunciation before students arrived. Today, 30%–40% of Tari conversations include a translation request. The primary medium of instruction remains English, reinforcing the policy, but teachers now have some additional linguistic support when they need it.

What Rising Academies discovered

Teachers repurposed Tari to solve their most urgent needs, revealing a gap between design assumptions and classroom reality. The team initially expected teachers to use Tari solely as a lesson planning tool aligned with Rwanda's competency-based curriculum. But as teachers began using it, a different pattern emerged. Teachers predominantly used the tool for English language support, including pronunciation guidance, vocabulary, and confidence-building for teachers delivering content in English, which was not their first language. The team observed teachers privately rehearsing English pronunciation with Tari before students arrived. Rather than a design shortcoming, this exemplified how teachers repurposed the AI tool to address another pain point.

Adapting to a focus on Kinyarwanda proved crucial, even if English is the official language of instruction. Despite Rwanda's English-first policy, teachers naturally used Kinyarwanda in conversations with Tari; it was how they thought most fluently. The tech team spotted this in usage data, validated it through interviews, and quickly built a translation feature. Teachers are required to teach in English, but now have additional support when they struggle. This solution emerged from listening to what teachers' user data showed.

Embedding teacher voices into the development team's sprint rhythms meant feedback shaped every sprint, making teachers true product stakeholders. Every sprint began with a 'download' of what teachers had shared about their experience using Tari. Weekly feedback huddles and WhatsApp groups ensured teacher input was continuously embedded, rather than marginal. In this way, developers could iterate on the tool based on the classroom realities. Throughout this sandbox, teachers weren't passive beneficiaries; they were stakeholders whose suggestions became features they then tested and refined.

The rhythm of co-design mattered as much as the mechanism. When teachers saw their suggestions become features and tested them in their own classrooms, they understood they were shaping the tool. For example, when teachers told product developers that the American English accent on Tari was not relatable, the developers responded by recording one of the teachers and using that recording as the default Tari voice instead. This visibility of their influence built ownership and credibility among teachers, as it provided evidence that their opinions make a tangible difference to the product.

Sandbox 3: AI to strengthen peer-to-peer support

Region, country	Lindi (Mtama District), Tanzania
Implementing partner	Aga Khan Foundation (Schools 2030)
AI use case	Teacher professional development
AI tool	No pre-existing tool; teachers built prototypes during the sandbox
What the team set out to learn	How might we use AI to strengthen peer-to-peer support and informal learning networks to improve the quality of professional development for all teachers?

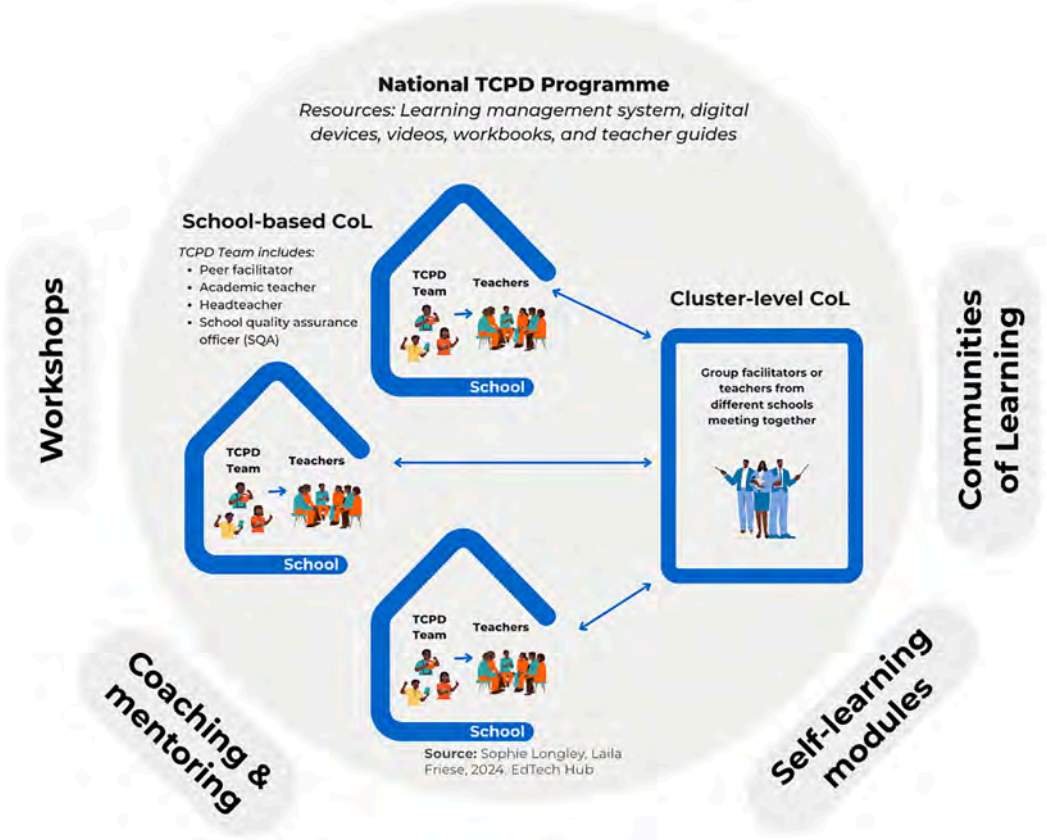
The challenge and the AI-enabled solution

The Aga Khan Foundation (AKF) is one of Tanzania's most established education partners, working across nine regions in partnership with 358 government schools and 3,600 teachers. The teachers who self-selected to participate in this sandbox were already part of the Schools2030[6] programme, an innovation initiative in which teachers work in design teams to develop and test classroom solutions. This meant that the 'lead teachers' participating in this sandbox had prior experience with design thinking and iterative testing, which positioned them well to lead AI exploration(↑Schools 2030, 2025).

At the heart of Tanzania's national approach to teacher professional development is MEWAKA (Mafunzo Endelevu kwa Walimu Kazini), the government's teacher continuous professional development programme (↑Adam et al., 2026). MEWAKA brings learning into schools through Communities of Learning, weekly, peer-facilitated spaces where teachers reflect on challenges and share approaches. Earlier research by EdTech Hub in Lindi found encouraging signs: teachers' engagement was growing, with participation becoming more voluntary and self-directed (↑Koomar et al., 2024). Yet, there was another question worth exploring: How could AI strengthen and accelerate what was already working?

[6] See https://schools2030.org/tanzania/. Retrieved 26 May 2026.

Figure 2. *The MEWEKA programme structure. Source:* ↑Adam et al., 2026



Rather than attempting to reach all teachers simultaneously with AI, this sandbox focused on engaging the most motivated teachers, called 'lead teachers', to explore using AI effectively, experiment with ways to use AI to enhance their experience of professional development, and then share that value outward through existing peer networks. This framing recognises that meaningful change in professional practice rarely begins everywhere at once.

The tool

Unlike the other two sandboxes highlighted in this report, the Aga Khan Foundation did not enter the sandbox with a pre-built AI tool to test. Instead, they had a compelling question and familiarity with human-centred design methodologies. (↑Aga Khan Foundation, 2024). They put teachers in the position of identifying the root cause of why teacher professional development was not consistently reaching all teachers. Then, the lead teachers used Lovable, an AI-powered app builder, to create a prototype tool to test back at their schools. To get to this point,

AKF first needed to build teachers' confidence in and curiosity about AI, which it began by holding a three-day design sprint.

How the Aga Khan Foundation brought teachers into the lead

Starting the sandbox with a three-day design sprint

The Aga Khan Foundation brought 28 lead teachers together for a three-day human-centred design workshop.

Before the workshop, the core programme team conducted a baseline survey to inform the agenda for the three-day design workshop. This survey captured their access to digital devices and reliable internet, prior experience with AI tools, the tasks they most wanted AI to help with, and their current habits regarding continuous professional development.

Day 1–AI Exploration: Aimed to build a shared, critical understanding of AI before any design work began. Sessions moved from conceptual foundations, including AI as pattern recognition, the risks of hallucination, and bias, to hands-on experimentation with tools such as ChatGPT, Lovable (an AI-powered app builder), and Suno (an AI music-generation platform).

Day 2–Launch, Explore, Define: Grounded the sandbox in teachers' lived experience. Teachers mapped existing peer learning practices and surfaced root causes of barriers that stopped all teachers from attending consistently. The specific challenges that emerged were: heavy workloads, staff shortages, large class sizes, unreliable connectivity, and, for many teachers, the lack of accessible tools in Kiswahili.

Day 3–Generate, Make, Test: Teachers generated ideas for AI professional development solutions individually, and clustered and voted on the most promising ones. They developed these ideas using an Ideas Dashboard, which is a structured template covering what the ideas were, who they were for, how they would work, and why they mattered. Teams then used Lovable to design a prototype to test in the schools.

Figure 3. *Lead teachers generate ideas about how they could use AI to strengthen peer-to-peer professional development relationships*

What did teachers gain from the three-day design sprint?

A pre / post survey of 27 lead teachers measured changes in their confidence in using and their understanding of AI across the three days.

- **Confidence in using AI rose sharply.** Before the workshop, only 15% of lead teachers felt very confident engaging with AI tools for their professional learning. By the end, that figure had risen to 63%.
- **Understanding of AI's capabilities and limits became much clearer.** Before the workshop, 70% of teachers were uncertain or undecided about what AI tools can and cannot do. Afterwards, all 27 reported agreeing or strongly agreeing that they understood AI's capabilities and limitations better.
- **Awareness of AI's risks increased alongside teacher confidence.** The share of teachers who strongly agreed they understood important limitations and risks of AI tools rose from 26% to 63%, suggesting the workshop built critical engagement with AI, not just enthusiasm for it.

Lead teacher prototypes that were tested

Following the design sprint workshops, four lead teacher teams returned to their schools and ran experiments over eight weeks, each tackling a different barrier to peer learning and engagement with the MEWAKA programme. The four experiments were designed to test distinct approaches to the same underlying problem: that teachers want to learn from their peers, but the conditions to do so are rarely in place; could AI help make a difference? Table 4 below shows what the lead teachers set out to test.

Figure 4. *Lead teachers generated four prototypes to test in their schools*

Table 4. *Lead teacher prototypes at a glance*

Prototype team	Problem	What lead teachers tested	How they measured signals of change
Digital Jumuiya za Kujifunza (JzK) (Communities of Learning)	Low participation in MEWAKA sessions due to weak professional relationships among teachers.	Whether AI-generated lesson plans, teaching aids, and Community of Learning summaries would improve the quality of materials and broaden participation.	Blind peer review of AI vs non-AI materials using a shared rubric; Community of Learning attendance.
Jifunze AI kwa vitendo (Learn AI by Doing)	Teachers are not consistently ready to engage with or independently apply new knowledge.	Whether teachers would use AI to prepare lesson materials on their own, outside of organised training sessions.	Attendance across three orientation sessions; submission of lesson plans, notes, and teaching aids.
Mewaka Kiganjani (MEWAKA on the Go)	Heavy workloads and staff shortages prevent consistent Community of Learning attendance.	Whether flexible digital scheduling (WhatsApp and Zoom) would sustain participation where in-person sessions could not.	Attendance and asynchronous contributions across five digital Community of Learning sessions.
Mwalimu Link (Teacher Link)	Teachers lack the time to attend MEWAKA sessions.	Whether a shared repository of AI-generated continuous professional development materials would give teachers access to professional learning on their own terms.	Materials uploaded; proportion of teachers who accessed and used them in the classroom.

Ongoing co-design during iteration

Once the prototypes were live, teachers stayed in the lead via several mechanisms:

- Weekly Zoom meetings with the Aga Khan Foundation programme team provided lead teachers with a structured space to share progress, troubleshoot challenges, and reframe experiments as needed. For example, when teams first submitted their experiment plans, they read more like rollout plans than tests. The weekly calls became the mechanism pushing teams to identify their most uncertain assumptions and define what evidence would tell them if they were right.
- WhatsApp groups for lead teachers enabled them to share ongoing reflections between check-ins, keeping a continuous record of what was happening in schools in real time.
- A mid-sprint review gave teams the opportunity to compare notes across the four experiments and identify emerging patterns. For example, at this point, the Aga Khan Foundation noticed that all four teams were converging on lesson preparation as their primary use case rather than the peer-learning structures the sandbox had originally set out to strengthen.
- Endline surveys, interviews, and focus group discussions captured what had changed by the close of the sandbox regarding confidence in using and understanding AI, participation in the MEWAKA Community of Learning, and the experience of the design process itself. Data was gathered from both lead teachers who had designed and run the experiments, and from the wider group of teaching colleagues who had attended Community of Learning sessions during the experimental period, giving the team two distinct vantage points on what the sandbox had changed. Teams also recorded what had *not* happened as expected.

What the Aga Khan Foundation discovered

When teachers are the ones who lead design, they solve their actual problem, not one someone else perceives as a problem. The sandbox was framed around strengthening peer-to-peer learning within MEWAKA

Communities of Learning. However, as the four teams ran their experiments, lead teachers pivoted. Instead, they used AI primarily for lesson preparation, not for creating MEWAKA materials for Communities of Learning. The programme team expected peer-to-peer support to emerge around pedagogy. What actually happened was largely about helping colleagues adopt AI itself. This was not a failure; it was teachers exercising genuine agency. When given the freedom to tailor tools to their actual needs, teachers focused on the most pressing problem: preparing lessons under heavy workloads and subject-specialism gaps.

Early signals suggest that AI can save time and support teachers who teach outside their subject specialism. Across all four experiments, teachers primarily used general-purpose AI tools (most commonly ChatGPT and Google NotebookLM) to generate lesson plans, lesson notes, and teaching aids by prompting the tool with a subject, topic, and grade level, then reviewing, adapting, and sharing the output with colleagues via WhatsApp. It was this simple, low-barrier workflow that became the de facto prototype across the sandbox. In addition, teachers reported that using these AI tools helped them to feel more confident teaching subjects beyond their subject specialism. For example, in a district where staff shortages routinely left schools without specialists, one lead teacher had previously travelled to Nachingwea (at a personal cost of 20,000 Tanzanian shillings per trip) to get help teaching an unfamiliar subject. Using AI eliminated the need for that trip and the associated expense.

A possible link between preparation time and peer-learning

Time freed up from lesson preparation appeared to create capacity that flowed into peer learning, although interpreting the relationship between the two needs caution. Teachers were not simply attending more MEWAKA Community of Learning sessions because they had a spare hour; the more plausible explanation is that arriving at a session with AI-prepared materials changed how teachers experienced those sessions. Lead teachers reported that instead of listening passively, teachers arrived with content they had already worked through and adapted, which gave them something concrete to contribute. One lead teacher described the shift directly: sessions moved away from being led by a single “champion teacher” while others observed, towards something closer to genuine peer-to-peer exchange. MEWAKA Community of Learning attendance increased by 56% in one experiment and doubled in another, but because AI-assisted preparation and other design changes were present

simultaneously across the experiments, it is not possible to attribute the attendance gains to any single factor. A future iteration that more deliberately isolates these variables would considerably sharpen the learning.

Peer networks showed promise. Lead teachers were not external trainers; they were colleagues facing the same constraints as their peers. When talking about their experience using AI, a lead teacher said, “I used this, and it worked,” and word spread organically. Teachers from Arusha and Morogoro (regions entirely outside the sandbox scope) joined experiments through informal networks without the need for formal invitations or dissemination efforts. Materials prepared by seven teachers in one district were accessed by teachers in two additional districts. We observed teachers sharing tools and ideas with people in their networks they already knew.

Structural barriers require policy-level solutions. Lead teachers encountered barriers outside their control. For example, Tanzania’s policy requires hard-copy lesson plans, which means teachers who use AI to generate lesson plans must manually transcribe them to comply, adding an extra step to a process the team wanted to streamline. Additionally, AI tools perform poorly in Kiswahili, and without deliberate investment in Kiswahili-language capability, the barrier for the broader teacher population will remain high. These are not teacher-level problems; they require ministry-level action on policy, curriculum requirements, and language model development.

4. Key learnings

Learning agenda

The Teacher-in-the-Lead sandboxes were driven by two core learning questions:

1. To what extent do AI-enabled teacher-facing tools lead to improvements (more effective, equitable approaches)?
2. To what extent does bringing teachers into the lead play a significant role in improving an AI-enabled approach?

Supporting research questions explored the extent to which prototypes improve efficiency and quality in teachers' practice, which aspects teachers find most or least valuable, how partners put teachers and their needs at the forefront of design and implementation, and what considerations should be made at the implementer and Ministry of Education level to incorporate teachers' input moving forward.

In partnership with the sandbox partners, our team centred these questions throughout the testing process and in sprint reflections.

What we learnt

About the value of AI-enabled tools for teachers in LMICs

AI tools generate efficiency gains, but their greatest value emerges when they address real classroom friction, not assumed pain points. Across all three sandboxes, AI tools reduced time on high-burden tasks: in Pakistan, Lesson Genie cut lesson planning from roughly an hour to one to two minutes, while in Tanzania, teachers used ChatGPT and Google NotebookLM to generate lesson materials without travelling long distances for subject-specialist support. But teachers aren't just asking for time back; they're asking for support to enable them to teach better. In Rwanda, teachers discovered Tari's audio feature and used it to rehearse their English pronunciation (not their first language). In Tanzania, a lead teacher stopped travelling long distances to seek subject guidance on topics he was not trained to teach; AI removed the need for that travel. The tools that landed best were those that solved the teachers' actual daily problems, not ones we assumed were the problems. Any efficiency gain is only useful if it saves time on tasks that teachers actually perform.

Tools contribute the most value to teachers when they interact with the existing classroom environment and resources. In Pakistan, Lesson Genie is anchored to the government-mandated textbook; teachers input the page they're teaching, and the tool generates lesson plans based on trusted curriculum content. In Rwanda, Tari's image-to-lesson-plan feature emerged from watching teachers work with physical teacher guides. The most effective tools weren't replacing teachers' workflows; they were slotting into them with what we might call 'phygital' design, blending physical and digital spaces in ways that respect how teachers actually work.

About the added value of bringing teachers into the lead

Building continuous touchpoints with teachers meant they went from being testers to being product owners. In Pakistan, Taleemabad didn't just interview teachers about their day; the Taleemabad team immersed itself in teachers' working lives for a month. They shadowed classes, took the registers, and communicated with parents before any design work began. Friction points became visible as a result of this immersion. In Rwanda, Rising Academies made the teacher voice structural. For example, every product sprint began with a download of teacher feedback on the AI tool. The significant element of innovation isn't the AI tool itself, but the architecture that keeps teachers' voices audible through the product iteration cycle. This approach produces a fundamental shift in the relationship between developers and teachers: teachers aren't just the testers. They become product owners.

Teacher co-creation helps re-direct tools towards more relevant challenges, and prevent the development of a solution searching for a problem. The Aga Khan Foundation proposed that AI could strengthen peer-to-peer learning in MEWAKA. But in the sandbox, teachers ultimately used AI primarily for lesson preparation and to spread AI literacy, not to enhance formal peer structures. Rather than a failure, this was the Teachers-in-the-Lead hypothesis playing out exactly as intended. When teachers are given genuine agency, they direct tools toward the problems they actually face. It requires the willingness to follow teachers somewhere you didn't plan to go, and to treat that redirection as evidence rather than error.

Meeting teachers 'where they are at' (both technically and functionally) led to more engagement. When Taleemabad introduced Lesson Genie on WhatsApp, there was no onboarding week or manual. Because the

interface was familiar, teachers engaged with it fluently. The same principle held in Rwanda, where Rising Academies chose to use WhatsApp because their teachers already use this interface. Meeting teachers on platforms they are already technically familiar with was important, but so too was finding functional alignment. In Pakistan, Lesson Genie was anchored to government-mandated content teachers were already using; in Rwanda, Tari's image-to-lesson-plan feature emerged directly from watching teachers work with physical teacher guides; in Tanzania, teachers gravitated toward general-purpose tools like ChatGPT and Google NotebookLM precisely because the workflow was simple enough to fit into how they already prepared lessons. Across all three sandboxes, the lesson is the same: removing barriers to adoption is not primarily about better training. It is about understanding the technical environments teachers already inhabit and the functional workflows they already rely on, and designing with those as the starting point.

Recommendations: How to bring teachers into the lead

Based on the learning generated across all three sandboxes, we offer the following recommendations for EdTech developers, policymakers, education implementers, and funders seeking to integrate AI tools into education systems in ways that centre teacher expertise.

1. **Start with teacher pain points, not technology:** Embed teams within schools using approaches like shadowing teachers to understand real challenges before building solutions.
2. **Meet teachers 'where they are':** Use platforms teachers already know and trust (e.g., WhatsApp) rather than requiring new apps or devices.
3. **Build in time to test, learn, and iterate:** Set up continuous feedback mechanisms and allocate time and resources for co-design cycles throughout development.
4. **Ground AI outputs in proven pedagogy:** Ensure AI-generated content aligns with established frameworks (e.g., Concrete, Pictorial Abstract for maths, structured literacy approaches) and curriculum standards.

Looking ahead

Early evidence suggests that putting teachers in the lead can improve an AI tool and lead to better outcomes for educators, but the path from sandbox to systemwide implementation surfaces a number of urgent questions that will determine whether this approach can be effective in the long term. These include:

1. **Where is the evidence of impact on learning outcomes?** We can say much about teacher experience, but links between teacher-led AI design and learning outcomes are yet to be determined. However, maintaining learning outcomes *while reducing teacher workload* is not a null result. It is a system-level gain with potential to unlock better teaching quality, teacher well-being, and retention. Pairing this with classroom observation can explain not just *if* outcomes change, but *why*, connecting teacher experience to learner experience.
2. **Who is paying, and what is the cost?** Unlike hardware, AI gets more expensive the more it is used. If these tools scale, costs scale with them. We cannot leave teachers dependent on external providers who can change pricing overnight. As these sandboxes move towards implementation, questions about sustainability and ownership become urgent.
3. **What does it take for ministries and districts to own these tools?** AI shifts where power sits in a system. Sovereignty means ensuring that power stays with the institutions meant to serve teachers and learners. Teacher leadership only translates into lasting change if local institutions can own, maintain, and adapt the infrastructure. Otherwise, co-design risks becoming a one-off exercise. Ensuring local institutions can exercise this kind of autonomy requires more than tools—it requires investment in infrastructure, skills, and governance at district and ministry levels.

5. Conclusion

The Teachers-in-the-Lead Sandboxes were designed to test a simple hypothesis: if teachers are meaningfully engaged in shaping how AI is used, we will unlock more effective and equitable approaches that improve teacher well-being, enhance the quality of teaching and strengthen learning outcomes for students. The evidence from three distinct contexts suggests that putting teachers in the lead can help developers focus on the challenges teachers most need solved, lead to stronger buy-in and uptake of AI tools, and generate real efficiencies for time-consuming tasks like lesson planning. Direct evidence on learning outcomes remains to be established, but the conditions that make better teaching possible were taking shape within each sandbox.

What we learnt is both encouraging and sobering. When teachers have genuine agency, they do not wait for perfect tools or ideal conditions. They redirect their use of technology towards finding solutions to their most pressing problems. Teachers in Pakistan, Rwanda, and Tanzania all demonstrated the same instinct: given the space to lead, they pull AI towards the points of greatest classroom friction and use it to unlock capacity they were never given time to exercise.

These sandboxes also made clear some limitations of this approach as well as of AI tools themselves. Teacher-led design can produce tools that work in classrooms. It cannot, by itself, change the policies that require teachers to do work twice. It cannot, alone, invest in language capabilities that serve teachers working in non-English languages. It cannot guarantee that, as tools scale, power and ownership remain with the institutions meant to serve teachers and learners.

The work that happens next, moving from sandbox to system, will require partners, policymakers, and funders to take teacher leadership seriously at levels beyond classroom practice. The teachers who participated in these sandboxes have shown what becomes possible when we trust them to lead. The question now is whether the systems around them will trust them enough to share power and listen to teachers' voices.

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