

The mEducation Alliance Launches Math Power! Explorer, a New Mobile Math Learning Solution for Low-Resource Countries, Through a Rwanda Pilot

Peter Joyce, Digital Scaling Specialist, mEducation Alliance

Research indicates that children in developing countries are not learning sufficient mathematical skills for the rapidly evolving 21st century. With seed funding from Cisco Systems and a partnership with Viamo and Save the Children, the mEducation Alliance's *Math Power! Explorer* (MPE) pilot is exploring the combination of pairing mobile phones and Interactive Voice Recognition (IVR) with parental engagement for easy delivery of math games and activities to primary-middle grade students in low resource countries, starting in Rwanda.



The Challenge

International development experts say that math is a forgotten skill in education efforts. Research indicates that children in developing countries are not learning sufficient mathematical skills for the rapidly evolving 21st century. Without foundational math skills, students are unable to count cattle, measure wood and fabric, or chart rainfall trends. In turn, they are less likely to complete basic levels of education or vocational and technical skills training programs. According to an UNESCO report, fewer than 50 percent of grade 6 students have achieved a minimum level in mathematics in three-quarters of eastern and southern African countries (UNESCO 2014) and this situation is even more exacerbated by the impacts of COVID-19. Many education advocates point to mobile penetration as a potential way to revolutionize the way students learn around the world. By bringing quality education materials directly to households by engaging parents and children in the learning process, and increasing accountability in the sector, it is hoped that *Math Power! Explorer* (MPE) will help students in low resource settings to learn more, faster.

Math Power! Explorer Launch

With initial support from [Cisco Systems Global Impact Cash Grants](#), MPE was developed and is currently being tested in Rwanda by the [Mobiles for Education \(mEducation\) Alliance](#) in conjunction with [Viamo](#), a global social enterprise that specializes in mobile engagement and information and communication technology. [Save the Children](#) (Save) is supporting all field implementation. The new pilot uses IVR prompted scripts to advance users – learners and/or with guidance of parental engagement – through instructions of four specific non-tech math games selected by the project organizers. The hypothesis of the pilot is that through the selection of engaging math games that learners will continue playing the game on their own, without the phone. In the first two weeks of going live in June/July 2022, MPE has attracted over 2000 unique users, reflecting a strong interest and need. While the pilot continues to pick up in Rwanda with additional promotion, including IVR prompts in the Kinyarwanda language, the mEducation Alliance is developing plans to expand content, identify additional countries for replication and scaling, and to collect evaluative data.

The initial MPE interactive games include:

- **Guess my shape:** In this game, the player listens to clues about a mystery shape and tries to guess which shape it is. This is intended to be a fun way to help children practice their knowledge of the characteristics of different shapes.
- **Guess my number:** In this game, the player tries to guess what the secret number is when given a specific range (i.e. 1-8). If the player does not guess correctly on the first try, they will be told if the secret number is less than or greater than the number they guessed. This process repeats until they guess the secret number.
- **Skip count:** In this game, children choose to skip count by 2s or by 3s. Then they hear a series of numbers (ex. 2, 4, 6,) and then have to type in the next number in the series, according to the skip count pattern/rule.
- **Jump count:** This game is a variation of the skip count game. Instead of typing in the number to match the skip count pattern, numbers are said aloud starting from one and going up sequentially by one at a time. Children are instructed to jump when they hear the number said that matches the pattern (ex. jump counting by 2: 1, 2 [jump!], 3, 4 [jump!], etc.). There is a sound effect that represents the jumping sound that happens as the skip count numbers as said aloud.

Math Power! Explorer Technology

Mobile phones have a deep penetration in developing countries and represent an untapped resource for education. The International Telecommunication Union estimates that as of 2018, mobile phone penetration is around 100 percent in low and middle income, and 55 percent in low income countries. IVR is an automated phone system technology, familiar to many, that allows incoming callers to access information via a voice response system pre-recorded messages without having to speak to a live person, as well as to utilize menu options via touch tone keypad selection or speech recognition to have their call routed to specific departments or specialists. MPE takes advantage of this infrastructure. MPE is pushing the boundaries of existing IVR to deliver math games that engage young learners and their families outside of the classroom.

As for project expansion, the mEducation Alliance has researched and identified a catalog of proven math activities, including new escape-room activities focused on math, that will enable



the project to deliver additional learning reinforcing games and enhance interactive instructional drama activities that engage primary-middle grade learners via basic mobile phones. As MPE project collaborator Noella Kabarungi, Monitoring, Evaluation, Accountability and Learning Officer from Save the Children- Rwanda attests, "In Rwanda, we are very much excited to see how parents and children are using technology to not

only improve the math skills of children, but help them enjoy math more!"

Interested in hearing more about our MPE pilot activities and how you can get involved? Please email us at medalliance@meducationalliance.org.