

A man with short dark hair and a beard, wearing a teal polo shirt, is standing in a classroom. He is smiling and looking at a chalkboard, with his hands near the board as if writing or pointing. In the background, there is a bulletin board with the title "Our shapes" and various geometric shapes like squares, triangles, circles, and rectangles. A window is visible on the left side of the frame.

LEARNING BRIEF

#01

How Can Participatory Methods Centre Teachers Within Education Policy?

EdTech^{Hub}

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The Learning Briefs each address a specific technical question. Each one explains why the question matters, provides insights to help with effective decision-making, and identifies issues that require further work. They are based on practical evidence generated through the work of EdTech Hub and from across the sector.

We want to make EdTech evidence accessible so that it can be used to improve both policymaking and implementation.

Please [contact EdTech Hub](#) to share your ideas for new Learning Brief topics which would help you in your work.

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Why this question matters

Participatory approaches to evidence-building in education mean that those closest to the context have a voice and are provided with the space to share their wisdom to inform and improve the work that takes place. They also intentionally recognise that knowledge among these groups is sometimes latent, and so methods to tap into this knowledge can help stimulate self-reflection. Notable participatory approaches in educational evidence building include:

- Fostering meaningful research-practice partnerships¹
- Co-design and ‘cooperative inquiry’²
- Applied, ‘transformative’³ and ‘systemic’⁴ mixed methods, which serve to both elevate participants’ perspectives and provide credible results for policymakers
- Iterative cycles of implementation experimentation, such as design-based implementation research (see figure 1)^{5, 6} and the sandbox method.⁷

Insights from those closest to the work shed light on the daily contextual realities that can determine the mechanisms for optimal success or failure of a programme.⁸ However, these voices are often neglected in the design, implementation, and evaluation of interventions. If project participants are consulted, it is sometimes unclear how their insights are captured and ultimately contribute to effecting change. Teachers are one such group, and their voices are often neglected in education policymaking. This happens despite the obvious centrality of teachers within the education system. Even when policies focus squarely on teachers and their own professional development, there can often be a disconnect between these policies and the teaching workforce’s needs, experiences, hopes, and aspirations.^{9, 10} It is important to note that a teacher ‘workforce’

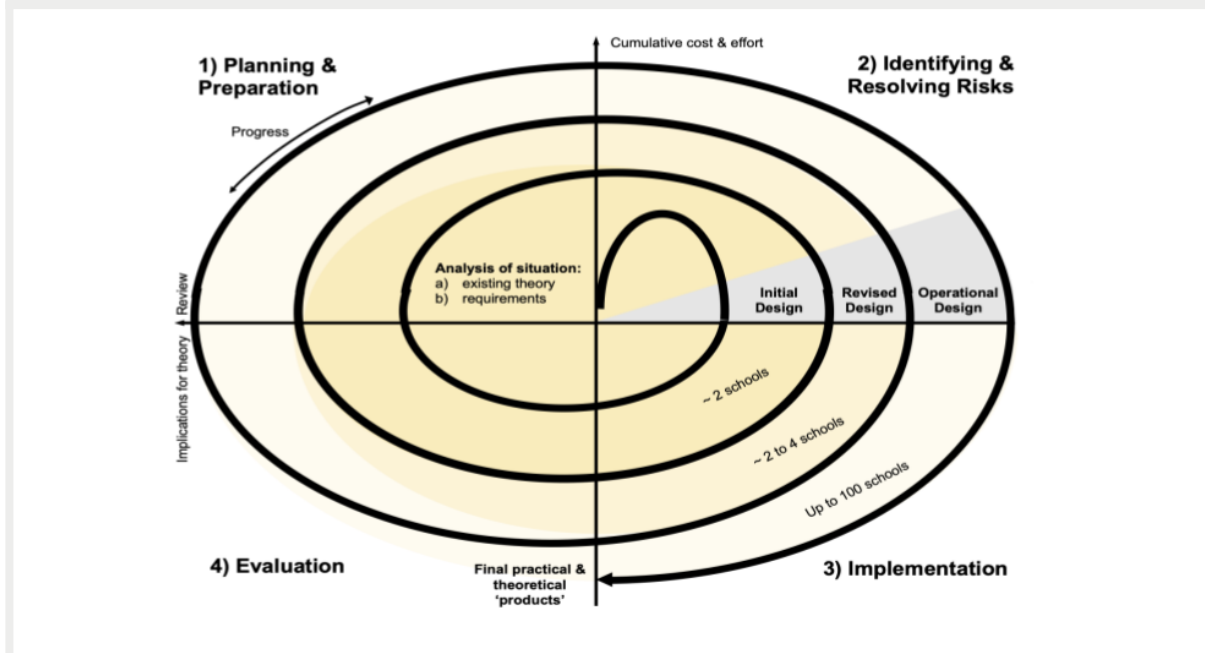
in itself is far from monolithic and has diverse wants and needs. But if a proportion of marginalised teachers’ voices are elevated via participatory and applied methods, this can spotlight some of the critical issues faced by those working in the most challenging implementation contexts. Furthermore, these methods can support reflection among these groups. Reflection can help to articulate critical issues when these are sometimes hidden, taboo, or so common and everyday that they are not viewed as something that needs changing.

Hennessy et al. broadly define teacher professional development (TPD) as: all forms of pre- and in-service teacher development that support teaching and student learning, including formal and informal programmes, and on- and off-site provision. Core characteristics for effective TPD include being participatory and addressing teachers’ needs, constraints, interests, and agendas.¹¹ The importance of participatory approaches within TPD is exemplified by Anamuah-Mensah et al., who discuss “a more individualised approach to teacher learning,”¹² which includes needs analyses during programme design. Power spotlights the link between understanding and incorporating the contextual realities teachers face in their everyday lives into teacher learning processes and an improvement in overall outcomes.¹³

This brief examines how to utilise a range of tools and methodologies to capture and elevate the voices of teachers within large-scale, government-led, tech-supported TPD programmes. It highlights the power of being participatory in education, and advocates for the adoption of more diverse participatory methods by educational researchers and practitioners to ensure the voices closest to the work are involved in designing and implementing the work.

Figure 1. DBIR's cyclical iterative approach

Source: Adapted from, B. W. Boehm 'A Spiral Model of Software Development and Enhancement'. *Computer* 21, no. 5 (May 1988): 61–72. <https://doi.org/10.1109/2.59>.



Contexts and methods

This section provides an overview of five main examples of work in Tanzania, Malawi, Madagascar, Bangladesh, and Sierra Leone that have informed this brief. Each one provides practical insights regarding how participatory methods can be used with teachers to inform evidence-building and education policy.

Tanzania

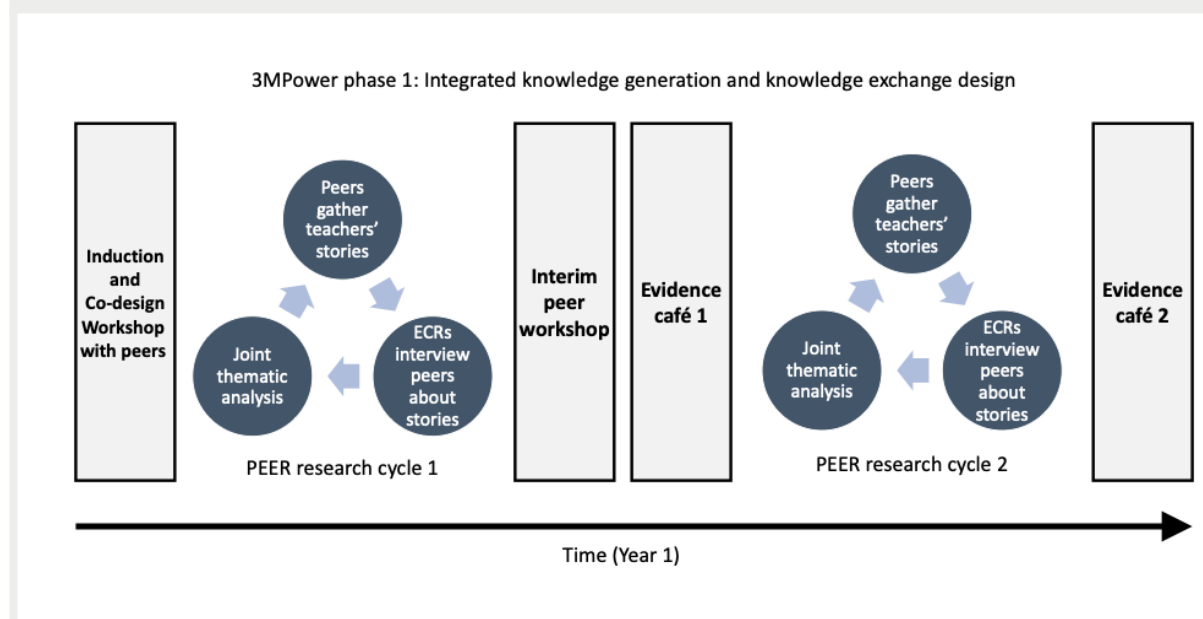
In Tanzania, the government is implementing a national-scale tech-supported TPD programme (known as MEWAKA in Swahili).^{14, 15} At the centre of MEWAKA is a school-based, Communities of Learning (CoL) model—focused on establishing continuous teacher learning in schools. It also has a learning management system (LMS), which houses CoL and self-learning modules, and other guides and manuals to support peer facilitation. EdTech Hub initially provided technical assistance (TA) to the government and supported the development of the TPD plans. EdTech Hub, in partnership with Aga Khan University and

the Tanzania Institute of Education, is currently conducting DBIR in rural schools alongside the government roll-out. **Figure 1** above depicts the cyclical DBIR process followed in Tanzania; each cycle includes a design > implementation > evaluation stage, and then the process starts again (redesign > reimplement > evaluation).

Malawi

In Malawi, the Ministry of Education is leading the National Numeracy Programme (NNP), in partnership with Cambridge Education (Mott McDonald) and funded by the UK Government's Foreign, Commonwealth and Development Office (FCDO).¹⁶ The NNP also has a focus on school-based peer learning, through teacher learning circles (TLCs). The programme targets lower primary classes (Standards 1–4). To support this work, EdTech Hub has also used a range of tools and methodologies, including ethnographic research and DBIR (following a similar cyclical approach to that depicted in **Figure 1**).

Figure 2. Flowchart describing the PEER methodology.¹⁹



In Madagascar, the government is implementing the Basic Education Support Project (PAEB in French).¹⁷ PAEB is a World Bank-funded project, the main component of which is TPD to build competencies around the teaching and learning of foundational literacy and numeracy. PAEB's model includes a blended approach to TPD. It has a learning management system (LMS) where teachers can access learning modules including microteaching videos to support critical reflection. EdTech Hub has provided TA to support the ministry, including conducting a nationally representative mixed-methods survey, and planned user testing of the LMS.

Bangladesh

In Bangladesh, the 3Mpower (Mobile Learning for Empowerment of Marginalised Mathematics Educators) project has researched Anonde Gonit Shikhi (Let's Learn Maths with Fun) courses on the government-led e-Learning platform Muktopaath.¹⁸ Nearly 200,000 teachers have completed Anonde Gonit Shikhi to support the teaching and learning of mathematics. The research is led by The Open University in collaboration with the University of Dhaka and focuses on teachers' access and use of the courses to improve numeracy outcomes of learners in low-income, rural communities.

The research combined cycles of participatory ethnographic evaluation research (PEER) with participatory knowledge exchange through Evidence Cafés. **Figure 2** above illustrates the PEER process. The process is iterative—peer researchers have a series of conversations with participants, allowing time for reflection between conversations. Peer researchers are then supported by early career researchers (ECRs) to turn those stories into qualitative data that can be analysed.

Sierra Leone

In Sierra Leone, the Teaching Service Commission (TSC) is rolling out a tech-supported TPD programme to improve the teaching and learning of foundational literacy and numeracy. This programme is delivered in partnership with the World Bank under the Free Education Project,²⁰ a five-year initiative. School-based communities of practice and a coaching model are both core components of the programme.²¹ EdTech Hub partnered with the TSC to apply the sandbox approach to help implement TPD at scale. The sandbox approach provides implementing partners with the tools and processes to design, test, adapt, and scale EdTech interventions. Sandboxes are split into short sprints that enable implementers to learn and iterate

upon the model being tested in stages. The sandbox approach focuses on 6Ps (people, provision, product, practices, policy, and place), as illustrated in **Figure 3** below.

There are noteworthy similarities across these government-led TPD programmes. Many of them use an LMS for teachers, focus on foundational literacy and numeracy skills, and include core characteristics of effective

TPD, such as school-based peer learning where teachers can discuss and reflect on pedagogical issues. The next section details some of the most significant findings and interesting lessons EdTech Hub has learnt when thinking about the methods used and how they have contributed to ensuring teachers' voices are heard at the policymaking level.

Figure 3. The '6Ps' of the education system

Source: Asad Rahman and Alice Carter. 2022. *Sandbox Tool*. EdTech Hub.
<https://doi.org/10.53832/edtechhub.0117>.



Key insights to improve practice

Build multidisciplinary teams, bringing together policymakers, practitioners, and researchers to promote dialogue across stakeholders

The use of DBIR has allowed EdTech Hub teams to capture almost live insights and follow the successes and challenges of programmes systemically, in schools, and at ward and district levels. In Tanzania, the research process includes regular visits by the research team to schools to conduct classroom and CoL observations, and end-of-cycle evaluations which include qualitative data collection via interviews, focus groups and surveys.

The inclusion of government partners on the research team has been particularly impactful and made it possible to feed back emerging insights to those leading and coordinating the implementation. This also means potential adaptations are flagged sooner rather than later. For example, during the first DBIR cycle, teacher motivation was a recurring theme during the school-level focus groups.^{22, 23}

Teachers consistently reported that making the time to attend CoL sessions was a challenge alongside their other responsibilities. There were also additional issues around the scheduling and frequency of holding CoLs. This was discussed during the evaluation phase of the DBIR and instigated adaptations to the structure of the programme during the second DBIR cycle—some schools held CoLs weekly, some fortnightly; some schools received certification for participation and engagement in CoLs, some did not. The outcomes of these mini-tests, flagged as possible adaptations early via the DBIR, will have broader implications for the wider roll-out of MEWAKA.

Research which captures teachers' voices and includes policymakers within the core team can help to highlight early warning signs of implementation issues, the solutions of which can then be piloted within subsequent research cycles.

Balance power dynamics and foster spaces where teachers can tell their stories

In Bangladesh, the PEER methodology has facilitated teachers working in marginalised, low-income communities to share stories about their lives and their work with each other.²⁴ PEER engages individuals who have existing relationships and trust within the communities in which the research is taking place. In this case, those individuals are teachers. The theory is that these 'peer researchers' are able to have more open conversations with research participants. There is a recognition of power dynamics between researchers and participants, and the PEER methodology provides innovative ways to help balance these out. As a result of the insights gathered from PEER researchers, it became apparent that there were surprisingly high rates of enrolment and completion for the online course—even in rural areas—but, despite these outcomes, there was limited practical application of the TPD in classrooms.

The PEER teacher-researchers spoke about the importance of the trust and professionalism of the approach. For example, they selected which teachers they gathered stories from, rather than the research team or local officials directing them. This gave opportunities for professional learning by choosing to seek out teachers who were known for their innovative and interesting classroom practices. The PEER teacher-researchers were then able to take part in evidence cafés with government stakeholders and the

research team, presenting and debating the evidence collected in an inclusive method of knowledge exchange.

Empowering teachers to act as researchers is a method of gathering more meaningful insights from participants due to the established trust and relationships that exist between colleagues.

Use video to show policymakers teachers' realities

Peer learning models are central components of the programmes in both Tanzania and Malawi. This means that existing teachers in schools are tasked with facilitating their colleagues to discuss issues related to their practice. In both cases, EdTech Hub found that, although the training of Peer Facilitators (Tanzania) or Master Trainers (Malawi) was action-oriented, practical, and engaging, their subsequent facilitation within the school-based modality has tended to be more lecture-based and didactic.^{25, 26} This has highlighted the need for ongoing coaching and mentoring of the designated TPD leads within schools so that they are continually supported to model the (andragogic) methods that are core to effective TPD. This was flagged across both contexts through observations of peer learning interactions. Gathering this data on actual practice has proved a powerful tool to demonstrate present gaps in the implementation. Furthermore, video recordings of these observations have been particularly impactful in illustrating the issues to government partners in Tanzania concretely. The videos can then act as tools within the TPD itself, demonstrating (in)effective practice for teachers to discuss and reflect upon. In Malawi, EdTech Hub will soon consider the use of videos to support facilitation of the more 'practical' components of those particular TCPD sessions. Likewise, in Madagascar, videos of model teaching sessions that can be discussed and reflected upon are a central part of the LMS content.

Video, and visualisation of stories more broadly, are powerful tools that can demonstrate to policymakers the precise issue at hand, often carrying greater weight

in influencing decision-making than a written report.

Use mixed methods to provide findings which have breadth and depth of research

In both Tanzania and Madagascar, large-scale surveys were rolled out nationally to collect data on teachers' experiences in relation to technology.²⁷ In Madagascar, the survey was implemented across the 23 regions of the country. The survey targeted 1,403 participants, 72% of whom were teachers. The survey provided crucial insights on teachers' needs, motivations, and experiences in relation to using technology—both personally and professionally. This is the first nationally representative survey to touch on teachers' perspectives on technology. It has offered useful insights on the types of technology teachers are familiar with, the infrastructural issues teachers face across the different regions, and therefore, the kinds of learning teachers may need to ensure the programme is effective. Importantly, it was a mixed-methods approach that led to these insights being generated. The research team conducted focus groups in each of the regions to contextualise the quantitative survey data. The focus groups helped underline the need for teachers to receive professional development on digital skills before being provided with devices by the government. The survey found that the vast majority of teachers used basic technological features (e.g., sending an SMS, making phone calls) rather than more advanced functions which would be required through the LMS (e.g., watching videos, completing a course module). This finding is echoed within the Malawi context as well, as access to and use of technology was a challenge during the training.²⁸ When thinking about breadth and depth, particularly in the context of mixed-methods research, focusing the qualitative research on marginalised communities can contextualise some of the pressing, everyday challenges these participants face, accounting for these increases the probability of producing more equitable outcomes overall.²⁹

The combination of qualitative and quantitative research is vital for data sources

to speak to each other in ways that can paint a fuller picture of participants' experiences. Moreover, qualitative research can be particularly insightful when speaking with marginalised communities, knowing that budgets are often limited, prioritising these groups is recommended.

Test products and systems with teachers early and often to ensure contextual relevance

User testing of tech systems has been a feature of EdTech Hub's TA in both Tanzania and Madagascar. In Tanzania, a first round of user testing uncovered various issues, including flaws in the registration and login process, as some teachers did not have emails to use as a personal identifier.³⁰ Once these initial problems were fixed, subsequent rounds of testing found deeper issues related to teacher learning. For example, some teachers did not understand how the modules on the LMS fit within the broader landscape of TPD opportunities, i.e., how the self-learning modules worked in tandem with the CoL modules. This iterative approach to user testing, which delves deeper into the technical problems during

each round, is a method that will be followed in Madagascar. Iterative user testing is planned to assess the accessibility, content and general usability of the digital platform, firstly for government web developers, and then for teachers across multiple phases, as per agile delivery methods.³¹

Regarding testing products, in Sierra Leone, the second sandbox sprint tested a 'one tablet per school' model—in line with the broader government TPD plans. The sandbox provided headteachers with tablets to understand use cases within schools and found that headteachers loaned tablets to teachers of their own accord. Further, teachers supported each other when they experienced difficulties using the tablets, and schools adopted different approaches to keeping the tablets safe (e.g., taking them home, or at a school lock-up).³²

Testing products and systems can help to ensure early identification of challenges that could become broader issues. Small-scale user testing is an effective means of risk mitigation, to ensure that by the time a product or system is rolled out more widely, there are fewer unknowns or teething issues, and greater chances of positive impact.

Areas for further exploration

This learning brief has shown the importance of using participatory, applied methods when working with teachers and policymakers to design programmes and improve policies. In particular, when approaching TPD from a systems perspective, creating connections and mechanisms between these two key stakeholder groups is essential to ensure that policymakers understand more fully the day-to-day realities of teachers. This understanding and connection is the first step to catalysing practitioner-driven policies, where teachers can consider themselves policymakers, or at least a part of that process.

Conducting research activities so closely with and alongside implementation is complex, contested, and messy! The experiences of

EdTech Hub have found significant benefits from the way in which almost real-time lessons learnt can inform programme designers before it is too late to make meaningful adaptations. Much of the work described above is ongoing, and EdTech Hub is still grappling with various questions in this space. The brief ends by highlighting five significant issues which require ongoing awareness-raising and further research.

Power dynamics and the unintended consequences of participatory approaches

Above, we described the benefits of policymakers being part of the research. However, there are also undoubted challenges to their inclusion. One of these challenges is the unavoidable power

dynamics at play when an individual from, say, the national government, supports data collection in schools. This can feel more like ‘monitoring and supervision’ to teachers, school leaders, and even sub-national government officers. Navigating the tension between the inclusion of key policymakers so that they are making a meaningful contribution to the research and ensuring the research team maintains independence and impartiality is an ongoing challenge.

There are also risks of participation and speaking up that must be considered, particularly for at-risk groups and when research touches on more sensitive topics. This requires a balance between raising participants’ voices ‘above the parapet’ and also ensuring those participants are protected in relation to the consequences of having contributed their voices. Continually referring back to frameworks such as TRUST’s,³³ which emphasise fairness, respect, care, and honesty as core tenets of equitable partnerships in international development is required.

The role of incentives for participating

The political economy of how decisions are made, and the role that per diems play within this, is a continued factor across EdTech Hub’s work. This applies across the system, from national government stakeholders all the way through to rural school teachers. We have sometimes found that ‘over-researched’ schools may have an expectation that they will receive some kind of financial benefit if they are to participate in the research. An additional challenge here is that these expectations can be heterogeneous, even within wards or zones of a handful of schools. So some schools may have this expectation of a financial incentive, while others would be happy to participate in the research for the sole purpose of making their voice heard. This makes it difficult to set an overarching process for how participants engage in education research. So, instead, it is important to work with sub-national government officials and school leaders to set expectations of what participation means for the school before any data collection is undertaken.

The burden of participation

Any effort to increase the participation of teachers in education research should recognise the underlying constraint that teachers are busy doing their day-to-day work. They have limited time and multiple responsibilities. There is a real tension between gathering the depth of insight described within this brief and also recognising the burden participation places on teachers. Exploring innovative methodologies that can work with teachers’ time and workload constraints is important; apps like TeacherTapp³⁴ have interesting data collection techniques that could be built on in LMIC contexts (e.g., via a WhatsApp survey bot).

Participation in dissemination as well as design

For some teachers, it may feel like they are involved in a research study, the study ends, and they never hear anything more from it. Disseminating findings should include learning sessions with research participants so they can hear the final products of the research and understand the ultimate implications for their practice and/or the associated policy. Where possible, including teachers when presenting findings, is an additional, positive step.

The next level of participation: practitioner-led research

A central driver for EdTech Hub is exploring what it means for teachers to go from participating in education research, to leading research, or participating regularly and democratically in policy decisions related to education. Understanding the role of organisations such as EdTech Hub to support and convene such models is critical, as is the role of teacher unions in building a coherent and loud teacher voice. Additionally, it is important to marry the specificities that practitioner-led research champions in particular contexts, with what can be transferable across contexts. Teachers, practitioners, even students and researchers can and should work together to find the right balance between context-specificity and generalisability.

Resources

These resources discuss participatory methods in education research

- Cumbo, Bronwyn, and Neil Selwyn. 'Using Participatory Design Approaches in Educational Research'. *International Journal of Research & Method in Education* 45, no. 1 (1 January 2022): 60–72. <https://doi.org/10.1080/1743727X.2021.1902981>.
- EdTech Hub. 'Sandbox Handbook V.2.0'. Working Paper. EdTech Hub, 24 August 2022. <https://doi.org/10.53832/edtechhub.0108>.
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- Haßler, Björn, Yomna El-Serafy, Abdullah Khalayleh, and Chris McBurnie. 'Systemic Mixed-Methods Research—a Conceptual Framework for Scalable EdTech Research'. EdTech Hub, 1 March 2021. <https://doi.org/10.53832/edtechhub.0001>.
- Henrick, Erin C, Paul Cobb, William R Penuel, Kara Jackson, and Tiffany Clark. 'Assessing Research-Practice Partnerships'. New York, NY: William T. Grant Foundation., October 2017. <https://rpp.wtgrantfoundation.org/wp-content/uploads/2019/09/Assessing-Research-Practice-Partnerships.pdf>.
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- Penuel, William R., Cynthia E. Coburn, and Daniel J. Gallagher. 'Negotiating Problems of Practice in Research–Practice Design Partnerships'. *Teachers College Record* 115, no. 14 (1 December 2013): 237–55. <https://doi.org/10.1177/016146811311501404>.

These resources discuss the use of technology for TPD in LMICs

- Anamuah-Mensah, Jophus, Frank Banks, Bob Moon, and Freda Wolfenden. 'New Modes of Teacher Pre-Service Training and Professional Support'. In *Teacher Education and the Challenge of Development: A Global Analysis*, edited by Bob Moon, 201–11. Abingdon: Routledge, 2012. <http://oro.open.ac.uk/31520/>.
- Hennessy, Sara, Sophia D'Angelo, Nora McIntyre, Saalim Koomar, Adam Kreimeia, Lydia Cao, Meaghan Brugha, and Asma Zubairi. 'Technology Use for Teacher Professional Development in Low- and Middle-Income Countries: A Systematic Review'. *Computers and Education Open*, 2022. <https://doi.org/10.1016/j.caeo.2022.100080>.
- Power, Tom. 'Approaches to Teacher Professional Development in Low-to-Middle-Income Countries'. In *Sustainable English Language Teacher Development at Scale: Lessons from Bangladesh*, edited by I Eyres, Tom Power, and R McCormick, 47–65. London: Bloomsbury Academic, 2019. <http://oro.open.ac.uk/57052/>.

These resources cover the education systems and TPD reforms focused on in this brief

Tanzania:

- For more information on MEWAKA, see:
<https://edtechhub.org/2023/03/03/mewaka-in-tanzania-emerging-findings-on-tech-supported-teacher-professional-development/>. Retrieved 17 February 2024 and <https://www.worldbank.org/en/news/feature/2023/01/24/continuous-teacher-training-goes-nationwide-in-tanzania>. Retrieved 17 February 2024.
- Chachage, Kristeen, and Jay Thakrar. 'Teacher Continuous Professional Development in Tanzania: Lessons Learnt'. EdTech Hub, 24 February 2023. <https://doi.org/10.53832/edtechhub.0157>.
- Kondoro, Aron, Salome Maro, Joel Mtebe, Björn Haßler, Jamie Proctor, and Edtech Hub. 'Usability Testing of a Mobile-Based Learning Management System for Teacher Continuous Professional Development in Tanzania'. *The International Journal of Education and Development Using Information and Communication Technology* 19 (31 August 2023): 75–92. https://www.researchgate.net/publication/373523617_Usability_Testing_of_a_Mobile-based_Learning_Management_System_for_Teacher_Continuous_Professional_Development_in_Tanzania.
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- Koomar, Saalim, Winston Massam, Kristeen Chachage, G. Anthony, Winifrida Jacob Mrope, Mustafa Malibiche, Emmanuel Mutura, et al. 'MEWAKA National Teacher Development Reform in Tanzania: Design-Based Implementation Research: Cycle 1 Findings'. EdTech Hub, 2023. <https://doi.org/10.53832/edtechhub.0167>.
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Malawi:

- For more information on the National Numeracy Programme, see:
<https://nnpmalawi.org/>. Retrieved 17 February 2024.
- Correa de Oliveira, André, Charity Kanyoza, Anne-Fleur Lurvink, Violet Boilo, Esme Kadzamira, and Björn Haßler. 'Teaching and Learning of Mathematics in the Context of the National Numeracy Programme in Malawi: Findings from a Rapid In-Depth Qualitative Study'. Working Paper. EdTech Hub, 2023. <https://doi.org/10.53832/edtechhub.0156>.

Madagascar:

- For more information on PAEB, see:
<https://projects.worldbank.org/en/projects-operations/procurement-detail/OP00210189>. Retrieved 17 February 2024.
- Coflan, Caitlin Moss, Saalim Koomar, and Hasiniavo Rasolohery. 2021. 'Evidence to Strengthen Tech-Supported Teacher Development in Madagascar'. EdTech Hub (blog). 23 April 2021. <https://edtechhub.org/2021/04/23/using-evidence-to-strengthen-tech-supported-teacher-professional-development-in-madagascar/>.

- Rasolohery, Hasiniavo, Saalim Koomar, Joel Mitchell, and Hasiniavo Rasolohery Mitchell Saalim Koomar and Joel. 'Access to and Use of Technology by Primary School Teachers: A Survey in the 23 Regions of Madagascar'. *EdTech Hub* (blog), 20 March 2023.
<https://edtechhub.org/2023/03/20/access-to-and-use-of-technology-by-primary-school-teachers-a-survey-in-the-23-regions-of-madagascar/>.

Bangladesh:

- For more information on Muktopaath, see: <https://muktopaath.gov.bd/>.
- Oyinloye, Bukola. 'Innovative Research Methodologies: Participatory Ethnographic Evaluation Research (PEER).' BERA UK Podcast: Innovative Methodologies. Accessed 17 October 2023.
<https://www.bera.ac.uk/media/innovative-research-methodologies-3m-power>.

Sierra Leone:

- For more information on the Free Education Project, see:
<https://documents1.worldbank.org/curated/en/957041593741800590/pdf/Sierra-Leone-e-Free-Education-Project.pdf>. Retrieved 17 February 2024.
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<https://doi.org/10.53832/edtechhub.0180>. Available at
<https://docs.edtechhub.org/lib/9NR4RZ98>.

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