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EdTech Hub Clear evidence, better decisions, more learning.

Asian Development Bank panel 2021

Reimagining Teacher Professional Development for Scalable, Sustainable and Equitable Outcomes - Using Edtech Research Evidence

Global and Regional Insights from Research into Technology for TPD

Sara Hennessy & Saalim Koomar





THE WORLD BANK

Outline

- 1. Introduction & Problem Statement
- 1. Teacher professional development (TPD) * tech * lowand middle-income countries (LMICs): A systematic literature review
 - a. Conceptualisation
 - b. Findings and key messages
 - c. Gaps
- 1. T4 Education Survey emerging findings
- 2. Conclusions



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- EdTech Hub is a £30m global non-profit research partnership funded by FCDO over 8 years.
- Our goal is to **empower people by giving them the evidence they need** to make decisions about technology in education.
- We research what EdTech initiatives are scalable, sustainable, locally contextualised and culturally appropriate, and costeffective in raising learning outcomes in LMICs.
- Partners World Bank and Bill & Melinda Gates Foundation.

5 key research topic areas — the use of EdTech to support



"Teacher quality is the most important determinant of learning outcomes at the school level, but in many countries teachers are in short supply, isolated, and not supported to provide effective teaching and learning"

(Education Commission, 2019, p.6)



A teacher-led TPD workshop in Zambia (Source: Author's own)



Critical issues:

- Most TPD is top-down, neglecting teachers' voices
- ... and much of it lacks practical application
- We need, therefore, a culturally responsive, inclusive and coherent TPD system

Technology-mediated TPD

- Increasing the use of technology across education systems offers potential opportunities to facilitate this coherent system.
- How can tech support teacher learning?
 - Mobile phones/tablets, social media/messaging can foster remote peer learning
 - Blended & distance learning options to access formal learning modules
 - Videos can act as powerful tools for modelling and reflection
 - Open educational resources (OER) allow teachers to create, adapt and re-use content for lesson planning, assessment, etc.



TPD systematic review



Tech 4 TPD: Research Questions

- Which forms of technology-mediated TPD are (cost-)effective for teacher learning at scale in LMICs?
 - e.g. How can technology support peer communities of practice?
- 2. Do any tech-mediated TPD initiatives help foster more equitable education systems?
 - How do they address needs of marginalised groups?
- 3. Are tech-mediated TPD initiatives **targeted to teachers' needs and locally and culturally contextualised**? In what ways are TPD initiatives systemic in their approach?
 - Which initiatives are sustainable and scalable?

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A coherent, multilevel TPD system



Broad trends in the literature

Research on Tech 4 TPD is absent or sparse in most LMICs



Numbers of studies by LMIC

Key: No studies, 1–4 studies, 5–9 studies, 10–14 studies, 15 or more studies.

- 97 of 136 LMICs had no studies at all (71%).
- South Asia region had most countries with a study (63%).
- SSA (30%), Latin America/ Caribbean (28%) and East Asia & Pacific (26%) had the lowest regional proportions.
- However SSA contributed the highest raw no. studies (63 or **36%** of the 170 studies).

Just 5 countries (all MICs and amongst the top 30 most populous countries globally) had 10 or more studies



Frequency

Five key takeaways

1: Outcomes

- 'Changed teacher practices' appeared more often than 'student outcomes' but together they made up only 17% of the total number of mentions of TPD outcomes in studies
- Most studies (over 60%) relied on selfreport to measure changes in teacher knowledge and practice
- <u>Bruns et al. (2018: Brazil)</u> found providing teachers with classroom observation feedback and virtual coaching produced significant and <u>cost-effective</u> student learning gains in mathematics and Portuguese.



Critical question:

How can rigorous measurement of TPD be normalised, so that student learning outcomes are consistently a key metric?

2: Equity

- Tech can provide greater TPD access and agency for teachers, enabling marginalised voices to be heard ...
- But most research offers no granular data/info on how initiatives impact certain groups (e.g. female teachers, SEND teachers and/or teachers of SEND learners, teachers in remote/rural areas).
- <u>*Onguko (2014: Kenya)</u> provides an example of how TPD can be adapted based on teachers' needs in different contexts.



Critical question:

How can TPD be adapted so that it is relevant and appropriate for marginalised groups (both teachers and learners)?

3: Cost-effectiveness

- Text messages from coaches/mentors can offer cheap, timely and easily accessible reminders (nudges) using a familiar technology to powerfully reinforce learning and behaviours (<u>*Slade et al., 2018</u>: Malawi)
- <u>*Kotze et al. (2018:</u> South Africa) found significant improvements in students' literacy outcomes after 1 year of virtual coaching compared to F2F model.
- However, in a recent, seminal study, virtual coaching proved *less cost-effective after 3 years* (<u>Cilliers et al., 2020</u>: S. Africa).



Critical question:

How can the issues surfaced by <u>Cilliers et al.</u> be explored further through research and implementation?

4: Sustainability

- <u>Cilliers et al., (2020</u>: South Africa) highlights importance of sustainability, yet less than 1 in 10 studies even incorporated TPD sustainability into design.
- A minority (18%) of studies were longitudinal. This raises further questions around sustained changes in teaching and learning.
- The OER4Schools programme was followed-up through teacher interviews after 18 months (*Haßler et al., 2020*: Zambia). The programme became **self-sustaining**; previous participants became peer facilitators and teachers had further developed their interactive teaching strategies.

Critical question: How can we ensure that follow-up and/or longitudinal studies are included for TPD interventions?

5: Scalability

• Scalability is critical to long-term success of initiatives. However <u>*Kraft et al. (2018: review)</u> show that smaller coaching programmes are more effective than those operating at a larger scale.



 <u>*Kennedy & Laurillard, 2019</u>: Syria and Lebanon found that blended learning MOOCs were effective due to their co-design components. The MOOC was scaled beyond existing partners and new course content was embedded.

Critical question:

How can such interventions be scaled in ways that can reach marginalised groups without reliable or continuous access to smart devices or connectivity?

Identified gaps

Evidence gaps

- More research on technology-mediated TPD overall, particularly larger-scale and longer-term programmes, and those situated in under-represented countries;
- Further research on tech-supported TPD in rural or marginalised settings, often associated with additional challenges (e.g., concerning infrastructure, socio-economic status, conflict/emergency, attendance of girls) is required.
- More research is needed on the **levels of structure in pedagogy** and lesson scripting that are appropriate to sustain pedagogical change across contexts.

Methodological gaps

- Investigate the **added value** of technology compared to inperson TPD models, along with measuring **cost-effectiveness** of initiatives using **experimental**, **mixed methodologies**
- **Student learning outcomes** need to be assessed more rigorously in TPD studies
- Conduct reviews of literature published in **other languages**



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T4 Education global teacher survey 2021





Poll

Which teachers do you think made most use of technology during the pandemic?

- 1. Teachers with 0-2 years experience
- 2. Teachers with 3-5 years experience
- 3. Teachers with 6-10 years experience
- 4. Teachers with 11-20 years experience
- 5. Teachers with 21-30 years experience
- 6. Teachers with 30+ years experience

A pandemic digital divide: gender

Learning Loss

The majority (60%) of teachers felt that girls' learning has not been adversely affected more than boys' throughout the pandemic.



A pandemic digital divide: access

Learning Loss

Learners with less access to the internet or technology were most likely to be reported (by 60% teachers) as having suffered learning loss,

followed by low-income households and learners whose parents/caregivers were unable to support home learning.

The pandemic has increased the digital divide along these lines.

Poll Results

Which teachers do you think made most use of tech during the pandemic?

- 1. Teachers with 0-2 years experience
- 2. Teachers with 3-5 years experience
- 3. Teachers with 6-10 years experience
- 4. Teachers with 11-20 years experience
- 5. Teachers with 21-30 years experience
- 6. Teachers with 30+ years experience

Experience matters

Tech Access and Use During the Pandemic

<u>More experienced</u> teachers tended to make the most use of tech, especially those with 21-30 years experience.

- 55% of teachers with 21-30 years' experience taught lessons online compared with 38% who had taught for 3-5 years.
- 48% of this group of more experienced teachers used their school's virtual learning platform to share lessons and tasks with students compared to only 31% who had taught for <2 years.

Multiple priorities

Teacher Development Needs

TPD duration was surprisingly high: 42% teachers had more than 10 whole days in the past year

But over half (54%) of survey respondents prioritised the need for "Developing skills and confidence in using digital technologies in teaching"

Second highest need was "teaching online/remotely" (41%).

These came out ahead of a host of potential needs including **Pedagogy / teaching methods** and **Teacher mental health and wellbeing** – despite the finding that wellbeing of 39% had suffered during pandemic teaching

Teachers are consummate learners

86% of teachers considered that the experience of teaching during the pandemic had made them better teachers and 50% of teachers are more enthusiastic about teaching.



Conclusions

- Tech offers significant potential for TPD across diverse contexts, however research is geographically concentrated, findings are mixed and many challenges arise.
- There is little focus on **needs of marginalised groups** (teachers or students) in either the literature base or teachers' views
- Both the review and the survey indicated that we need to develop a deeper understanding of the **multilevel factors** that support/constrain tech-mediated TPD.
- Rigorous assessments of **added value of tech, cost-effectiveness** of initiatives, **sustainability**, and impact on **student learning** are desperately needed.
- Teachers' needs, motivation and professional agency need consideration to increase efficacy of programmes. Acting upon large-scale surveys such as T4's is crucial to incorporating these considerations.

Thank you for listening

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