

THE GLOBAL PARTNERSHIP FOR EDUCATION KNOWLEDGE AND INNOVATION EXCHANGE (KIX)



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International Development Research Centre
Centre de recherches pour le développement international

Canada



ADAPTING AND SCALING TEACHER PROFESSIONAL DEVELOPMENT APPROACHES IN GHANA, HONDURAS, AND UZBEKISTAN

FINAL TECHNICAL REPORT

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15 February 2023

IDRC Project Number 109290-001

Country/Region Uzbekistan (Asia), Ghana (Africa), Honduras (Latin America)

Reporting Period covered by the report April 2020 to January 2023

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This work was supported by the Global Partnership for Education Knowledge and Innovation Exchange, a joint endeavor with the International Development Research Centre, Canada. The views expressed herein do not necessarily represent those of IDRC or its Board of Governors; the Foundation for Information Technology Education and Development; SUMMA: Laboratory of Education Research and Innovation for Latin America and the Caribbean; Worldreader; other members of the TPD@Scale Coalition for the Global South; or UNESCO.



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Acronyms & Abbreviations

Avloniy Institute	National Research Institute named after A. Avloniy under the Ministry of Public Education
CPD	continuous professional development
C3	Childhood Cost Calculator (Tool)
DGDP	Dirección General de Desarrollo Profesional (General Directorate for Professional Development)
FIT-ED	Foundation for Information Technology Education and Development
FT	field test
GES	Ghana Education Service
GPE	Global Partnership for Education
KIX EAP	Knowledge Information Exchange Europe, Asia, Pacific Hub
ICT	information and communications technology
LAC	Latin America and the Caribbean
LMIC	lower- and middle-income country
LMS	learning management system
MEL	monitoring evaluation and learning
MoE	Ministry of Education
MoPE	Ministry of Public Education
MT	master trainer
NSC	National Steering Committee
NTC	National Teaching Council
NTS	National Teacher Standards
OU	The Open University, UK
PIIMA	Agency for Presidential Educational Institutions of the Republic of Uzbekistan
PLC	professional learning communities
SUMMA	Laboratory of Education Research and Innovation for Latin America and the Caribbean
TPD	teacher professional development
TPD@Scale	(ICT-mediated) teacher professional development at scale
UNESCO	United Nations Educational, Scientific and Cultural Organization
UoG	University of Ghana
UPNFM	Universidad Pedagógica Nacional Francisco Morazán
VLE	virtual learning environments

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3. Country TPD@Scale models
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Executive summary

Overall objective. "Adapting and Scaling Teacher Professional Development Approaches in Ghana, Honduras, and Uzbekistan" was a global 34-month project funded by KIX. The project sought to address the challenge of improving systems of teacher professional development (TPD) to contribute to improved quality classroom teaching in GPE member countries. The overall objective of the project is to identify how ICTs can be utilized at scale to strengthen equity, quality and efficiency in teacher professional development systems. Researchers would achieve this objective through studying how different groups of teachers and other actors within public education systems responded to new and adapted models of ICT-mediated TPD, described here as TPD@Scale.

Activities. In each study country (Ghana, Honduras and Uzbekistan) researchers collaborated with key education stakeholders from the public education system through a three-phase project design comprising: contextualization; customization and field testing. In Ghana the project lead, Worldreader, collaborated with the National Teaching Council (NTC) and researchers from the University of Ghana (UoG); in Honduras SUMMA led a partnership with the General Directorate for Professional Development (DGDP) and researchers from the Universidad Pedagógica Nacional Francisco Morazán (UPNFM); in Uzbekistan United Nations Educational, Scientific and Cultural Organization (UNESCO) established partnerships with the Avloniy Institute (National Research Institute named after A. Avloniy under the Ministry of Public Education) and the Agency for Presidential Educational Institutions of the Republic of Uzbekistan (PIIMA). Overall coordination was by the project lead, FIT-Ed with researchers from the Open University, UK (OU).

In the first *contextualization* phase researchers undertook an assessment of existing TPD systems and policies as well as studying teachers' readiness for ICT-mediated TPD through a desk review of literature, key informant interviews, and a survey administered to a purposive sample of teachers. Exploratory meetings were held with national stakeholders including teacher unions leading to the formation of a National Steering or Technical Group in each country. These groups validated the country context analysis and confirmed priorities for TPD system improvement.

In the following *customization phase* contextualization findings were used to inform the design of a TPD@Scale model for each country—in Uzbekistan a model was developed with each of the two key partners (Avloniy Institute and PIIMA). In addition, a short course (4–6 weeks) addressing an identified problem of practice, was designed and produced to use in the TPD@Scale model field testing: Honduras—the teaching of algebra for teachers working in the third cycle of education (grades 7–9); Ghana—literacy teaching for teachers of early grades (KG–grade 3); and in Uzbekistan a suite of courses was developed to enable testing with a range of subject specialist teachers. National Groups were engaged at different points in this process through different mechanisms including workshops and formal consultation meetings.

The final *field-testing* phase comprised two field activities. In field test 1 researchers assessed the basic stability of the new TPD@Scale models over a three-week period with a small number of teachers. Findings were shared with stakeholders and informed refinement of the TPD@Scale model—an improvement cycle. Field test 2 explored the scalability (equity, quality and efficiency) and sustainability of the TPD@Scale model through implementation in at least three districts and 800 teachers in each country. In Ghana and Honduras teams worked with government officials to undertake a costing exercise of their TPD@Scale models using the Bookings C3 tool (Childhood Cost Calculator). Field test findings informed a number of project outputs including an analysis of opportunities and threats to implementation of ICT-mediated TPD at scale and recommendations for next steps in each study country. A framework to support other GPE countries and development partners in utilizing the TPD@Scale approach is being finalized and will be shared through online spaces and regional and international conferences.

Throughout the project the global team (FIT-ED and the OU) facilitated peer sharing and learning for the country teams through various online events and an in-person conference in addition to leading research skills workshops. Despite the restrictions of the pandemic, for example prolonged school closures in Honduras, and delays in finalizing in-country working relationships in Uzbekistan, project activities were completed in each country.

Research findings, outputs, and outcomes

Capacity strengthening was a strong component of project working and reached over 900 stakeholders, educators, and researchers. Highlights include the costing activity with ministry staff in Honduras and Ghana and associated outputs, training for mentors and tutors working directly with teachers and work with researchers to enhance their skills in field data generation and data analysis which is now influencing their wider practice in other projects and with their university students.

Knowledge mobilization from each phase of project activity has influenced and informed a number of changes in TPD policies and activities in the study countries. Most noteworthy is the adoption of the TPD@Scale model developed under this grant by PIIMA in Uzbekistan and, in Ghana, the adoption of the LMS and guidance on the modality and format of activities for Professional Learning Communities (PLC) from this work by the National Teaching Council (NTC). Further significant developments arising from this work include the emergence or re-vitalising of key institutional partnerships in each country, both between national agencies and between education actors at different levels of the system.

Lessons learned. The value of devoting energy, time and resource to ensuring close working with in-country government stakeholders at multiple levels throughout the project journey—this was extremely difficult at project start in the conditions of the pandemic but has proved a worthwhile investment. However, this engagement could usefully have been extended to a wider group of education stakeholders—this may have been helpful in sustaining of project-initiated activities following project closure.

In relation to internal project working experiences in this project indicate that in similar future activity careful attention should be paid to selection of partners—their related prior experiences and expertise, researchers should be central to project working which should include earlier auditing of knowledge and skills to identify needs, greater resource allocated to supporting these needs and more time allowed in an induction period to enable development of a shared understanding of the problems being addressed, key issues such as equity, expectations of team members and ways of working.

Recommendations for future research. Findings from this research point to the need for further inquiry on how a national or region/province-wide TPD@Scale model can accommodate variations for different local needs and contexts to optimize equity and efficiency while ensuring quality. Project findings indicate that ICTs can be deployed to enhance quality and efficiency in TPD, however substantial equity issues were highlighted with the models designed and tested here. Addressing these issues requires TPD@Scale models to be flexible and accommodate variations: a variation may be offered from the centre as we have seen with the availability of online and offline modalities (Honduras) or at a district level as we see with the hybrid modalities in Ghana or at the level of a Community of Practice or PLC. However current examples are limited and, in this project, stakeholders were reluctant to move away from the idea of one normative implementation model—they are concerned that opening spaces for adaptation would potentially lead to lower quality. More research is required to explore how spaces can be opened for different forms of adaption or localization whilst ensuring quality within different kinds of education systems —those that are highly centralized, those with highly devolved powers and so on—to enable diverse groups of teachers to engage in productive professional learning. Such adaptations need to be costed, building on the costing work undertaken with this grant.

Project rationale and objectives

Strengthening systems of teacher professional development (TPD) is recognized as fundamental to improving classroom teaching and learning and education system performance. This project is researching how the powers of ICT can be harnessed to optimise equity and efficiency and increase quality in TPD systems or large scale TPD programs.

The work builds on prior experiences with proven models of ICT-mediated TPD in other (lower- and middle-income countries) LMICs and was undertaken in the three very different contexts of Ghana, Honduras, and Uzbekistan. There have been few studies in LMICs looking at the use of ICTs in TPD and very few studies which explore ICT-mediated TPD with larger sample sizes (teachers from different sub groups) across multiple contexts including remote rural areas, and which consider cost—the latter was undertaken through piloting an innovative costing tool—the Brookings C3 tool.

Since project approval the conditions of the pandemic drove a surge of interest in, and activity related to, the use of ICTs to support TPD. Teachers' expectations and use of ICTs—particularly mobile phones, for professional purposes accelerated and governments and their partners are now investing heavily in learning management systems to provide and monitor TPD. These developments opened doors to conversations with stakeholders on ICT-mediated TPD and offered more enabling conditions for its use. However, this shift also underlined the need for evidence relating to issues of quality, equity, and efficiency in ICT-mediated TPD. It prompted us to expand our understanding of equity in TPD; moving from issues of access to encompass productive participation particularly for teachers from marginalized groups, those with low digital skills and those working in remote communities. The rapidly increasing availability, acceptability and use of ICTs in education also shifted our understanding of the research problem from "scaling the use of ICTs within TPD systems" to using scaling as a lens to reorganize or refresh TPD systems to become more equitable and more productive: ICTs are both the catalyst and a tool for this change.

Project objectives

The project seeks to understand how and to what extent ICT-mediated Teacher Professional Development (TPD@Scale) can be used in GPE member countries to improve all teachers' access to quality professional learning opportunities which advance the quality of classroom teaching. To that end, its specific objectives are:

- To develop a framework and guidelines for adapting, implementing, evaluating, and continuously improving upon proven TPD@Scale models, or core components of such models, in different developing country contexts and for different sub-groups of teachers, as an approach to scaling in-service teacher training.
- To examine the curricular, pedagogical, technological, organizational, economic, socio-cultural, and political factors that impact on the inclusivity, quality, and efficiency of TPD@Scale implementation in diverse developing country contexts and for different sub-groups of teachers.
- To build the capacity of Ministries of Education, other concerned government agencies, and education stakeholders at all levels (including teachers; school heads and other instructional leaders; educational policymakers and planners; TPD developers and providers; education researchers, etc.) to design, develop, implement, evaluate, and continuously improve TPD@Scale implementation for the diverse range of contexts and teacher sub-groups in their respective countries.
- To promote evidence-informed changes in policy and practice in both GPE member countries and non-GPE member countries towards improved access to quality teacher professional development using the TPD@Scale approach.

Section 1: Project implementation and management

Achievement of project objectives

The KIX TPD@Scale project objectives continued to remain critical and relevant through the project period and the challenges of the pandemic. Objectives were either fully or almost fully met as discussed below.

Objective 1. To develop a framework and guidelines for adapting, implementing, evaluating, and continuously improving on proven TPD@Scale models in different context and for different groups of teachers.

This objective has yet to be fully achieved due to delays in undertaking field work and subsequent analysis of the data. Delays were mainly caused by external factors—a combination of Covid-related constraints such as school closures and changes in policies and government personnel. However, analysis of the project findings from each country has now informed the generation of a draft framework for implementing TPD@Scale. This summarizes the prior conditions and issues to be considered during the processes of adapting, implementing, evaluating, and improving on ICT-mediated TPD in education systems or large programs. Following feedback from partners and global experts the framework will be finalized in an easily accessible format. Accompanying the framework will be a protocol for using the framework and a guidance toolkit drawn from the resources generated through the project by the global and country teams. The toolkit includes templates for adapting TPD@Scale models, advice on stakeholder engagement, sample research instruments and materials to support research skills development.

Objective 2. To examine the multiple factors which impact on the inclusivity, quality, and efficiency of the TPD@Scale implementation in each country context and for different subgroups of teachers.

This objective was fully met for the TPD@Scale models implemented in partnership with public education systems in each country: Honduras (1 model); Ghana (2 models); Uzbekistan (2 models). Structured field testing of these models has been undertaken with large numbers of teachers (N> 800) in at least three locations in each country. Data from these field tests has illuminated the inter-related factors which influence the experiences of teachers with different characteristics: gender, length of service; location; language fluency; prior qualifications and so on relevant to each country context and model. Findings are outlined below (p 4).

Objective 3. To build capacity of Ministries of Education, other education stakeholders at all levels, to design, develop, implement, evaluate, and continuously improve TPD@Scale for diverse contexts and teacher subgroups.

This objective has been delivered. Relevant education stakeholders from different levels of each country system have been closely involved and participated in activities integral to the planning and implementation of the TPD@Scale model throughout the project period. Key stakeholders from each country were included in the monthly global project meetings and participated in the meeting in Istanbul in September 2022, shaping the evolving development research and knowledge mobilization activities. A wider group of stakeholders has actively contributed to multiple in-country meetings and workshops to plan and deliver activities such as the adaptation of the TPD@Scale model for testing, creation of the course and delivery of the field testing. In Ghana and Honduras relevant ministry staff have been highly involved in the innovative TPD@Scale costing exercise using the Brookings C3 tool. Finally, a number of researchers from Ghana, Honduras and Uzbekistan took part in research skills development. Further details are discussed on (p 13) and Section 2 (p 18).

Objective 4. To promote evidence-informed changes in policy and practice in both GPE member and non-member countries towards improved access to quality TPD using the TPD@Scale approach.

There is considerable evidence of meeting this objective within the study countries (Ghana, Honduras, and Uzbekistan) for details see the discussion in Section 2 (p 15). However, progress on this objective outside the study countries has been weaker. Our approach has been to concentrate on guiding and supporting country teams to take part in peer discussions across their region, although the global team have also presented the approach and emerging findings at a number of international conferences. Where there has been a strong connection to regional activities, for example in Honduras through SUMMA and the KIX LAC hub, there has been considerable engagement in regional knowledge mobilization events. Similarly, the Uzbekistan team have leveraged their relationship to the KIX EAP hub to share their learning on TPD@Scale with colleagues from Central Asia. The Ghana project team's regional presence is small and, after a promising start they have had limited capacity for regional engagement. We hope that now the data analysis is complete project partners will use the framework (objective 1) to support more activity related to this objective.

Main project activities

Throughout the project period the global team (OU researchers, country technical advisers, the MEL lead and FIT-ED project staff) held monthly technical meetings with country project leads, researchers and key stakeholders (see Annex 1 for project organizational chart) to guide project activity. Country teams worked within an overarching common project framework comprising 3 phases:

Phase 1: Induction and Contextualization (April 2020–December 2020): Onboarding of team members, stakeholder analysis, establishment of Steering Groups and background study of current TPD policies and teachers' lived experiences of TPD to build a rich picture of each context.

Phase 2: Customization (January 2021–August 2021): Adaptation of TPD@Scale models in each country drawing on TPD@Scale approaches and experiences from other LMICs. Creation of course materials to use in the TPD@Scale model during field testing. Critical reading of course materials by experts and developmental testing of the materials with teachers.

Phase 3: Field Testing (September 2021–January 2023): Planning and carrying out initial small scale field work to assess the basic stability of the TPD@Scale model, refining of the model and larger scale field testing. Data generation and analysis. Creation of final outputs.

Engagement with key stakeholders was ongoing throughout all three phases. In-country activities in Ghana, Honduras and Uzbekistan are summarised in Annex 2 and the TPD@Scale models generated in each country for field test 2 are explained in Annex 3.

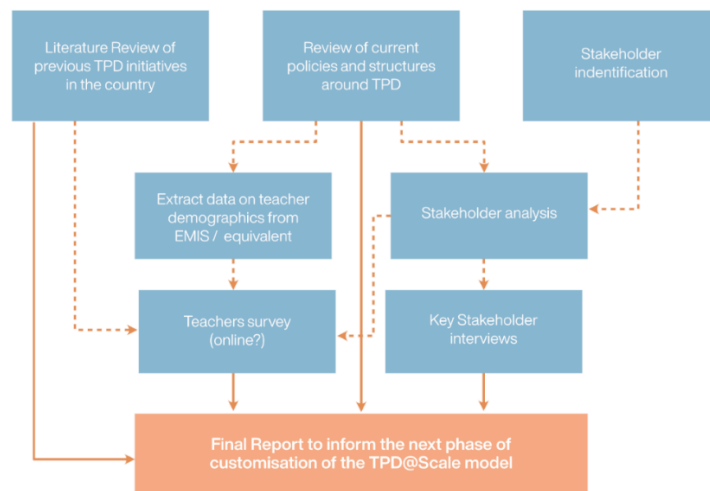
Research methods

The project methodology drew on a realistic evaluation approach, looking at activity and experiences at a number of levels in the education system to understand how the TPD@Scale model can be scaled across different contexts and for diverse groups of teachers. This mixed methods approach combined quantitative and qualitative techniques and evolved through the project in response to researcher capabilities, contextual opportunities, and constraints, together with findings from earlier project phases. Project activity comprised three phases—contextualization, customization, and field testing—as described above. Each involved research activities. Overall, approximately 3,000 teachers were involved in the research activities.

In the contextualization phase researchers undertook a number of activities (as outlined in figure 1 below) to understand the TPD policy context, teachers' recent experiences of TPD, teacher demographics and the extent

to which teachers have access to ICTs and are using them for professional learning. In this phase Covid constraints did not allow in-person data collection, hence virtual methods were used for interviews and survey collection. For example, in Honduras 300 teachers completed an online survey about connectivity, access to IT hardware and software and so on. This approach limited access to potential teacher respondents in areas with little connectivity or those without access to digital devices or low digital skills. Consequently, assessments of teachers' use and familiarity with ICTs may have been over ambitious and this was reflected in the initial TPD@Scale models used in field test 1.

Figure 1: Phase 1 research design



In the customization phase the intention was for researchers to take on the role of participant observers at the various workshops and meetings with stakeholders and other education actors. As participant observers they would have generated firsthand data (through field notes and short conversations) on actions, beliefs and attitudes of those involved in the activities (DeWalt & DeWalt, 2011). These observations were also intended to inform the MEL logs, in particular outcome cases. However, as we progressed through the phase it became apparent that most of the researchers had little prior experience of this type of in-depth observation and were not always involved in these activities with stakeholders. Hence this approach to data generation was not taken forward. (It was only later in the project, generally after in-person meetings, that in-country researchers felt sufficiently comfortable to request support with research methods and analytical techniques.) Instead, researchers later undertook more formal semi-structured interviews with those involved in this phase to understand the influence of the project activity on their attitudes, behaviors, and beliefs.

For the field tests generic project research sub-questions were adapted for each country by the country researchers and a research design developed in workshops with the global team. Research activities in both field tests varied considerably across the study countries depending on the model being tested, equity and quality concerns arising from pilots and/ or the contextualization findings, field conditions, time and resource constraints, and researcher capabilities. For example, in Uzbekistan schools in the field test sample were highly dispersed across large geographic areas and researchers had limited time in person at each school. Hence researchers employed teacher focus groups at each school rather than individual interviews. In Honduras researchers were not able to travel to the field sites and although individual teachers (research participants) were again highly dispersed there was only one teacher at each school, hence individual online teacher interviews were undertaken. Considerable time was spent with each country research team to develop a shared understanding of national teacher demographics and the country context. This improved sampling of both field sites and selection of participants to invite for interview/focus group from the available data. However much of this was driven by convenience factors rather than being truly random or representative. In each field site

quantitative and qualitative data was generated through a combination of surveys, course analytics, data from social media interactions, and interviews and focus groups with teachers, school leaders, mentors, facilitators, district officials and system level actors. A brief overview of the research design in each country is shown below:

Figure 2: Research design of Honduras Field Test 2

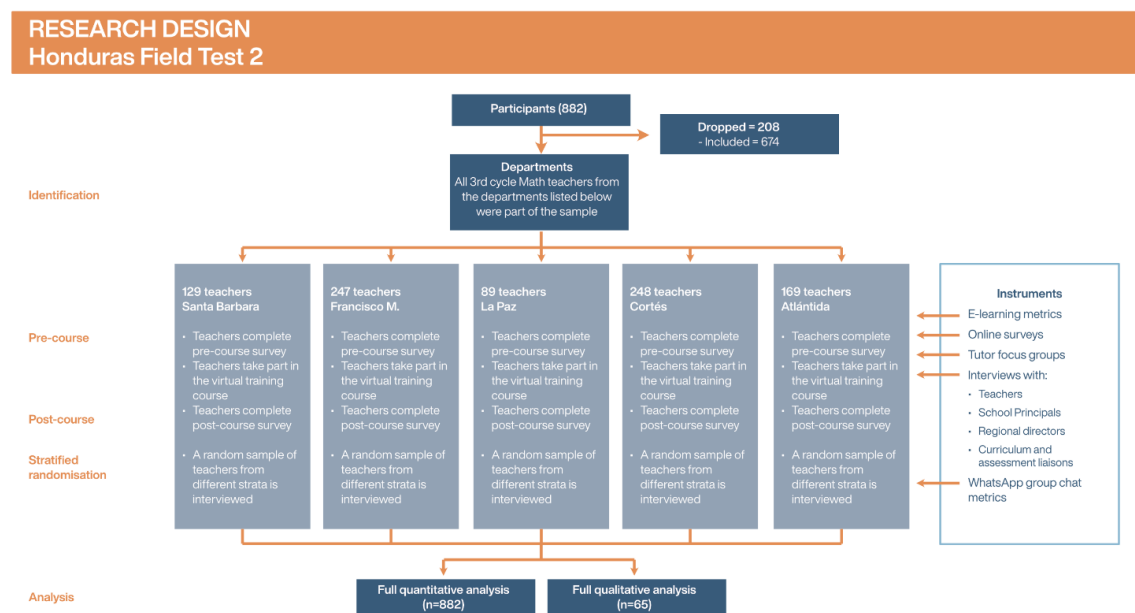
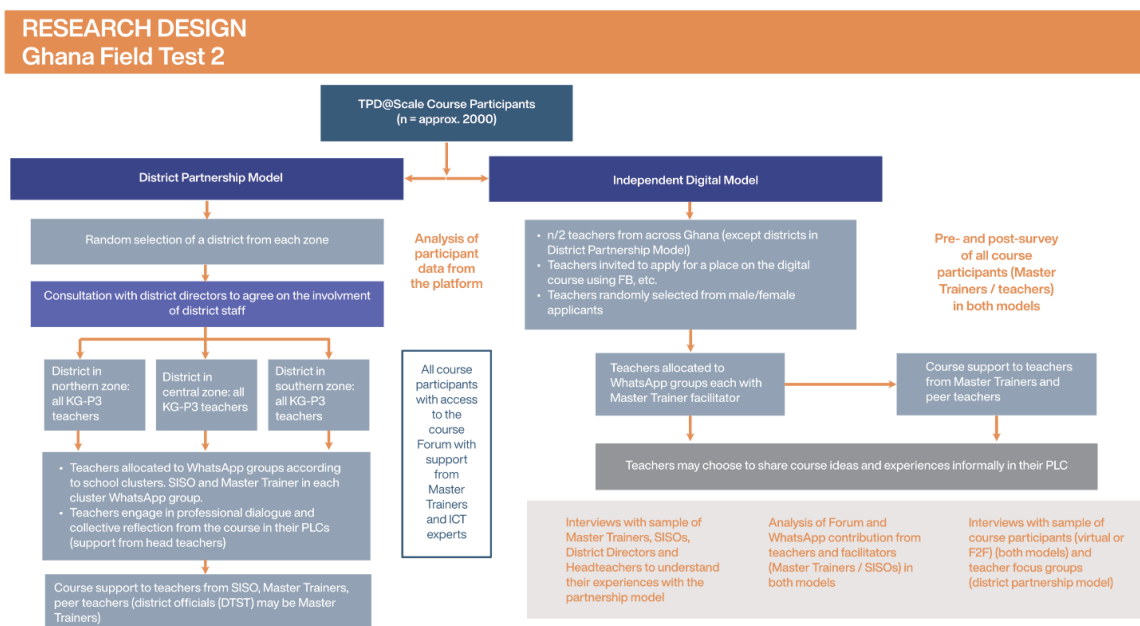


Figure 3: Research design of Ghana Field Test 2



The following instruments were used in the district partnership model and digital model:

Instrument	Invited participants	Teacher survey	Master trainers survey	Teacher interviews	Teacher focus groups	Master trainer interviews	Interviews with MoE officials / national stakeholders	Interviews with local education stakeholders
District partnership model	2389	25	N/A	30 (10 in each district)	2 (12 teachers)	4	1	21
Digital model	1429 (557 complete the course)	696	18	10	N/A	4	2	N/A

Box A: Research design Uzbekistan: PIIMA Field Tests 1 and 2

FT1 was carried out with 57 volunteer teachers from eight schools located in four regions of Uzbekistan (Tashkent, Namangan, Khiva, and Nukus). The selection of the four regions was linked to the research priorities and interests of PIIMA. They operate Presidential and Specialized schools in each region and could therefore establish a common environment for the study. Teachers completed a survey and were randomly selected to participate in focus group activities. Interviews were conducted with school leaders.

In FT2, PIIMA introduced some changes to the TPD@Scale model following analysis of data from FT1. FT2 was undertaken with schools in the same four regions as FT1; PIIMA were keen to see the impact of improvements from the earlier iteration of the model. For data collection two schools from each region were randomly selected and then teachers from each school were also randomly selected with the aim of involving teachers from different disciplines. A total of 85 teachers completed the online survey and two face-to-face focus groups were conducted in each region with a total of 56 teachers (38 female and 18 male teachers). In addition, eight mentors and seven school principals were interviewed.

Box B: Research design Uzbekistan Avloniy Field Test 2

The mixed-methods methodological design of this field study involved the implementation of surveys, interviews and focus group activities with teachers, school principals and methodologists from four different regions of Uzbekistan.

Regions	Survey teachers	Focus group teachers	Interviews with school principals	Interviews with methodologists
Karakalpakstan	278	46	6	6
Navoiy	293	40	6	5
Kashkadarya	629	47	6	6
Tashkent	188	41	6	5
Total:	1388	181	24	21

The selection of the four regions, out of a total of fourteen, responded to the research priorities and interests of the Avloniy Institute, some of the local universities and UNESCO. Based on data shared by the Ministry of Public Education, the following regions were chosen: Karakalpakstan, due to its autonomous status in Uzbekistan and the local language being the language of instruction at the majority of schools; Tashkent, as the largest city and mostly urban composition and skewed female teacher population; Kashkadarya for having a significantly larger teacher population; and Navoiy for having several schools in remote rural areas. The interest was to introduce different non-probabilistic and probabilistic sampling techniques to minimize selection biases. This was key to addressing the issues of equity—perceptions of gender roles, language(s) in which TPD materials are produced and disseminated, and equal opportunities for teachers in urban and rural areas, among others—which are the focus of the study, whilst simultaneously balancing the challenges of conducting large-scale fieldwork in mostly unexplored areas of Uzbekistan.

To this end, [1] four regions were selected on the basis of the research priorities of local institutions and how different from each other they are perceived in terms of languages spoken, urban/rural composition, etc.; [2] one district was randomly selected from each region after accounting for the size, urban/rural composition and the saliency of any issues of relevance to the object of equity; [3] six schools were randomly selected from each district; [4] in each school, six to eight teachers were randomly selected from different strata based on their teaching category and their gender. All school principals and methodologists available in these districts and schools were also included in the sample (see table above). All interviews and focus groups were conducted in -person. This enabled researchers to understand the working context of the teachers, principals, and methodologists.

In each country quantitative data, generated from the survey and existing platform analytic trends, was analysed using descriptive and inferential statistics (chi-squares and t-tests) to test possible correlations among variables of interest. The qualitative data that emerged from the interviews and focus groups was analysed using an adapted model to Braun and Clarke's (2013) thematic analysis framework, which consisted of researchers coding the data in an open-source tool (Taguette) first, then grouping codes into overarching categories, and finally developing and defining derived themes through group discussions.

Ethical clearance for the field work was through in-country researchers' institutions. All participants were given detailed information about the project objectives and activities. They were asked to give informed consent before participating in any data generating activity. All participant data was promptly anonymized, securely stored and only made available to the research team.

In Ghana and Honduras, it is likely that the field testing did not include teachers with extremely limited connectivity or those who had very low digital skills; these teachers are unlikely to have enrolled on the online courses and hence were not captured in the data generation. The District Partnership Model in Ghana (DPM) attempted to implement a blended model to purposefully include teachers in these sub groups. Unfortunately, implementation of this model, by a new partner, was not successful and few of the intended cohort participated in this innovative solution.

Across all countries the studies would have been enriched had the researchers been able to carry out further data collection: in Uzbekistan interviews with senior officials, in districts, departments and at national level; in Honduras more interviews with teachers who did not complete the course or did not enrol; in Ghana more surveys from teachers in the district partnership model. However, limitations of time and resource prevented these taking place and in Uzbekistan expanding the envelope of research participants would have required further political negotiations.

Considerable support with research skills development was made available to all country research teams by the global team—see discussion below for more details (p 18). This was found to be much more effective if delivered in person but arranging this slowed down progress with both data generation and analysis. Unfortunately, the Uzbekistan technical adviser was not able to travel due to extended covid restrictions—these were only lifted in the final months of the project.

Reflections

Partnerships. All project members valued highly the global consortium with its focus on a common goal and the opportunity to engage in cross-country interactions with colleagues facing similar challenges. Different teams progressed at different speeds which facilitated peer learning, as this colleague from Ghana commented, "It helped to learn from Honduras when they finished a costing exercise prior to us or to ask other geographies how they were strengthening their platforms or research agendas." Other colleagues spoke of learning how other teams were approaching and collaborating with stakeholders. These interactions also prompted colleagues to self-assess the quality of their work with reference to the work of other teams. However, this was tempered by a feeling of 'performative anxiety' from some colleagues who worried whether they were "doing it right." The monthly global consortium calls were found useful for project management, technical information, and building and sustaining energy and commitment around the project although everyone commented that the most valuable learning took place during the Istanbul in-person conference.

Experiences of collaborative partnerships within countries were more variable. Project members commented that it would have been valuable to have had greater clarity on respective responsibilities, better in-country project management, a protocol or model to guide cooperation between different partners or actors and more

time to develop a common understanding of expectations from different team members and organizations at the start of the project—some team members found it took time for them to become familiar with the project aims and approach. Nevertheless, in all countries the collaborative working between different partners was felt to have been critical to success and to have laid foundations for more permanent collaborations.

Overall implementation of the research in support of scaling impact. Scaling is a complex concept and the research design in this project challenged traditional conceptions of research. Many of the country researchers initially thought their role was to act as traditional "outsider" researchers evaluating the implementation of the courses in the TPD@Scale model rather than undertake research to build knowledge about scaling impact. The latter activity involves becoming involved in the design and implementation activity—working side-by-side with the other teams, making observations, and asking questions. Researchers expressed surprise that they were not merely expected to implement a research design blueprint but to exercise their agency and expertise to develop research designs and accompanying instruments. This transition has been slow and a challenge for many of the researchers. As might be expected progress is non-linear and dependent on personal prior experiences of international research and institutional research histories. The paradigm shift would possibly have been easier if researchers had been involved in the conception of the original proposal, this would have helped them to engage with the core framing of the endeavour as development research that needs to be flexible and responsive.

Choosing project partners at the bid development stage is always difficult and risky but perhaps more attention should have been paid to partners' prior experience and understanding of the core concepts underpinning TPD@Scale: social learning, learning at scale and situated professional development (learning through practice). Across the consortium expertise in these areas was limited and in the early phases in particular much time was taken with extensive epistemic work to begin to disrupt and modify deeply embedded conceptions of how teachers learn to become more effective teachers. This work has been ongoing. In addition, many team members were inclined to see ICTs as enabling more efficient and extensive replication of existing TPD practices rather than exploring how ICTs might enabling new ways of learning that model those advocated in policy for school classrooms.

Finally, implementation of the research was also influenced by the nature of the partnership between the researchers and in-country lead organization. In Honduras SUMMA partnered with UPNFM as a key institution involved in teacher education. This made working easier and ensured continuity when research team members moved on from the project. By contrast contracts in Ghana and Uzbekistan were with individual researchers. In this situation accountability within the research team is less formal and it is more difficult for the lead researcher to ensure deadlines are met and to schedule activities; most of the researchers are undertaking this work outside university working hours. This has led to delays in project working and to sporadic attendance at some workshops and team meetings. This is regrettable and in future institutional contracts should be the preferred option.

Integration of gender equality, equity, and inclusion. On reflection more time should have been devoted throughout the project to problematizing issues of inclusion and gender equality with the aim of developing a shared understanding of how these issues play out in TPD and project working, including the composition of research and implementation teams. An explicit gender lens could have been applied to all activities and instruments. However, such discussions can be threatening or unsettling, particularly with new colleagues, and at project start it was difficult to create a safe team space for sensitive discussions; in the conditions of the pandemic all interaction was online and many team members were understandably distracted by personal and family health issues.

A key aim of the research was to consider equity in TPD, and this was reflected in research questions and sampling. However, across the research sites a gender lens was rarely applied in qualitative data analysis as this researcher commented, "Female teachers tend to be more responsible and it is important to hear their

voices but they also have house chores... and I don't think we captured that well." Other colleagues reflected that more effort should have been made to find comfortable spaces outside schools for interviews and focus groups. Team members agreed disability was neglected in the field work, but teams were not able to locate data on teachers with disabilities at any of the field sites. Experiences of teachers from different ethnic groups was perhaps not given appropriate consideration in sampling but again relevant teacher demographic data was sparse. There are policy gaps in these areas.

Similarly design of the TPD@Scale models was felt to give insufficient attention to issues of equity: consideration of the specific needs of female teachers; issues of accessibility in the use of ICTs; and consideration of the needs of teachers working in multi grade schools or in highly remote areas.

Achieving a gender balance in project research teams was difficult; in Ghana the team included no female researchers and in Uzbekistan there was one female researcher in the Avloniy team although the majority of researchers in the PIIMA team were female. This gender imbalance may have influenced how questions were framed in interviews and focus groups and conditioned research participant responses. In Honduras there was a gender balance in the research team composition but the female colleagues were younger and qualitative researchers—historically seen as a lower status specialism.

Capacity strengthening of relevant stakeholders. This was a relative success of the project—see discussion above on progress with objective 3 for more details.

Knowledge mobilization activities. Project activity has been stronger on events (workshops, conferences and other related activities) than in production of secondary knowledge outputs. In part this has been due to an absence of findings until very recently; final field work was only complete at the end of October and much of the final three months have been occupied with data analysis leaving little time to synthesis findings into outputs. Furthermore, through much of the project there were capacity and capability issues—capacity of country team members with skills in writing at this level was stretched through other demands on them. In retrospect it may have been helpful to have offered structured writing mentoring to a wider group of country team members to increase capacity, however this is time consuming and requires specialist skills.

Research capacity of institutions and individuals. Strengthening research capacity of colleagues in partner institutions has been a notable success of the project. Many of the researchers had appropriate qualifications but little experience of working in international projects. These capacity strengthening activities have been particularly prevalent in the final year of the project for a variety of reasons: increased capacity in the global research team; the demands of field testing; and finally, in-person country workshops enabled the development of closer professional relationships and in-depth conversations in which the global team was able to more easily identify and subsequently address research skill development needs. Later in the project the global team developed simple diagnostic tools to target more tightly specific research skills development; on reflection it might have been helpful to have devised and deployed such tools earlier or to have asked country research teams to undertake a skills audit in the first phase of the project—their needs, particularly around qualitative research techniques, were varied and extensive. The use of open source software for data analysis has been a success and researchers have transferred their skills with these tools to other activities beyond the TPD@Scale project, including university teaching. Finally, the project research associates (global team and all from LMICs) report that working on this project has sharpened and extended their research skills; teamworking with colleagues from very different contexts, becoming fluent with new software packages, being flexible and appreciating how large development research projects operate and activities fit together. As one of the research associates reflected, "it's been a transition from the PhD to the real world and an opportunity to apply what I've learned." Having a committed group of research associates who are able to support each other and develop close relationships with their peers in the country teams has made a considerable contribution to successful project working.

Project management. While ultimately effective, overall project management over the project life was very challenging for a number of reasons, the two most impactful of which were the following:

- a. *The pandemic and knock on effects experienced throughout.* For the first 22 months of the project, there were no face-to-face interactions between the global team and the country teams; all country teams were only able to meet once, in month 29. Changing Covid-restrictions at country level also made interactions between the country teams and stakeholders a challenge. Further, the unpredictability of the school calendars (and government work arrangements generally) due to the pandemic and other local disruptions, particularly in Honduras (extreme weather events and change in government) and Ghana (teacher strikes), limited what could be done, when and with whom, most consequentially with respect to the initial contextualization research, the two field tests, and related stakeholder mobilization, coordination and data-gathering activities. Compounding delays and work slow downs meant little time at the end of the project lifespan to conduct knowledge mobilization and influencing activities after analyses of research results were completed despite a 3-month extension granted by IDRC.
- b. *Need for capacity building of country teams and their research partners.* While all three country partners (SUMMA for Honduras; Worldreader for Ghana; and UNESCO for Uzbekistan) and their corresponding local research partners (UPNFM in Honduras; UoG in Ghana; and PIIMA researchers and the Avloniy Institute in Uzbekistan) were chosen based on their proven track record in education and education research work, their understanding of the country contexts and their strong relationships with critical stakeholders, doing research on scaling proved to be a challenge for all. Intensive mentoring and technical support from the Principal Investigator, supported by the Technical Advisers and Research Associates, to deepen understanding of effective TPD and the research focus on the process of scaling as well as to fill in research skills gaps across the country teams were critical. The learning curve was steep; more capacity-building is needed for local partners and key government stakeholders if more TPD scaling research is envisioned in these countries. These complex scaling research projects also require a high level of project management (including financial management) capability. This was a challenge particularly in Ghana.

The IDRC Program Officer and Grant Administrators were highly responsive, providing timely and meaningful inputs throughout. Most importantly, they were alert to the need for flexibility given the unique challenges of implementing a complex, multi-country project under pandemic conditions. Two flashpoints for further consideration would be:

- a. *Separate contracting for multi-country projects (Honduras and Ghana under FIT-ED and Uzbekistan under UNESCO).* While the challenges encountered by the Global Team in leading cross-country collaboration might be peculiar offshoots of GPE KIX's special relationship with UN agencies, we note the need to ensure that effective arrangements are made from the outset to ensure that research leadership is formally specified in the parallel grant agreements, accountabilities are agreed and protocols for such are established and adhered to especially in terms of data sharing, analyses and the contributions of each partner to cross-country or synthesis knowledge products and activities. Related to this would be the harmonization of work planning (including grant end and start dates), budgeting and technical and financial reporting.
- b. *Technical and/or reporting requirements from IDRC.* Ideally, all such requirements from IDRC would be specified before the start of the grant period and incorporated into work planning and budgeting. The introduction of the MEL system mid-stream was a challenge in terms of 1) understanding and fulfilling the technical requirements and 2) resource allocation (staff skills and time required at country and global levels).

Section 2: Project outputs and outcomes

Knowledge generation

The project's main contribution to knowledge is through generating a framework for analysis of factors which need to be considered when implementing TPD@Scale or scaling the use of ICT-mediated TPD in national TPD systems of LMICs with different types of governance structures. This analysis complements research on how ICTs can be utilized to support professional learning in LMICs and contributes to the emerging body of work on how ICTs can be used in TPD to reduce inequalities in access. The focus on equity in TPD has previously received little attention and emerges as a key strand of the findings generated in this work.

The framework for implementation of TPD@Scale focuses on structures and actors' opportunities for agency at three levels—system or national level, district or department level and teacher level. Hence high-level findings are reported under these headings here with a focus on the TPD@Scale core principles of equity, quality and efficiency. Findings also include a number of other issues relevant to TPD more broadly which are not discussed here—teacher motivation for undertaking TPD, recognition for teacher professional growth through participation in TPD and the financing of TPD for example.

System level. Three key issues relevant to the implementation of TPD@Scale are data, coordination between agencies and centralization of TPD design. In all study countries it has been difficult for the project teams to obtain reliable data on teachers. Data sharing does not seem to be a common occurrence and there are massive inconsistencies in data from different levels of the system particularly in Honduras, for example on the number of teachers in each district. Furthermore, an equity lens on the data available reveals gaps for example an absence of data on teachers with disabilities or on preferred language for TPD. These absences inhibit equity in TPD@Scale.

In all three countries structural tensions between different agencies involved in TPD at both national level and district (or department) are emerging with the advent of centralized online platforms for TPD. There is a risk that these initiatives are marginalising the role of local educators who support TPD, rather than harnessing their skills to offer support to teachers with online learning appropriate to the teachers' context and needs (see point below). In Ghana field testing of the promising "District Partnership model" which potentially offered localization of support and modalities, was severely hampered by the weak coordination between the NTC (who run the platform and control teacher registration on the platform and subsequent awarding of TPD points) and the GES who employ all school and district level staff. These disconnects potentially portend widening inequalities in TPD between those teachers who are digitally literate and have access to a range of online based TPD options (for example through the Avloniy platform in Uzbekistan or in the Ghana digital model) and those teachers who are limited to what is provided locally in traditional face-to-face mode. Where annual completion of TPD is becoming mandatory, this potentially disadvantages teachers for whom online course participation is not possible or desirable.

Thirdly in all the study countries the centrally designed and delivered online platforms were seen as at the heart of TPD@Scale and there was no facility to enable teachers or tutors/mentor/methodologists to contribute material to the platform or to take the platform content as a resource for classroom or school enquiry. This centralization potentially constrains adaptation to meet diverse teacher needs particularly when levels of resource are low at the centre, as was evident in the Ghana district partnership model.

District/department level. In all three countries there is a cadre of experts available to support TPD—tutors, district officials, methodologists and so on. However, the competencies and skills of many of these 'experts' emerged as a critical issue; many of them were claimed to lack recent classroom experience (a particular issue

in Uzbekistan), possess limited digital skills and have limited recent experience of professional learning themselves. In Ghana the Master Trainers working with the online course are highly competent with the digital tools but may reside anywhere in Ghana. The district officers supporting the in-person sessions have intimate knowledge of the conditions and priorities but were much less competent with the platform digital tools. Coordination between these two actors was found to be weak impacting negatively on teachers' experiences of TPD@Scale.

School leaders (principals, headteachers, school directors) are not seen as key actors in TPD and often they do not see leadership of TPD as an integral part of their role and are not involved in current initiatives. This was most pronounced in Uzbekistan where the majority of school leaders in the study reported being unaware of the programs available through the online platform. This limits the contribution of TPD to school level improvements in teaching and learning.

Although each of the study countries organizes education delivery through subunits—districts, departments or regions, there is currently little autonomy or capacity for adapting TPD@Scale provision to better meet the priorities and conditions of these sub-units for example in content or pedagogic focus, modality, type of support or language. This makes optimizing equity in TPD more difficult.

Teacher level. At this level issues of equitable access, participation and choice for teachers predominate. This project takes an extended perspective on equity in TPD which extends beyond access to productive participation in TPD.

Teacher access to the internet or to digital materials varied across country. In Ghana it is not a major barrier to participation in ICT-mediated TPD. Many teachers use their phones although these bring issues associated with data costs and ensuring content is formatted to read easily on small screens. In Uzbekistan teachers have access through the facilities in their schools, school access is less common in Ghana and Honduras countries. However, in Honduras technology access is a major barrier—connectivity is weak in many areas and teachers do not have access to appropriate devices to use for professional learning. Across all locations internet access is more challenging in remote rural areas but a number of teachers working in these locations were found to travel to their homes in urban areas at the weekend. The use of apps which operate offline was a useful compromise for many of this group. However much more critical in all three countries is teachers' low level of digital skills and confidence in using ICT tools/online modalities reported particularly by older female teachers. This is potentially a critical threat to the successful implementation of TPD@Scale.

Teachers who do engage in ICT-mediated TPD opportunities are keen on the flexibility these modes afford them and the reduced need to travel extensive distances to in-person events, particularly female teachers. Many teachers initially express a preference for in-person TPD over virtual learning but successful experiences with online learning encourages teachers to be prepared to try more online learning. These findings indicate a need for models to combine online and in-person activities (different blends) for greater equity.

A number of variables impact teachers' productive participation in ICT-mediated TPD. In Uzbekistan the language of the professional development materials is important to teachers; many teachers wanted materials in languages other than Uzbek. This is an important equity issue. A further equity issue is the relevance of the activities within the TPD to teachers' classroom realities is also important to teachers. In Honduras many teachers were concerned that the course promoted the use of digital tools which are not available in their schools. Teachers also comment that much TPD is too theory-intense with few examples of how to draw on theory in the planning of teaching and learning activities. This demotivates teachers who do not perceive the TPD opportunities as relevant to their professional learning needs and classroom realities.

However, teachers highly value opportunities to exchange ideas with their peers and access support from experts through digital spaces; social media platforms are widely used by teachers. Further analysis of the data is needed to understand factors which might limit teachers' use of these platforms.

Provision of TPD emerges as a linked issue; some teachers report being overwhelmed with TPD options while others have no TPD available. However, when TPD@Scale is available, opportunities to participate can become more equal. It is more difficult for school leaders to select and restrict the number of teachers who participate and, as in Ghana and Uzbekistan, teachers can choose courses which meet their individual professional learning needs. Finally, teachers report that compared to workshops ICT-mediated TPD brings the classroom into their TPD and makes it easier to see the relevance of the TPD to their teaching.

The TPD@Scale framework draws on analysis of the situation in each study country, overviews of these are attached to this report (Annex 4). In the more extensive versions of these frameworks, shared with country stakeholder, each cell is supported by evidence from the field work and additional observations from meetings, workshops and documentary analysis.

Capacity strengthening

Capacity strengthening at multiple levels has been a strong feature of this project. Throughout the life of the project multiple activities have been held to enhance the skills and understanding of TPD of education stakeholders across different levels of the education system and researchers in Ghana, Honduras, and Uzbekistan. Activities included workshops, collaborative generation of course materials, TPD programs, handbooks and protocols and meetings. They focused on a number of areas pertinent to the TPD@Scale development research:

- Designing TPD@Scale—the components constituting the TPD@Scale model, for example provision of expert support, and the forms these might take in different contexts;
- Learning (instructional) design skills to develop courses to enhance teachers' professional practice;
- Research skills to design and conduct field research relevant to scaling questions, in particular ethical considerations, the construction and use of qualitative research instruments and analysis of qualitative and quantitative data;
- Costing TPD – understanding of the wide range of inputs needed to generate accurate costings for different TPD modalities and adjusting these for different numbers of teachers;
- Tutor/mentor/methodologist skills—devising and delivering programs to enhance the skills of educators who support teachers' professional learning; and
- Teachers' classroom practice through participation in the TPD@Scale field test activities.

The activities, outputs, outcomes and impact on stakeholders in study countries associated with each of these areas are described below:

Designing TPD@Scale. Online workshops were held by the global research team on the key components of the TPD@Scale approach and the relationship between them in different models. Subsequently country teams held workshops and meetings with stakeholders from government agencies, several of these brought together actors from different levels of the education system in rare collaborations and peer learning. This has enhanced the understanding of senior stakeholders on the field conditions for teachers. Outputs include TPD@Scale models for each country (two for each of Uzbekistan and Ghana—see Annex 3) and a framework to support other GPE countries and development partners in utilizing the TPD@Scale approach and various guidance documents to be published by the TPD@Scale Consortium. In Ghana, the capacity strengthening activities resulted in an increased leadership role for the Ghana National Teaching Council and the Ghana Education

Service in the use of the learning management platform to conduct in-service teacher training using online and offline models of the TPD@Scale models developed under the project.

Learning design. In Honduras a series of workshops and project meetings were held to strengthen the capacities of the pedagogical teams of regional centers and the core maths team at the DGDP in ICT-mediated modes of TPD. Similarly in Uzbekistan PIIMA held a number of workshops with PIIMA staff and teachers to develop a suite of blended courses for the first field test. Guidance from the global team encouraged teams to engage in structured developmental testing and to use critical readers—these were new activities for many team members. Outputs include a number of online courses with hybrid optionality. All were refined and modified following feedback from the first field test and now offer templates for the design of future courses.

Research skills. Eleven discrete in-person and online workshops (some extended over several days or sessions) were conducted by the global research team for researchers in each of the country research teams. The workshops aimed to extend and deepen the research skills of members of the research teams and hence improve the quality of the research undertaken with this grant. Approximately 70 researchers participated in these workshops which highly interactive and included role play, modelling research techniques such as different methods of sampling and the co-construction of outputs such as interview schedules, focus group activities and surveys as well as action plans for the field tests. The workshops were accompanied by a number of outputs: ethical guidance and instruments (consent forms, information sheets); guidance on conducting interviews, focus group activities, using Taguette (open source qualitative data analysis software), undertaking thematic analysis and qualitative data analysis. The major outcome of these workshops has been an increase in the confidence and skills of team researchers, one participant commented that having experienced how to conduct a focus group “... has been eye-opening as I was not aware that this type of data collection method could be so effective” (participant feedback on the workshop). Other participants valued “the use of participatory techniques to codevelop the instruments together” and “the use of open-source technology as it can become an important tool to do research.” Furthermore, researchers from all country teams have communicated that this tool is already being implemented in other projects across their departments, and that many have introduced the tool to their undergraduate or graduate students. In addition, at least two country researchers are now embarking on doctorates using data from this project.

Costing TPD. Government officials and researchers (35 in total) in Ghana and Honduras were trained on how to use the Childhood Cost Calculator (C3) tool developed by the Centre for Universal Education at Brookings Institute. This tool facilitates cost analysis to make the case for investment and to encourage more informed investments through provision of costed implementation plans at scale. The training involved a series of workshops (online and in-person) to collect cost data and use it to estimate the costs of different scenarios of designing and delivering modalities of TPD. In each country the activity led to the production of a case study report and data which can be a reference input for the planning of budgets and training actions. In addition, the team in Honduras developed a dynamic dashboard for costing and accompanying guidance documentation. These outputs have been shared with officials in the finance areas of the Ministries of Education. Outcomes include enhanced capacity of participants to carry forward to future cost analysis assignments.

Tutor/mentor/methodologist skills. A range of different mechanisms were used to develop skills in online tutoring and mentoring of teachers across the study sites. In Ghana Master Trainers (tutors) participated in an intense series of training events prior to each field test in addition to weekly sessions through the field test periods. Similarly in Honduras training on tutoring virtually was provided for all the tutors in each field test, accompanied by a tutor protocol. In Uzbekistan a two-day National Forum was attended by over 300 educators involved in supporting teachers’ learning. The forum introduced new pedagogical practices and tools to support movement in professional practice. Further outputs in Uzbekistan included a workshop for over 120 Master Trainers on innovative pedagogies.

Teachers' classroom practice. Across the three study countries through the two field testing episodes over 3,000 teachers participated in TPD designed to strengthen their classroom practices. Unfortunately, there was insufficient time to assess the impact of this study on teachers' practice due to Covid-related delays in the field testing.

Overall, 960 education stakeholders and decision-makers, 48 percent of whom were women, benefited from these capacity-building events over the course of the project. The focus of the capacity-building activities was on how to use ICT-mediated learning platforms to enhance teachers' capacity to enhance instructional quality.

Knowledge mobilization

Knowledge mobilization remains work in progress in which stakeholders draw on their experiences collaborating with the project through the two field tests in each country and the associated findings from different levels of the system and in a shared in a range of formats, often through meetings and sustained dialogue as well as secondary knowledge products such as videos, working papers, training manuals, and infographics. These included information regarding the effectiveness of the ICT-mediated knowledge management platforms and the experiences of implementing TPD@Scale models in different locations. In Ghana, Honduras, and Uzbekistan, the outcomes of the knowledge mobilization activities have led to changes in teacher professional development design and delivery.

Knowledge mobilization activities in Ghana were through a collaborative working with the National Teaching Council (NTC), the project National Steering Group (chaired by the Deputy Minister of Education). However most effective was the detailed engagement of staff from NTC and the Ghana Education Service (GES) throughout the project. Learning from activity funded under this grant has influenced the following shifts in TPD in Ghana:

- The NTC has adopted the virtual learning environment (VLE) used by the TPD@Scale project for further TPD courses.
- Formal conception of the Master Trainer role for online tutoring (with terms of reference and guidance).
- The Ghana MoE has implemented a one-teacher-one-laptop policy in which every teacher in pre-tertiary education is being given a laptop to increase efficiency and provide the tools necessary to support ICT-mediated teacher professional development.
- The GES has adapted the social learning aspect and guidance from the TPD@Scale model to inform pre-tertiary PLCs, part of the Government of Ghana's strategies to improve instruction quality and innovations in the classroom. PLCs can now be held in either in-person or virtual mode – the latter draws directly from the TPD@Scale model. GES is currently rolling out a PLC app to track implementation of PLCs in pre-tertiary schools where PLC has been mainstreamed into the weekly school schedule—teachers hold PLC sessions every Wednesday to share best practices, discuss teaching and learning challenges, and support each other in addressing them. The NTC sees the PLC as a key mechanism for scaling up ICT-mediated TPD in schools.
- The NTC is integrating the TPD@Scale model into its professional development strategy to ensure that teachers have access to continues professional development programs to hence instructional quality across pre-tertiary schools in Ghana. According to the Registrar of the National Teaching Council, ICT-mediated TPD programs holds promise for the present and future teacher professional development across the country and it must be mainstream in Ghana's in-service education and training strategies. NTC have expressed an intention to scale up the TPD@Scale model to at least 60,000 teachers using the course used in the project field testing as a starting point. This activity is contingent on securing appropriate funding.

Similarly in Honduras knowledge mobilization activities have been focused through the close collaboration with the DGDP and a National Steering Group. During the project there was a change in government and numerous

changes in key personnel at the DGDP, this has slowed progress with knowledge mobilization. However, the TPD@Scale model has been endorsed by the DGDP as an innovation to support the continuous professional development of teachers in under-resourced areas and socioeconomically disadvantaged communities. During a UNESCO–SUMMA workshop titled "Teachers Task Force Learning and Policy," the Director of Teacher Professional Development at the Secretary of Education Office described in his presentation how the Ministry of Education is adapting the TPD@Scale model to increase teacher professional competency and enhance school instruction. TPD tools and resources from the platform are shared on IBERTEL and EDUCATRACHOS (Secretary of Education platforms) and the project team was invited to contribute to the new TPD national policy.

In Uzbekistan the project worked with both PIIMA and the Avloniy Institute (in January 2023 these were merged and experiences of collaboration under this grant has been helpful to individuals in their initial discussions on TPD systems). A number of meetings were held with key stakeholders including the State Advisor of the President of the Republic of Uzbekistan, Teachers Associations, the State inspectorate for Supervision of Quality in Education and universities involved in teacher education.

As part of this KIX development research, PIIMA was supported to develop and pilot an innovative hybrid learning and knowledge management system that hosts online and offline platforms for teacher professional development courses. Building on results from the field trials and in recognition of the new knowledge management system's potential to facilitate more cost-effective teacher professional development, the Ministry of Education established the Center for Pedagogical Excellence to oversee the adoption and expansion of TPD@Scale in Uzbekistan to provide quality teacher education to all 6,000 teachers in PIIMA schools. The TPD@Scale model was adopted in October 2022. This is a significant step in improving in-service teacher education in Uzbekistan.

In the collaboration with the Avloniy Institute the research examined the equity and quality dimensions of the emerging national platform for TPD for all public-school teachers (no-cost study was undertaken in Uzbekistan). Following this research various changes were made to the national platform to improve accessibility and to expand the use of online spaces where teachers can engage in peer supported learning. In addition, work is underway to create a more comprehensive teacher database to record more detail on their professional development achievements.

Section 3: Insights and recommendations

Lessons learned

The project team note a number of specific learning points pertaining to internal project design and working relevant for future similar projects:

Project resource allocation. As discussed earlier the level of expertise and experience with designing, implementing and researching large scale TPD programs in the country teams was lower than anticipated when developing the project proposal. Field testing revealed considerable gaps in country researchers' confidence and capacity to create field instruments and engage in detailed analysis of research findings. As far as possible the global team have responded to these needs but this team has been permanently stretched even when enlarged in the latter stages of the project. This has limited their contributions to primary knowledge products for much of the period of the project. In future projects more resource should be allocated to support capacity strengthening of country team members in a sustained manner and the generation of knowledge products and wider knowledge mobilization.

Collective expertise. As the project progressed it became apparent that understandings of contemporary ideas on professional learning, pedagogy, scaling, gender equity, inclusion and so on were highly variable across the team. Moving forward it would be preferable to begin to challenge assumptions and to start to develop a shared understanding of these key issues from project start, perhaps through a series of workshops in an induction period. During such an induction period it may also be helpful to undertake an audit of research skills to identify areas for researcher development.

Researcher roles. Notwithstanding the need for research skills development in some areas, country researchers were not always sufficiently involved in project activities including proposal development as discussed earlier.

Limiting and focusing activity. Our workplan anticipated that the key activity in the customization phase would be the adaptation of the TPD@Scale model. In practice activity in this phase was dominated by the creation of learning content for the field testing. Whilst this developed the skills of stakeholders, for example DGDP staff members, it greatly slowed project progress and distracted attention from the core project objectives and research questions. This suggests that it would be preferable to separate course development and TPD@Scale model testing in future activity through procuring a pre-existing course (possibly with adaptations). This would focus activity more securely on the testing of the TPD@Scale model. For a substantial part of the project journey some team members (and possibly some stakeholders) held the view that the project was about evaluating one specific TPD course prior to scaling, rather than researching implementation of the TPD@Scale model.

The following learnings pertain to project working in-country:

Collaboration with stakeholders. Much energy, time and resource were devoted to ensuring in-country government stakeholders at multiple levels were kept abreast of project developments and consulted on decisions relating to the core work. This was a new way of working for some team members but has proved to be a worthwhile investment. However, engagement with a wider group of educator actors such as INGOs and development partners was more limited, reducing opportunity to influence their TPD programs—in Ghana and Honduras many teachers participate in TPD from these providers, and to use them as knowledge mobilisers and influencers.

Sustaining project working. A key challenge for the project is sustaining some of the stakeholder activities after project end. More attention needed to be given to how these might be financed and supported moving forward, one strategy might have been through greater engagement with development partners in Ghana and Honduras.

All project members valued highly in-person interactions both in-country and internationally. This may seem obvious but there was a noticeable adverse impact on project working by the restriction on these until the final year of the project.

Recommendations for future research in relation to TPD@Scale

Findings from research undertaken with this grant point to equity issues as an area for further enquiry in large scale ICT-mediated TPD. There is a need to explore how ICTs can support improvement of equity in TPD whilst optimizing efficiency. Equity in TPD is closely intertwined with quality: quality in TPD is seen to be emergent. It does not reside within or pertain to the individual course materials or other components of the TPD per se but is dependent on their relationship to each other, how the TPD is enacted and experienced within any specific education system. Thus, exploring equity in TPD@Scale must take account of context and future research must be focused on issues of relevance to the context of the research.

Future research might involve consideration of questions such as:

- a. Who is not participating in TPD and why? The realities of teachers' participation in TPD have been found to be highly complex and subgroups of teachers are much less easily defined than anticipated, for example the teacher in the highly rural area who travels to her home in the city each weekend. This complicates consideration of equity in TPD.
- b. How might aspects of a national (or large scale) TPD program be decentralized or devolved to districts or regions to improve equity (including management of different aspects of the TPD platform)? How does this devolvement impact on efficiency? What are the implications for the role of district officials and other actors involved in TPD at a local level? Findings from Honduras, for example, point to the need for more flexible types of assignments and study periods—these might be best agreed at a local level with input from teachers.
- c. What balance of online and offline study is helpful to different groups of teachers? What factors might shift the balance? Who decides the balance? What are the relative costs of different "blends"? and efficiencies? Teachers across all three country contexts expressed a preference for blended or hybrid modalities but with little specifics on the forms that they would find most convenient and helpful.
- d. What different forms and modalities of communities of practice (or professional learning communities (PLCs)) can best support teacher learning in a particular context and time? In Ghana virtual and in-person PLCs are endorsed in national policy but there is no guidance for school leaders or teachers on the factors to be considered when choosing a specific modality or format.
- e. What forms of support within TPD learning episodes do teachers find most helpful and when? Findings from the district partnership model in Ghana indicate that there is a role for in-person support in addition to online support. This area would benefit from further investigation.
- f. What approaches to diagnose teachers' professional learning needs can be utilized at scale? Teachers in Uzbekistan comment that TPD provision can be irrelevant to the realities of their classroom and needs—an equity issue.
- g. How can platform analytics be used to inform improvements in TPD@Scale which support greater equity? This data is readily available to program designers and implementers but is, as yet rarely being drawn on to inform changes to TPD programs.
- h. What adjustments in online provision are needed to ensure full inclusion? Consideration of disability was recognized to be absent in the findings of this project.

Finally further study of the relationship between TPD@Scale systems and the broader education ecosystem is recommended to better inform integration of ICT-mediated TPD in GPE country education systems. Such enquiries might include how TPD systems are linked to governance arrangements and routes to implementation; for example, in countries such as Ghana where there is devolution of TPD to districts, could this open up space for local initiatives and local alliances in TPD? What are the drivers of improvements in TPD in such contexts?

The project has been highly valuable in moving forward the TPD agenda in the study countries. While the advent of the pandemic constrained and limited project working in multiple ways, it prompted a shift to online teaching and learning including for teachers. This shift was, at best, only partial but opened up space for conversations about how ICTs might be utilized to the challenge of improving TPD across education systems. The majority of GPE countries, including those in this study, are now constructing or commissioning VLEs for TPD but there is little scholarship to guide governments in how these investments might be optimised. The timing of this project was opportune. Its objectives align perfectly with national TPD goals.

Findings generated in this work might not be ground-breaking in a traditional research sense but the diverse flows of funding within the project have led to considerable achievements. At this point these are difficult to quantify in traditional value for money terms but lay the foundations for new ways of working and

understandings of large scale TPD. There is now more widespread understanding that ICTs offer viable quality alternatives to in-person workshops even if the mechanics of integrating ICT systems with traditional systems to create new hybrid TPD modalities have yet to be worked through. In all three countries the project stance of working closely with government actors and agencies at multiple levels has been productive. These relationships have been highly demanding, not always easy to navigate and often involved compromise in aspects of the research design (for example in the selection of districts or the focus of the course materials used in the field testing)—a balancing of political and research needs. However, this practical approach has informed policy developments in an innovative fashion partly through exposing stakeholders and team members to diverse lived realities of TPD and teachers' social conditions in their country.

Project working has also facilitated the evolution of new partnerships (or revitalised dormant partnerships) to address challenges in implementation of ICT-mediated TPD: in Ghana between NTC and the GES and with researchers; in Honduras between the central government agencies and the department levels and between the DGDP and the university, in the latter overcoming longstanding barriers to cooperation; and in Uzbekistan between the Avloniy Institute and PIIMA and between the Avloniy institute and regional level actors. Accompanying these key relationships are a host of interactions and emerging collaborations with other KIX grantees, development partners and NGOs. This increased collaboration and trust is a major project legacy.

As discussed earlier, capacity strengthening has been a bright spot for the project; as a result of this collaboration, large numbers of teachers, educators, government officials, researchers and team members have enhanced—or new—skills and capabilities. They are also in possession of numerous guidance materials and tools, including the costing tool and the TPD@Scale model and course. This ownership of project outputs will support progress moving forward. However, a critical potential barrier is the availability of future funding to extend and deepen TPD@Scale activity; for example, in Ghana the NTC wishes to use the model more widely and extend the "pilot" literacy course to over 60,000 teachers—in line with policy aspirations—but this is contingent on securing funding.

References

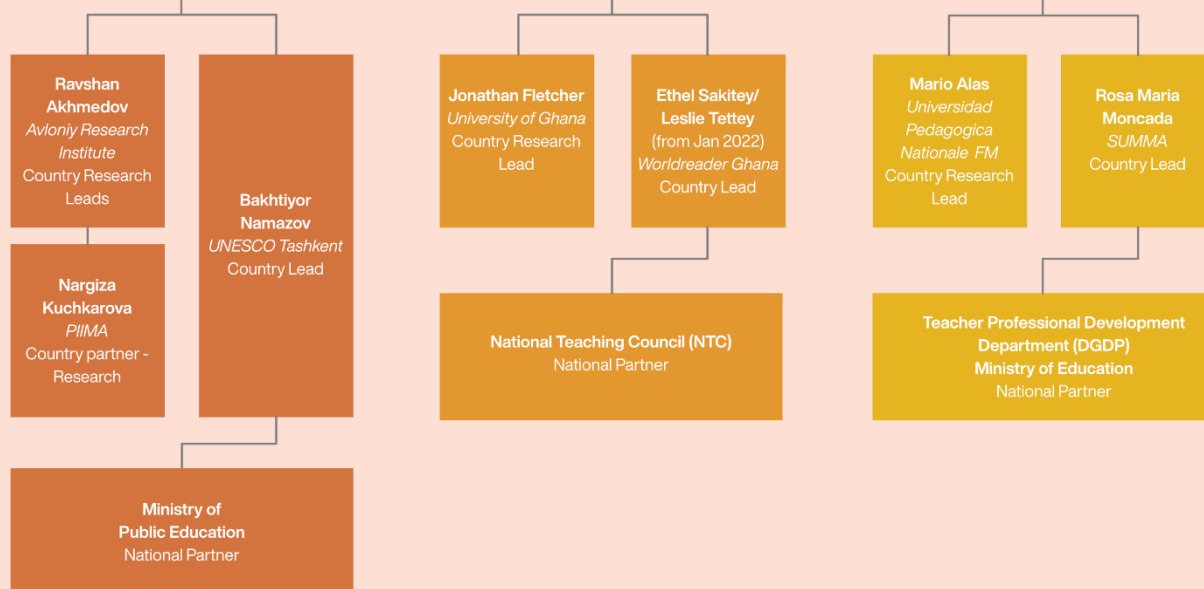
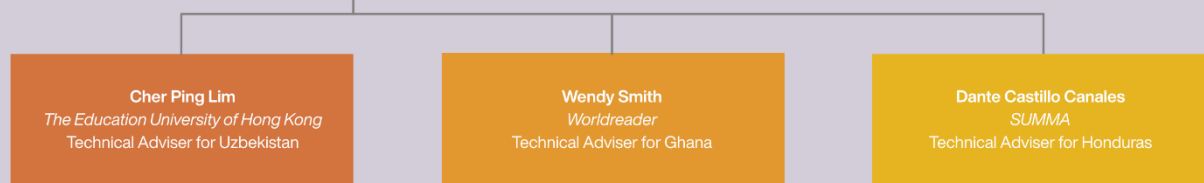
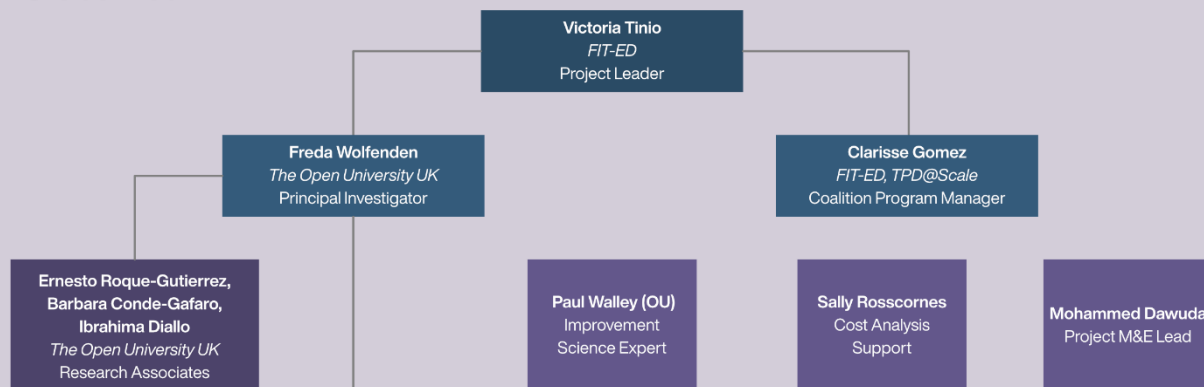
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Annex 1: Project Organizational Charts

KIX TPD@Scale Project Organizational Chart



Global Team



Uzbekistan

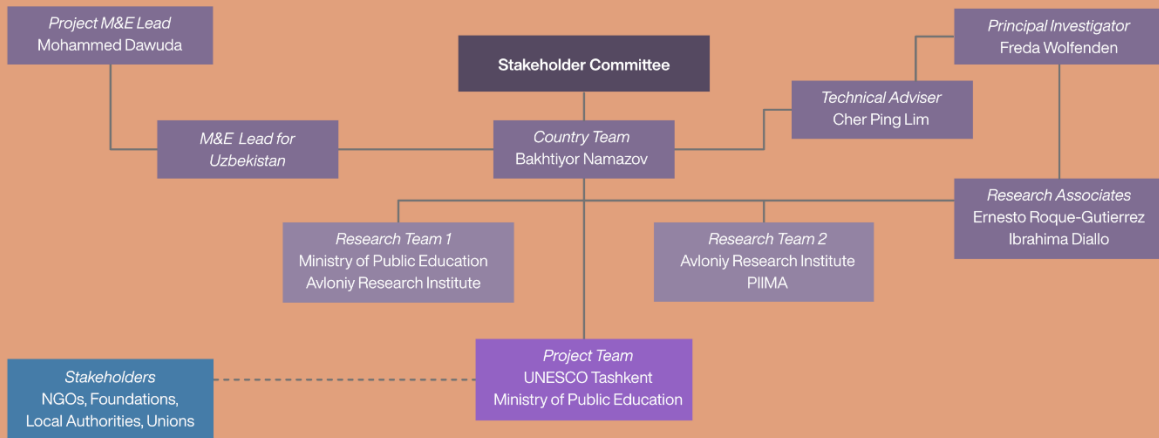
Ghana

Honduras

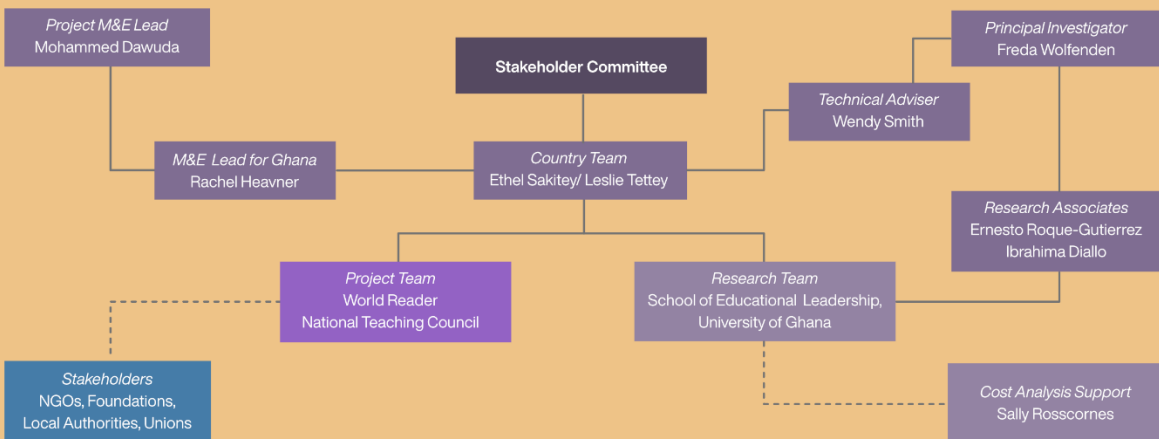
KIX TPD@Scale Country Teams



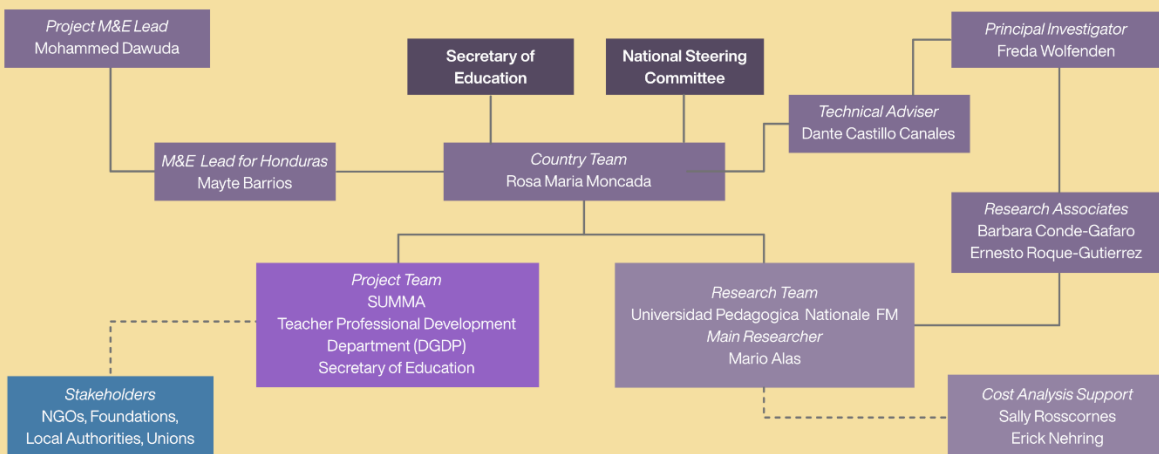
Uzbekistan



Ghana



Honduras



Annex 2: Synthesis of In-Country Project Activities

Ghana: Synthesis of In-Country Activities		
Phase 1: Project initiation and contextualization April 2020 – December 2020	Phase 2: Customization January 2021 – August 2021	Phase 3: Field Testing and Project review September 2021 – January 2023
<ul style="list-style-type: none"> Setting up the Project Management Team and Research Team, latter led by consultants from the University of Ghana (Objectives 1/2/4) Establishing agreements with the National Teaching Council (NTC) of the Ministry of Education – the project Co-Lead (Objectives 2/4) Planning of The National Inception Meeting with World Vision Ghana, which is likewise implementing a GPE KIX Global Grant project in the country (Objective 4) Identifying key members of the National Steering Committee with NTC taking the lead on formation and the GPE Local Education Group assisting (Objectives 3/4) Conducting contextualization research (literature review, policy analysis, teacher survey). Data analysis and report preparation (Objectives 2/4) Collaborating with NTC and the Commonwealth of Learning (CoL) on CoL's Moodle platform, to be used in field testing the TPD@Scale model (Objective 2) 	<ul style="list-style-type: none"> Presentation from the local TPD consultant on the first iteration of a TPD@Scale model for Ghana in a workshop involving team members (Objectives 1/2) Workshop on the development of the learning content for the TPD@Scale field testing with literacy consultants Discussion on format (short modules for weekly study) and subject content. Agreement that the content would be focused on the use of digital resources to support reading in early grades (Objective 2) Further content development (digital reading) workshops with local expert reviewers including teachers and district level education actors to generate a first draft of the material for external review (Objectives 2/3) Meeting with KIX Africa 19 Regional Hub to share the work of the project (Objective 4) Adapting the TPD@Scale model after extensive consultation with boundary partners, including teachers and four teacher unions (Objectives 2/3) Development of draft course materials to use in the field testing of the adapted TPD@Scale model (Objectives 2) Presentation at the KIX19 Africa Hub learning event Ministry of Education representatives from 18 African countries); Presentation: Distance Education and Teachers' Training in Africa (DETA) 2021 Conference; Presentation: mEducation Alliance 2021 conference (Objective 4); Presentation Ghana National Education Week Evidence Summit coordinated by the Ministry of Education) (Objectives 4) 	<ul style="list-style-type: none"> Field testing 1 involving district officials carried out. Data collection (Objectives 1, 2, 3) Analysis of field test 1 findings, at a two-day workshop which led to the development of teacher and facilitator personas (Objectives 1/2) Agreeing research design for field test 2 based on revised model informed by field test 1. Ethical permissions for field research sought at the University of Ghana (Objectives 1/2) Working with the Ghana Education Service (GES) after they agreed to support the project costing exercise and assigned three GES finance officers to participate in the cost-efficiency training and provide cost data throughout FT2 (Objectives 1/2/3) Engaging in data collection and analysis training workshops in-person and online to optimize data generation and processing times in FT 2 (Objectives 2/3) Conducting field test 2 (2 different models) in three different districts of the country, data collection. (Objective 2) Compilation of a number of project outputs and meetings with NTC and MoE. National Steering Committee planned. (Objective 4)

Honduras: Synthesis of In-Country Activities

Phase 1: Project initiation and contextualization April 2020 – December 2020	Phase 2: Customization January 2021 – August 2021	Phase 3: Field Testing and Project review September 2021 – January 2023
<ul style="list-style-type: none"> Letter of understanding signed between the Ministry of Education (MoE) and SUMMA (Objectives 2/4) Setting up the National Steering Committee (nine organizations with links to TPD were invited to be part of the Committee) (Objective 3) Recruitment of the interdisciplinary research team from the National Pedagogical University Francisco Morazán (UPNFM), including the Director of the Observatory of Education (Objectives 1/3) Building partnerships with the Secretary of Education (SE) and The General Directorate for Professional Development (DGEDP), latter appointed co-leader of the project on behalf of the SE (Objective 3) Reviewing country data, surveying teachers, interviewing key informants at the DGEDP and producing a contextualization report (Objective 2) Initial meeting of the National Steering Committee (Objectives 3/4) Presenting the TPD contextualization research findings to a large audience (88 participants) comprising central and regional stakeholders (Objectives 2/3) The work was also presented at the UPNFM XI Regional Congress of Educational Research (Objective 4). 	<ul style="list-style-type: none"> Designing and delivering a series of workshops to gather and discuss data on the TPD@Scale approach with different groups of boundary partners from across the education system to generate principles and refined concepts around TPD@Scale for the Honduras context (Objectives 2/3) Conducting a workshop with 66 participants from local and national stakeholders (Ministry of Education, International NGOs, and the UPNFM) to consider how the specified principles for TPD@Scale may be enacted in a TPD@Scale model for Honduras (Objectives 2/3/4) Recruiting maths experts from regional centers and DGEDP technical units to lead on course content development and revision for the TPD@Scale field testing (Objectives 2/3) Defining the teachers' learning outcomes for the virtual maths course with the help of DGEDP authorities (Objectives 3) Creating four maths units to be included in the virtual maths course for field testing named "Geometry teaching in the third cycle" [<i>Enseñanza de la Geometría en el tercer ciclo</i>]. The course was uploaded on the DGEDP platform, and its materials were then shared in the SE's online repository called Educatrachos (Objective 2/3) Training tutors and establishing a "tutor protocol" (Objective 1/3) Partnering with Brookings and working with their costing tool to strengthen stakeholder capacity in efficient financial planning of TPD@Scale across the country (Objectives 1/2/3/4) Knowledge sharing activities with the KIX LAC hub, other SUMMA partners and at the regional UNESCO in addition to national events with participants from different levels of the education system (Objective 4) 	<ul style="list-style-type: none"> Planning FT1 with the virtual maths course: 30 teachers from three different contexts within one department (key factors: connectivity and rurality) Ethical approval through UPNFM's ethics committee (Objectives 1/2) Developing research instruments (online surveys, interviews, and focus groups) to understand how the TPD@Scale model was experienced by different groups of teachers and to unpack the roles played by other key actors (tutors, school directors, regional Center Coordinators and District curriculum officials) during FT1/ FT2 (Objectives 2/3) Undertaking FT1 with associated data collection in virtual mode (Objectives 2) National Steering Committee meeting (Objective 4) Engaging in 3-day capacity building workshop with the country project team, global research team, and national and regional government teacher education representatives. The workshops included in-depth analysis of FT1 findings; adaptation of the TPD@Scale model based on FT1 findings, planning FT2 (Objectives 2/3). Completing FT2 including data generation with maths teachers from five departments (Objective 2) Familiarizing and using open source software, Taguette and Whatsanalyze, to conduct qualitative data analysis generated in FT2. Capacity building workshops supported by members of the global team (Objective 3) Presenting the project to the Secretary of Education vice minister and directors of the new elected government: 46 participants. March 28th, 2022. The work carried out in FT1 and the plan for FT2 were also presented to key decision-makers in the field of education, including five departmental directors, five deputy directors of Curriculum and Evaluation and 95 municipal directors, March 30th, 2022 (Objectives 1/ 4) Knowledge sharing activities with other KIX projects in Honduras, at the second annual KIX LAC Symposium and various other regional events (Objectives 1/4) Developing secondary knowledge products, such as a brochure of the model, an infographic of the project timeline, and an evidence-based policy brief on TPD (Objectives 1/ 4)

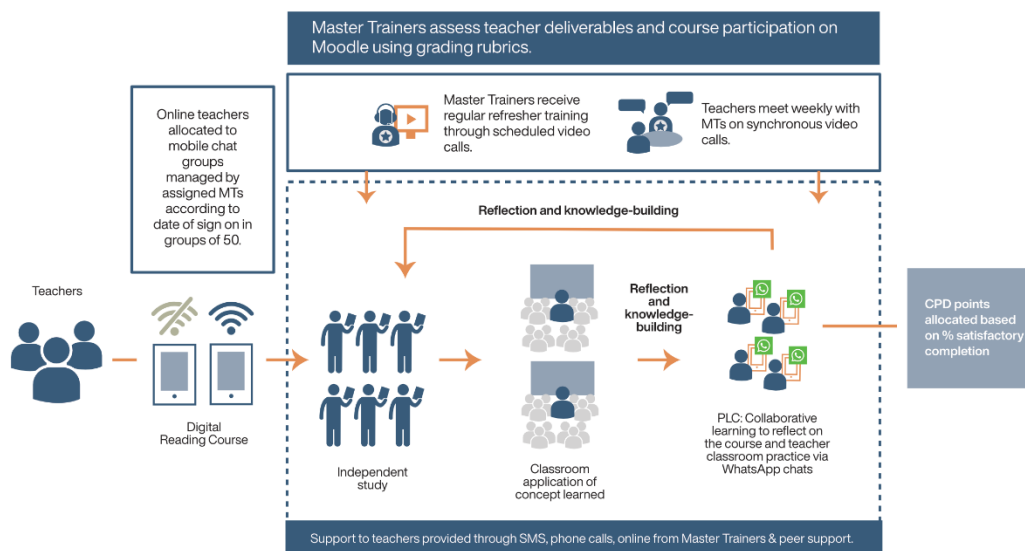
Uzbekistan: Synthesis of In-Country Activities

Phase 1: Project initiation and contextualization April 2020 – December 2020	Phase 2: Customization January 2021 – August 2021	Phase 3: Field Testing and Project review September 2021 – January 2023
<ul style="list-style-type: none"> Identification of key stakeholders and boundary partners. The Ministry of Public Education (MoPE) and its complementary institution, Scientific Research Institute named after A. Avloniy (Avloniy Institute), were identified as the key government stakeholders of the project. PIIMA was identified as a research partner (Objective 4). Onboarding of the UNESCO project staff and recruitment of local consultants (Objectives 1/2/3/4). Steering Committee and National Inception meetings convened (Objectives 3 & 4) Conducting a rapid situational analysis of the teacher training system in Uzbekistan, a pilot survey on ICT readiness of the country for ICT-mediated TPD interventions, and an analysis of current regulations governing the system of retraining and advanced training of teachers of public education. Report preparation (Objective 2) 	<ul style="list-style-type: none"> Designing and holding five virtual workshops to raise awareness of the project objectives, workplans and the TPD@Scale approach, with national stakeholders and boundary partners (Objective 4) Formation of the National Steering Committee (NSC) and first virtual meeting of the committee to endorse Terms of Reference of the NSC and share project progress, chaired by the Deputy First Minister of Public Education (Objective 4) A series of engagements with the new key research collaborator PIIMA developed the draft adapted TPD@Scale model (Objectives 1/2) Review of proposed TPD@Scale model by teachers and experts (Objective 2) Planning the FT1 pilot, sensitization with teachers, initial data collection from teachers and other actors involved in the model. Securing ethical permissions through UNESCO and training for all field researchers (Objectives 1/2/3) Development of course materials by expert content writers for the PIIMA platform to use in the field testing of the adapted TPD@Scale model. (Objective 2) High level Implementation Phase Launch Meeting involving key stakeholders from the Ministry and other agencies and including peer-sharing from the Ghana Team (Objective 4). Meeting with the Rector of the Avloniy Institute to discuss re-engagement of the Institute in the project and (Objectives 3/4) 	<ul style="list-style-type: none"> Field testing PIIMA's model (FT1) with data collection (Objective 2) Analysis of data from FT1 (Objective 2) Engaging in a series of research workshops and (online and in-person) training with key national actors, including the Avloniy Research Institute and PIIMA on conducting field research and analysis of data (Objective 3) Field test 2 to assess the sustainability and scalability of the two models (PIIMA and Avloniy) with over a thousand teachers, several dozen school leaders and methodologists/mentos in six different regions. (Objectives 1 and 2). Analyzing the data and writing the final reports based on the emerging quantitative and qualitative findings and submitting abstract to regional KIX EAP EPIC conference (Objectives 3/4) Development of teachers' guidebooks for innovative pedagogy (with PIIMA). (Objective 3) Capacity strengthening forum with methodologists, teachers and school principals (>300) on TPD (Objective 3) Training workshop for Innovative pedagogy with 120 Master Trainers (Objective 3)

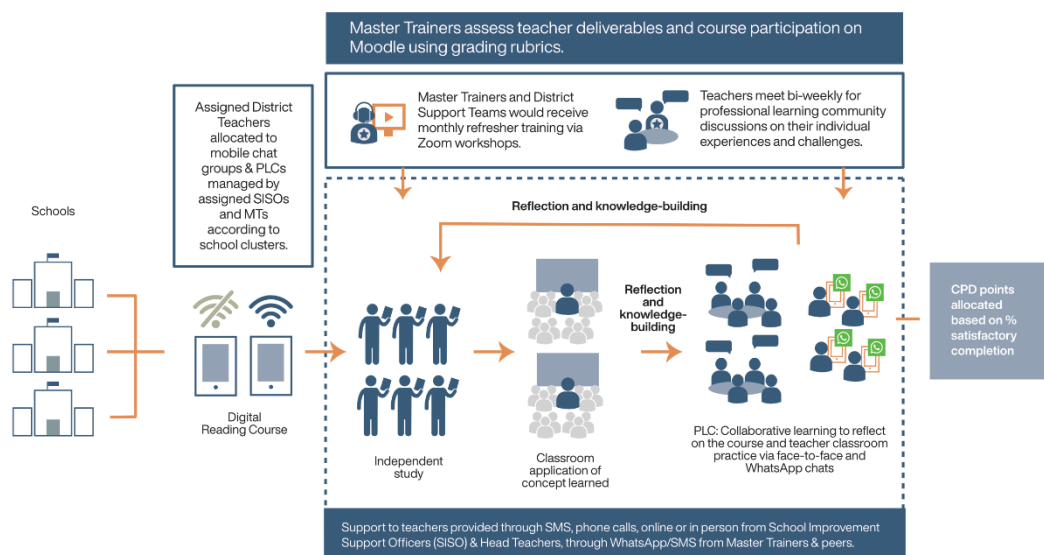
Annex 3: TPD@Scale Models

Ghana

TPD@Scale Digital Model in Ghana



TPD@Scale District Support Model in Ghana



Overview and Rationale

The TPD@Scale models leverage a Moodle education platform hosted by NTC and seeks to deliver TPD through a combination of digital and in-person professional learning and support. The Moodle platform had been previously used by NTC in partnership with Commonwealth of Learning but was transferred to NTC ownership as part of the KIX TPD@Scale project. Moving forward it will be used by NTC for future teacher professional development in Ghana.

The ICT-enabled TPD@Scale models in Ghana were designed to support teachers to own their professional growth while also meeting the Ghana National Teacher Standards (NTS). These guiding principles around quality professional knowledge, practicum, and professional attitudes (National Teaching Council, 2018, p 12) underpin the models in the following ways:

- **Professional Knowledge.** Through NTC's Moodle platform, teachers are able to enroll in courses throughout the year, gain new skills and abilities by enrolling in a marketplace of courses relevant to their needs and acquiring continuous professional development points to support career development.
- **Professional Practice.** Courses on the NTC platform are designed for a combination of self-learning both without and within the classroom. "Learning through practice"—classroom application—is built into the course.
- **Professional Attitudes/Values.** The model allows for peer-to-peer learning (through online and school-based professional learning communities) in addition to expert mentoring. This is critical to the localization and increased need for TPD to be relevant to teacher's daily lives and problems of practice.

These models are in response to the current challenges in Ghana and globally to meet the need of in-service TPD quickly and at scale.

The model is a blended learning model in that it leverages a combination of in-person and digital support. Courses are designed by the government and NTC approved service providers in Ghana, creating a learning marketplace that allows districts, head teachers, and individual teachers the opportunity to choose courses of relevance to their practice and work.

The NTC Moodle platform and Worldreader course are also accessible for offline learning, though many teachers and Master trainers need support to understand how to use and support teachers working offline. Moodle is accessed online via a generated weblink, which is accessible to teachers via various communication channels and social media platforms at the national and district level.

What is the teacher journey?

The NTC platform is accessible on any data-enabled phone, tablet, or computer. Teachers can enroll in any course using their National Teacher Identification Number. Enrollment is designed to be communicated through district and national NTC and Ghana Education Service (GES) circulars and open for a two-week period. Social media channels are also to be used for course enrollment information and awareness where appropriate.

Enrollment and Participation. Teachers are enrolled through two avenues represented in the two graphics. The first route is digital enrollment by individual teachers seeking professional development opportunities and accreditation points. Teachers find the course through the NTC portal and communications, or by referral from a peer in their community. This is the digital model.

The second route is prompted by a call or text messages from the district education office for teachers to participate in the course as it runs in their district. While initial connectivity is critical for enrollment through the NTC portal, accommodations for enrollment in schools and districts are considered for teachers with connectivity challenges or poor digital literacy skills. This is the district partnership model.

Digital Model. Once registered, the teachers join the digital course on NTC's Moodle platform and are assigned by the NTC course facilitator to a group of up to 50 teachers where they meet their course moderator. The course moderator is known as a Master Trainer (MT), and s/he supports teachers with course activities assesses their progress and troubleshoots challenges. Each MT has received training from both NTC and the course service provider. The MT communicates with teachers using both the Moodle platform and external social messaging services. MTs holds weekly synchronous sessions with teachers in digital learning communities where tasks and/or assessments are discussed. MTs also send reminders to course participants and sometimes initiate telephone calls to troubleshoot problems with teachers who are struggling with the course. MTs are expected to work an average of 10 hours a week supporting their 50 teachers, grading assignments, and holding group Zoom calls once a week. Social messaging platforms have been found to be highly useful for quick reminders to all teachers in the group and are particularly useful for teachers who may be on the Moodle platform intermittently or have a lower ICT skills level. As most teachers are highly familiar with social messaging platforms, they are almost universally acceptable. However, in the case of teachers in rural communities and remote places, challenges with connectivity can prevent effective use of social messaging platforms.

District Support Model. Through the district support model, teachers are enrolled in the course with support from the district education office and a designated district support team. They may hear about the course from their head teacher or school improvement support officer (SISO), or through regular communications from NTC and

their district education office. The teachers join the Moodle platform, with support from the district support team as needed, and are assigned a group based on their school circuit to ensure proximity to offline support through their existing professional learning communities (PLCs) and their head teachers and assigned school improvement support officers (SISOs). Once registered, the course follows the same progression as the digital cohort with the addition of offline localized support.

While many online courses provide limited support, the MT is a more personalized course companion and seeks to provide the necessary additional support for teachers in Ghana less familiar with digital classes. MTs and District Teacher Support Teams are also subject-matter experts and provide expert coaching to teachers virtually via WhatsApp or Telegram or face-to-face at the district or school level. SISOs and head teachers are also available and trained to coordinate learning activities and assist with the organization of professional learning on and offline.

School-based and District based learning. Professional Learning Communities (PLCs) exist at the school and cluster/circuit level and inform teacher groupings in the district support model. Teachers from each school circuit/cluster will meet as a professional learning community per the NTC guidelines to discuss the course and receive support from assigned head teachers and SISOs.

Assessment. Each course has a combination of formative and summative assessments to ensure learning is a dialogue, and there is regular opportunity for application and feedback. Reflective questions are part of each course, and teachers can assess themselves and support peers and colleagues as part of the learning process. Successful course completion is linked to credit points and certification. Continuous Professional Development (CPD) points are allocated by NTC based on the percentage of the course deliverables completed, with a total possible eight points allocated for 100% satisfactory completion of all deliverables.

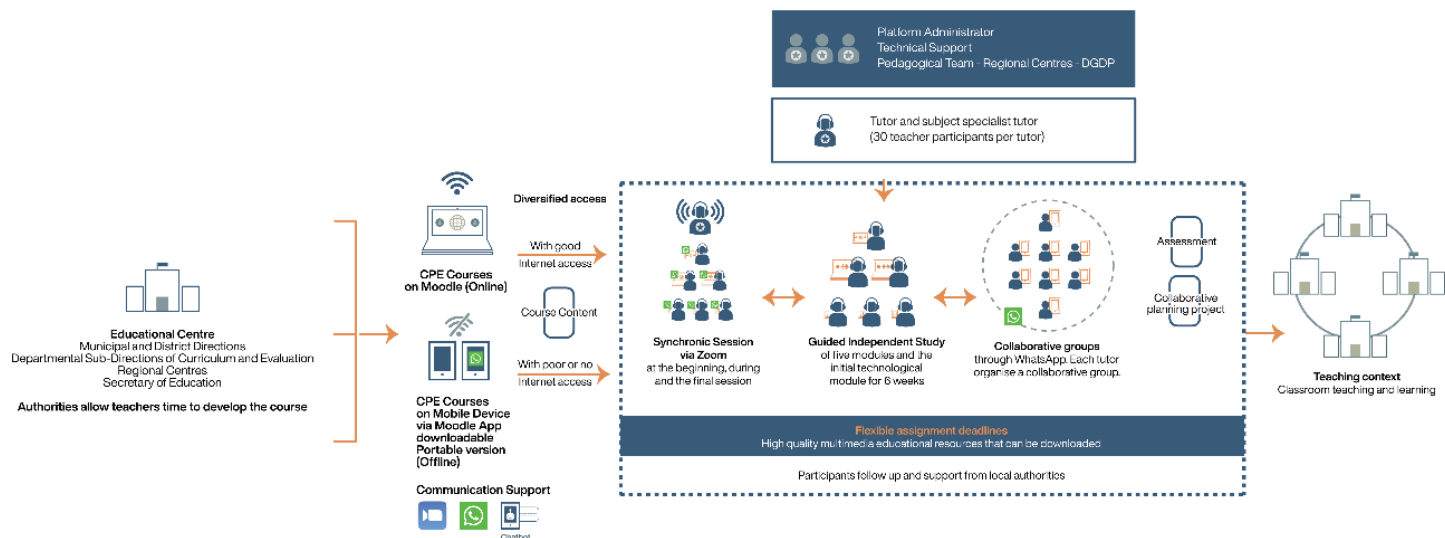
Access, Equity and Quality

The model recognizes there exist many teachers without regular or limited access to the internet and data. Initially, the model considered data sticks and printed copies of the course but felt this was cost prohibitive and not scalable. Instead, it was agreed that such adaptations should be decided at cluster or district level.

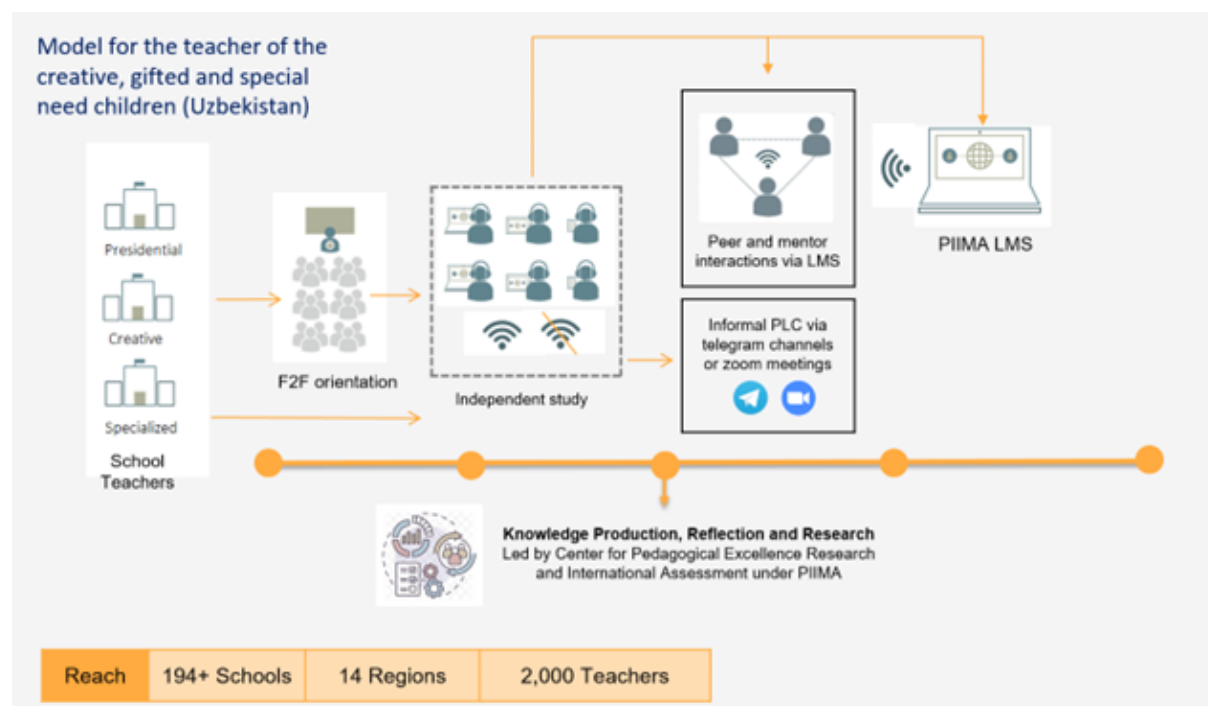
Course content is designed to be downloaded and completed entirely offline through the Moodle App. The challenges however do not lie with connectivity alone. Barriers such as poor digital literacy can also impact teacher participation and performance.

In the district partnership model, recognizing that district officials and school leaders know their schools and teacher's needs, district and school leaders are consulted and part of a co-design process that helps identify the appropriate adaptations of the model to meet the needs of their teachers. District support teams were designated in each district, composed of relevant stakeholders such as ICT officers, ECD specialists and DTSTs, to adapt the model and course to their district and set up a relevant teacher support structure for the course. An offline approach is necessary for teachers in very remote districts, without regular internet or teachers who have limited ICT knowledge or lack appropriate devices. For example, some district leaders felt establishing weekly hotspots at secondary schools for teachers to download or upload materials and receive in-person feedback would be most appropriate. Other districts proposed home visits for particularly remote teachers. In the research, all three districts proposed that district education support staff work directly with MTs via WhatsApp groups to communicate and prepare for teacher participation. In this process MTs help district education support staff and head teachers better understand the course content, assessments, and teacher performance to then work as a team in identifying struggling teachers and necessary adaptations to support course completion and learning.

Honduras

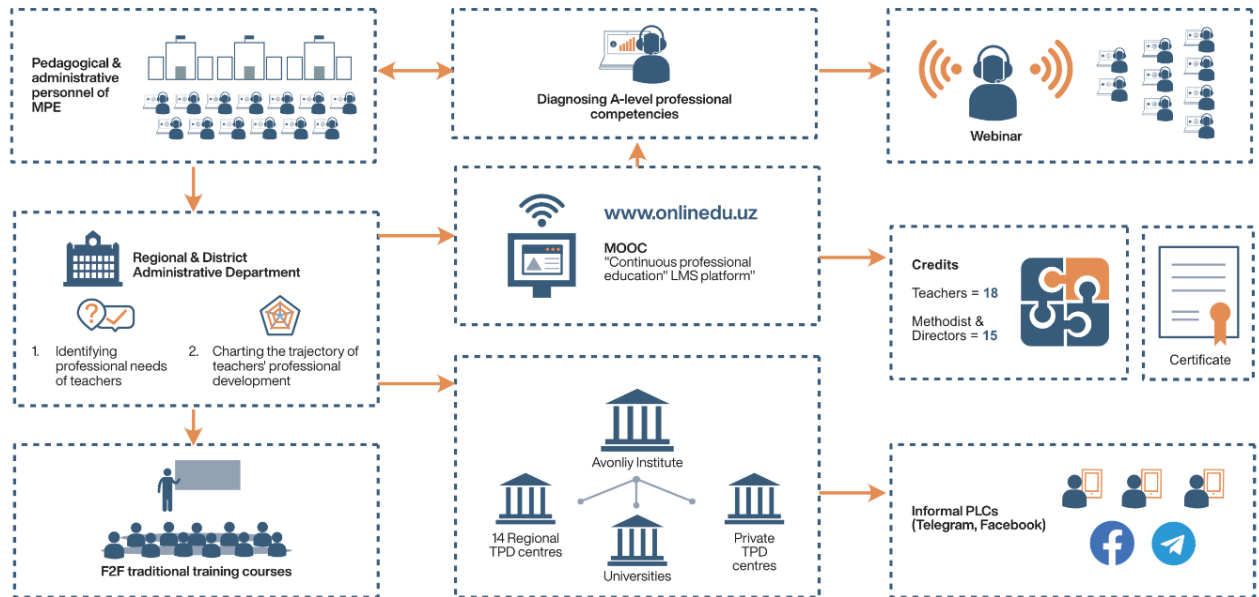


Uzbekistan





Continuous Professional Education



Annex 4: Analysis of opportunities and threats to scaling ICT-mediated TPD

Ghana: Analysis of opportunities and threats to scaling ICT –mediated TPD			
Issues that support/hinder the scaling of the TPD@Scale model	Opportunities or Strengths	Potential Threats	Critical Threats
National level	<ol style="list-style-type: none"> 1. NTC have a TPD platform in place and in use. 2. Teachers are aware of the existence of the platform. 3. Structure for TPD points agreed by government and implemented. 4. Ready pool of Master Trainers (MTs) 	<ol style="list-style-type: none"> 1. Feedback loop with districts is weak. 2. MTs are enthusiastic for the digital model at the expense of district partnership model. 3. Management training and support needed for a large number of MTs and the need to increase number of female MTs 4. Lack of regional /national support for districts to implement blended TPD model (district partnership model) 	<ol style="list-style-type: none"> 1. Coordination with GES is weak and needs to be strengthened to deliver the district partnership model (blended TPD model). 2. Technical systems (registration) are inefficient and difficult to use. Supporting capacity is low.
Regional/District level	<ol style="list-style-type: none"> 1. Enthusiasm for blended TPD model from districts and teachers 2. ICT Skills of MTs strong 	<ol style="list-style-type: none"> 1. Headteachers and SISOs underused in supporting TPD particularly in the district partnership model 	<ol style="list-style-type: none"> 1. Need to clarify the role of MTs role in blended TPD.
Teacher level	<ol style="list-style-type: none"> 1. Positive reviews of the course (offering a template for future virtual courses) 2. Peer support valued by teachers (including via WhatsApp) 3. Teachers have access to smartphones (but not always to data) 4. Online Professional Community (PLC) validated as an option 	<ol style="list-style-type: none"> 1. MTs support critical but care needed not to overwhelm them. 2. Time for teachers to undertake TPD is limited. 	<ol style="list-style-type: none"> 1. Many teachers have weak digital skills. 2. Digital model attractive to teachers with secure digital skills (young, male teachers in higher grades) 3. Connectivity is related to location, poor in rural areas.

Honduras: Analysis of opportunities and threats to scaling ICT-mediated TPD

Issues that support/hinder the scaling of the TPD@Scale model	Opportunities or Strengths	Potential Threats	Critical Threats
National level	<ol style="list-style-type: none"> 1. The Secretary of Education already has an institution (General Management for Professionals Development-DGDP), which is specially dedicated to TPD training, with staff dedicated to developing TPD activities in the country. DGDP staff members are fully engaged with the KIX project and are keen to take it forward. 2. The DGDP administers a platform for virtual courses that had started to operate before the pandemic but has been enhanced through this project. 3. DGDP staff began to strengthen their digital and learning design skills by working on the virtual course offered during the project. 	<ol style="list-style-type: none"> 1. Communication between DGDP staff at the central level with other parts of the Secretary of Education needs to be improved (horizontal communication) 2. The platform used for the development of virtual events should be improved both in terms of capacity and software. 3. In virtual courses the weekly study hours and assignment / coursework submission deadlines should be reviewed. 	<ol style="list-style-type: none"> 1. DGDP staff at the central level need further training to design and produce virtual course content. 2. The regulations concerning the evaluation of teaching performance need to be modified to encourage participation in TPD. 3. Records of participation in TPD need to be improved to hold individual files of all in-service teachers and types of TPD.
Department/District level	<ol style="list-style-type: none"> 1. The DGDP has four Regional Centers in the interior of the country. The centers have rooms for face-to-face training for teachers and staff and some computer labs for participants to facilitate their ICT-mediated TPD training. 2. The DGDP has members of staff in the Regional Centers who have some experience (very little) in developing virtual courses. 	<ol style="list-style-type: none"> 1. Communication between the Regional Centers of the DGDP and the Departmental Education Boards needs to be improved. 2. The equipment and connectivity of the Regional Centers is limited. 3. Connectivity is limited in the rural areas of most of the Departments. 	<ol style="list-style-type: none"> 1. DGDP staff in the Regional Centers need to strengthen their technological competencies to support mentors, tutors, and teachers. 2. The equipment and connectivity of the Regional Centers need to be improved. 3. Further local spaces with connectivity and laptops/ tablets need to be available for teachers to undertake ICT-mediated TPD. 4. The support provided by Municipal/District Directors to teachers participating in TPD programs needs to be improved (experience in the course indicates

Teacher level			that they are only involved in announcing that a course is going to be provided, not in supporting the participants or ensuring how what they have learned can be transferred to the classroom).
	<ol style="list-style-type: none"> 1. Most teachers have a positive attitude towards receiving virtual TPD training. 2. Teachers working in rural areas, who have had very little access to face-to-face TPD training, express interest in receiving virtual TPD, despite connectivity problems. 	<ol style="list-style-type: none"> 1. The ICT skills of teachers, particularly those over 40 years of age, need to be strengthened. 	<ol style="list-style-type: none"> 1. Incentives given to teachers for participating in TPD programs should be improved. 2. The support provided by school principals to teachers participating in TPD programs should be improved, to support effective participation and to transfer virtual learning into classroom practice.

Uzbekistan: Analysis of opportunities and threats to scaling ICT-mediated TPD

Issues that support/hinder the scaling of the TPD@Scale model	Opportunities or Strengths	Potential Threats	Critical Threats
National level	<ol style="list-style-type: none"> 1. National TPD Model and Program in place: adopted, tested, and socialized. Uzbekistan adopted ICT mediated continuous teachers professional development policy in February 2021. 2. Model provides an induction diagnosis of teachers' competencies before they are enrolling courses. Furthermore, there are pre/post-course assessment surveys to assess teachers' progress and evaluate course quality. 	<ol style="list-style-type: none"> 1. Lack of comprehensive teacher national policy linked with teachers' qualification standards, qualifications, and teacher professional development across educational levels 2. Limited TPD opportunities for teachers who teach in minority languages. 3. Identifying clear mechanisms and instruction for private TPD providers and universities 	<ol style="list-style-type: none"> 1. Creating a culture of lifelong learning and stimulating teachers to increase the quality of teaching and meet professional standards 2. Designing and improving TPD programs in response to the professional development needs of teachers 3. Involving teachers in the development of the TPD program and design of training delivery
Regional/District level	<ol style="list-style-type: none"> 1. All schools and regional TPD centers have access to technological gadgets and internet connectivity to provide online TPD courses. 2. Official and unofficial platforms and Telegram 	<ol style="list-style-type: none"> 1. Quality of master trainings at regional TPD centers should be enhanced to meet the needs of teachers and integrated with the online platform 	<ol style="list-style-type: none"> 1. Very limited practice of peer-learning communities and provision of easily accessible spaces for exchanging ideas and learning self-reflective

	channels/groups for professional learning and community discussions	<ol style="list-style-type: none"> Supportive environment for school-based TPD for example on method days should be enhanced. Mentors' role is not defined, and they are mostly occupied with administrative issues 	practice, and experimentations.
Teacher level	<ol style="list-style-type: none"> Positive feedback from teachers about online courses in terms of quality, cost-effectiveness, and flexibility in planning TPD 	<ol style="list-style-type: none"> Classroom application of TPD weak; need for guidance for teachers. Need for parallel investment in technology and development of teachers' ICT skills 	<ol style="list-style-type: none"> Attention is needed on teachers' social, pedagogical, and emotional skills to create a healthy and inclusive learning environment at schools.