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3Mpower

Evidence Café 2: Report

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Study abstract

3MPower will generate evidence on technology use for Teacher Professional Development (TPD) in low- and middle-income countries, with a particular focus on children's foundation numeracy skills in schools serving marginalised, low-income, rural communities.

3Mpower will study the use of numeracy TPD courses on Muktopaath—a government-led e-Learning platform used by over 400,000 teachers in Bangladesh—to answer the question "How are primary numeracy teachers using mobile learning for teacher development in rural schools and in what ways does this change learning and teaching?". At the time of writing, almost 200,000 primary teachers have completed Anonde Gonit Shikhi (Let's learn Maths with fun)—the most popular Muktopaath course on numeracy teaching.

3MPower will generate evidence about the validity of assumptions at every step linking teachers' use of mobile learning to improved student learning outcomes, through at-scale mixed methods research. 3MPower includes four process evaluation studies and two impact evaluation studies with 240 teachers and 3,600 learners. Qualitative methods include Participatory Ethnographic Evaluation Research (PEER) studies exploring rural teachers' experiences of accessing CPD with technology and then applying the CPD to the practices of teaching and learning in their schools.

Throughout the research, 3MPower will engage a broad range of national stakeholders including government policymakers, policy implementers, teacher educators, rural education officers, and rural teachers. Stakeholders will participate in an iterative series of knowledge exchange activities—beginning with co-design and continuing through a series of Evidence Cafes—to refine the research approach, make sense of the emerging evidence, and identify the implications and recommendations for policy and practice.

3MPower findings will address significant gaps in global evidence on the use of technology for teacher development in marginalised schools, the role of communities of practice, and the impacts at-scale on teaching quality and learning outcomes.

Introduction

Phase 1 of the project set out to ask the question "How are primary numeracy teachers using mobile learning for teacher development in rural schools?". An initial Evidence Café was held in October 2022 to share and make sense of findings from the first Cycle of this research by exploring evidence from Study 1A (Access), Study 1B (Relevance) and Study 1C (Communities of Practice); and to confirm the focus of Cycle 2 of research of Study 1A (Access), Study 1B (Relevance) and Study 1C (Communities of Practice).

Key findings from Cycle 1 were that:
- Almost all teachers are aware of the online AGS course, and most were able to register, enrol and complete the course.
  However,
- there was little sense of a common concern to improve teaching practice or learning outcomes specifically in numeracy.
- there was limited evidence of application of AGS to teaching and learning in schools
  - Very few teachers gave specific examples of AGS activities they had used in their teaching, or how learners had responded.
  - Many teachers claimed only occasional use of the AGS activities with learners— 'I tried the activities'—without any specific details.

- o Some teachers said they had made no attempt at using the AGS activities with their learners.
- o Some teachers who did not attempt to use AGS activities with their learners justified this in relation to a lack of technology in their classrooms. As none of the AGS activities include the use of technology in the classroom, this suggests a misunderstanding.

The evidence suggests that inequitable access to understanding about the nature and purpose of the AGS professional development programme—and the role of technology within it—may partially explain the limited application to practice. Some teachers did not realise they were expected to use the activities in the classroom with their learners and others mistakenly thought they needed access to technology in the classroom to be able to use the activities.

Cycle 2 Data collection and analysis

The working hypotheses brought forward from Phase 1 was that, if AGS is to make a difference to learning:

1. Teachers need to understand the AGS course (purpose and use)
2. They need to put it in to practice in the classroom
3. They need to do it regularly

A further round of data collection was therefore undertaken to explore the experiences of those teachers who reported using AGS regularly in the classroom.

PEER researchers, who are themselves teachers, were asked:

1. **Do you know any teachers who have used the techniques and activities from Anonde Gonit Shiki in the classroom?** (If yes) Can you tell me about their story and whether or not they regularly used the activities with most learners? (Equity of Access).
2. **Do you know any teachers who are helping each other use the ideas and activities from Anonde Gonit Shiki in the classroom?** (If yes) Can you tell me all about their story? (Communities of Practice).

The teachers were then interviewed by the PEERS or in some cases by Early Career Researchers (ECRs) from the Institute of Education and Research, University of Dhaka.

This approach resulted in 118 transcripts of stories told by teachers.

Working with the research leadership team, the ECRs were then asked to:

- Identify stories in the transcript
- Select and log stories where one or more of the following occurs: The PEER or participant
  - o Uses **adjectives** to describe their experience (e.g. during the activity, they eagerly participate. The students become impatient to do the activity) and/or
  - o Talks about the **mood or emotions** of their experience (e.g. happiness, excitement, satisfaction, frustration) and/or
  - o Talks about the **importance** they attach to the experience (e.g. the children are learning more, I am becoming a better teacher) and/or

  o Talks about **change** (e.g. I didn't do this before AGS, but now….)

These stories were then collated by the following themes:
1. **Barriers** to using AGS in the classroom.
2. **Enablers** to successful use of AGS.
3. **Classroom practices** (improving participation, making classroom management easier).
4. **Improving Maths** skills and learner outcomes.
5. **Teacher motivation** and development.

The Evidence Café Workshop

The Evidence Café was held at the Institute of Education and Research, University of Dhaka, on Tuesday 24th January 2023, with 24 stakeholders from Bangladesh's Directorate of Primary Education (DPE) at central and Upazila levels, Innovate for All ([a2i](#)), the [National Academy for Primary Education](#) (NAPE), the EdTech hub and IER; In addition, there were 5 Early Career Researchers and 3 members of the core research team.

All ten upazillas in the project team were represented at the Evidence Café.

The aims and objectives of Evidence Café 2 were to:
- Explore evidence from the five themes presented above.
- Begin to develop emerging recommendations arising from an exploration of the evidence.
- Reflect on Phase Two of the research and refine the proposed approach.

The programme is set out at Annex 1.

Summary of Sessions

Introduction to Evidence Café and Overview of 3Mpower

Following welcome addresses by distinguished guests, participants were introduced to the 3Mpower project rationale and a summary of approach and findings to date.

Sharing of Findings

The Early Career Researchers then presented findings from Cycle 2 of the Phase 1 research. As shown by the stories of the teachers interviewed:

1. **Barriers** to using AGS in the classroom were that teachers:
   - Sometimes struggle to manage implementing AGS activities—in a single lesson, in a large class, or where resource requirements are challenging.
   - Are selective about which AGS activities they use with learners, avoiding activities which are difficult to implement in class.
   - Try to overcome challenging resource requirements by—gathering and using local resources; making resources together; getting children to help prepare resources; creating resource libraries; preparing resources before the class so more time to do the activity; reusing resources; improvising resources.
   - Sometimes adapt activities to make them more manageable, for example using group work instead of pair or individual work.

2. **Enablers** to successful use of AGS were that:
   - Many headteachers are highly supportive and help to overcome resourcing issues.
   - Teachers discuss AGS activities and how to implement AGS in the classroom, share resources or create them together (sometimes with children), work together to manage time; and/or co-teach to enable more effective implementation of AGS.
   - As a result, the support and encouragement from the headteacher is highly motivating, whilst the support from other teachers makes it easier to implement AGS activities.

3. **Classroom practices** change. As a result of using AGS activities in class, teachers think that:
   - Learner participation improves—AGS activities increase children's activity in the classroom, improve children's attention, reduce boredom, and enable more—or all—children to join in. And, as a result,
   - Classroom management becomes easier—children are more likely to attend class and be on time, children's behaviour improves, and teachers are more willing to keep trying.

4. **Learners' Numeracy skills** and outcomes improve. As a result of using AGS activities in class, teachers think that:
   - Children have greater confidence in studying Maths; children learn Maths more quickly and more easily; children's learning may be more sustained; learning becomes more inclusive—for example—of children who speak minority languages, or who have special educational needs, or who are normally shy or quiet and not engaged in learning maths.
   - There is a change in children's attitudes to learning maths; fear is reduced and there is more enjoyment of Maths (including for teachers!); children seem keener to attend maths lessons.

5. **Teachers' motivation** and appetite for professional development improves:
   - When teachers begin to be successful in implementing AGS activities and teaching Maths, they often support and encourage others to do the course and use AGS activities in their teaching.
   - This contributes to more frequent conversations about teaching and learning numeracy between teachers, learning from others, and developing skills together.
   - As communities 'of learning and practice' develop, teachers say they become more confident and motivated, feel more effective, and feel better supported.

Our overall reflections on the data were that:
- Headteachers are a key facilitator of change
- There is a relationship between the school culture and teachers' ability to help each other improve practice, in that:
  o Support and collaboration can lead to improved understanding and practice.
  o Changing practices can lead to greater collaboration and support.
- From the perspective of teachers:
  o Teaching practices are improving.
  o Improved teaching practices are influencing children's success in Maths.

Discussion of Findings

Following the presentation of findings, the participants were asked to move into groups to explore and discuss the evidence which had been gathered.

Each table had one set of evidence relating to one of the themes noted above, and the participants then reviewed the evidence using the same set of questions for each theme:

1. What does the effective implementation of AGS in schools look like?
2. What do headteachers do?
3. What do teachers do?

The participants were encouraged to move between tables to provide as many insights as possible.

Examples of the evidence discussed are presented in Annex Two. Responses included:

1. Effective implementation of AGS in schools covered practical issues such as time available to plan, prepare and deliver classes; having class sizes that did not inhibit the use of AGS activities; and having sufficient resources available for the activities. In addition, staff would support each other by freeing up time for planning, or to make and share resources, or to co-teach.
2. Headteachers were seen to support the provision of resources for learning materials and, in addition, ensure effective communication between staff in the school and between schools. They would also monitor, encourage, and support changes.
3. Teachers would implement AGS activities regularly and encourage others to do so, discuss their experiences with other teachers and share best practice, and share their resources.

Generating Recommendations

Participants were then asked to respond to the following questions:

1. What can I personally do to promote the effective implementation of AGS in the schools I am responsible for, and how can I do it?
2. What could other people in my role do to promote the effective implementation of AGS in schools, and what would they need to enable them to do that?

To offer a more focused discussion, participants were placed with those working in a same or similar role.

Education Officers considered that they—and others in similar roles—could:

- develop a greater understanding of AGS themselves, e.g. by completing the course
- facilitate meetings for teachers and headteachers to discuss AGS and experiences
- offer in-house training on implementing AGS in class
- observe, monitor, supervise and offer feedback to teachers who have undertaken the AGS programme and are putting the activities into practice in schools
- support headteachers, and work with policy makers to facilitate the greater adoption of the programme in schools.

They largely felt funding for staffing and resources was in place, although more specialist maths teachers needed to be appointed. They felt they could do more to ensure greater support from senior staff and policy makers and they could develop a

monitoring and feedback framework to support school-level implementation of the AGS and staff development.

Participants from NAPE and A2I felt that they (and others in similar roles) could:

- Work together to develop additional online materials and face-to-face activities to support
    - professional development about AGS for Education Officers
    - school-based implementation of AGS for headteachers
- Offer training to field-level education officers about AGS and how it can be successfully implemented in schools
- Develop dissemination opportunities including webinars, evidence cafes or panels for local and national policy makers.
- Work with NCTB to incorporate the AGS activities into the primary teachers' DPEd training curriculum and in the primary Teachers' Guides

What next – Phase Two and closing comments

The café concluded with an overview of Phase Two of the 3Mpower project and a request for support from Education Officers for the next phase of data collection. Finally, there was a brief summary of feedback from the sessions and a thanks to participants for their contributions.

Annexes

Annex One: Programme

Time	Session focus
9.00 – 9.30	Welcome and formalities
9.30 – 10.00	**Introduction to the 3MPower project**
10.00 – 11.00	**Sharing Cycle 2 findings** 1. Barriers to using AGS in the classroom. 2. Enablers to successful use of AGS, 3. Classroom practices (improving participation, making classroom management easier). 4. Improving Maths skills and learner outcomes. 5. Teacher motivation and development. Reflections on the evidence
11.00 – 11.15	**Tea break**
111.15 – 12.15	**Discussion of Findings** 1. What does the effective implementation of AGS in schools look like? 2. What do headteachers do? 3. What do teachers do?
12.15 – 1.00	**Generating Findings** 1. What can I do to promote the effective implementation of AGS in. schools, and how could I do it? 2. What can other people in my role do to promote the effective implementation of AGS in schools?
1.00 – 1.15	**What Next – Phase Two**
1.15 – 1.30	**Feedback and Closing**
1.30	**Lunch**

Barriers
He mentioned that it is hard to do the activities in classes of 60 students. As these techniques need small pieces of papers & it is not possible to show the activities to the whole class at a time, it is hard to manage the time & also organizing the activities. Moreover, a lot of paper pieces are needed to run these activities in several groups which is also problematic to him. (Mollahat-PEER2-T3-1A-Cycle2)

His school has marbles, sticks and papers. His head teacher arranged those. He uses these for his classes. Sometimes, he instructs his students to bring some materials. For example, he ordered every student to bring 10 sticks to make a "Bundle of 10". Sometimes he collects natural resources like leaves. He hardly buys materials. (Alikadam-PEER 1-Study 1A-T2-Cycle 2).

I arrange making paper aeroplanes & discuss the idea of distance with it. I instruct the class to make planes while I demonstrate the making & let them fly their planes in pairs. They can easily identify whose plane is going further & understand about distance. But it's problematic to execute in the classroom. So, sometimes I bring the whole class in the playground making it a playing session while learning. It is also used to teach counting as they can count their steps to the spot where their planes crashed. (Sarankhola-PEER2-T1-1A-Cycle2)

Enablers
The head-teacher is a motivating and inspiring person. He has given him a lot of advice about his classes. He more often motivates him by acknowledging his efforts in class. His colleagues are supportive. They push him to perform better. They occasionally help him in creating numerous teaching materials. They cut calendars to help him to make teaching aids during break time. They talk about many teaching techniques with him. (Nikli-P2-T1-Cycle 2-1A)

Their head teacher is also very co-operative to them to apply these activities. As they do not have many teachers ,when a teacher performs in another teachers' class, the head teacher fills the gap of this class. The head teacher goes for proxy class to make up the gap. Sometimes, her head teacher observes her class and gives his valuable feedback like altering any material or to conduct activity in a different manner. The head teacher also provides poster papers sometimes. (Ruma-PEER 3-Study 1C-T2-Cycle 2)

Some of my colleagues are also enthusiastic in implementing the ideas as they also completed the course & want to use them for better outcomes. The head teacher doesn't interfere in any of my activities regarding this & motivates me. I got allowances from the head teacher for the cost of preparing teaching materials. (Sarankhola-PEER2-T1-1A-Cycle2)

Classroom Practices
Presently, students are arriving for class. They used to skip math classes because they used to dislike the subject. Now the students are enjoying their lessons very much. Because he used group-based methods, every student had to participate actively. (Nikli-P2-T1-Cycle 2-1A)

Although I have to work hard to manage them sometimes as they are all restless and running all the time and the number of students is 38, it is challenging. However, when I applied these techniques with dolls and cars, the most restless kids even seemed to be very attentive.(Ruma-PEER 1-Study 1A-T1-Cycle 2).

To be honest, it is very enjoyable for me and my students both. The class is not boring anymore, when I see my kids are receiving it very joyfully, I feel happy also. Sometimes, they finish tasks so quickly that I have to be concerned every single moment to manage the class. When some of them completed tasks earlier than their peers, I assigned them another bonus task to keep them quiet. But overall, I enjoy my class with AGS techniques. (Ruma-PEER 1-Study 1A-T1-Cycle 2)

Improving Maths skills and outcomes
To be honest, as a teacher I was really satisfied to see them totally engaged in that AGS activity. Their learning is more solid for these activities. In our area most of the students do not study after going home, especially at night. They fall asleep early. By doing these activities they learnt better in the classroom. I think these types of activities should be more emphasized in the classroom like ours. I feel happy when I see that they were practicing the techniques beyond the classroom. (Alikadam-PEER1-Study 1A-T1-Cycle 2).

In my opinion, they have improved a lot. With the materials, they enjoy learning Mathematics. When they enjoy the learning, it sustains. They learn with joy. The activities from Anonde Gonit Shikhi are fun. If we could take classes utilizing these strategies regularly, they would learn a lot more. They would be skilled. (Dharmapasha-PEER 1-Study 1A-T1-Cycle 2).

There are many kids in the class who are a bit shy. They don't want to talk much in class. But they can do just fine if given the activity in class. So these strategies are very effective for such children. Earlier, the teacher was worried about the learning of these children. But through the use of materials, he can easily ensure the participation of all types of students. There were a few active students in the class. But those who like to stay quiet are not engaged in class. Now all kinds of kids are engaged in class. (Chilmari-PEER 1-Study 1A-T 1-Cycle 2).

Teacher motivation and development
One day I was teaching another subject. The topic was 'The name of the seven days of a week'. While teaching suddenly I got an idea. I thought it might be more interesting if I use the number card techniques from AGS for this topic also. So, I made paper cards with each name of the day written on them. I assigned group work with these cards. After they learned the name I also called some students and told them to organize the position of the day in a rope which I tied before. Thus I implemented the AGS techniques in this topic and shared my experience with my colleagues. They all liked the idea and applied it to their classes also. One of my colleagues taught the name of the seasons in Bangla using this approach. (Ruma-PEER 3-Study 1C-T1-Cycle 2).

Sometimes, when I am in my home area, I meet other teachers near the marketplace and discuss the techniques. We mainly share our experience with these activities, who used what, how one's whose students were feeling, what challenges they have ...that kind of staff. I remember, one of the teachers were saying he applied a certain technique in a different manner than I do, I just finished with a group work but that teacher called students in front of the class and asked them to stick their cards on the board with gum, I grasped this idea as It seemed more interactive and clear to me. (Ruma-PEER 3-Study 1C-T1-Cycle 2).