

# Yiya Solutions, Uganda: AI-Powered Interactive Voice Learning with Feature Phones

## GENERATIVE AI COHORT CASE STUDY

team4tech

AI USE CASES: PERSONALIZED  
ADAPTIVE LEARNING, INCREASING  
ACCESS TO EDUCATION

In rural Uganda, digital learning opportunities are scarce. Over 80% of households lack reliable internet access, and the high cost of smartphones and computers puts them out of reach for most.<sup>1</sup> This creates a significant barrier to quality education, particularly for critical subjects like STEM (Science, Technology, Engineering, and Mathematics). For millions of young learners, this means missing out on the digital education revolution.

Yiya Solutions provides equitable access to skills-based STEM education for youth in under-resourced, remote areas. In response to the access challenges their learners are facing, Yiya observed that one device is readily available in rural Uganda: the feature phone.<sup>2</sup> Cheap, durable, and widely used, it quietly connects millions of families every day.

Armed with that information and responding to COVID-19 pandemic school closures, Yiya developed a solution that can turn a family's feature phone into a classroom: Yiya AirLearning. This ground-breaking, offline remote learning program is designed specifically for rural communities without internet, smartphones, or access to academic materials. By leveraging low-cost digital tools (radios and feature phones) that youth already have, Yiya has reached 40,000 youth since 2020, with an 80% course completion rate.

## Cohort-Based Learning Supports Yiya in AI Implementation

Team4Tech is an impact accelerator, building technical and pedagogical capacity for non-governmental organization (NGO) staff and educators so that they can do more to prepare their learners for high-quality employment in the knowledge economy.

As AI rapidly advances, Team4Tech recognizes the pressing need to support local NGOs as they seek to leverage this new technology to improve teaching and learning, as well as their own operational efficiency. Team4Tech has made significant investments to ensure that NGO staff and educators are not left behind in the AI revolution in education and to promote ethical representation of NGO voices and experiences in AI tool development.

We are leading various AI accelerator programs for education-focused NGOs, supporting them with expert coaching and technology grants as they develop their AI implementation strategies.

With funding from the Ezra Charitable Trust, Team4Tech is leading a three-year project (2024-2027) to build knowledge of AI tools for education-focused NGOs and support the application of Generative AI tools for more cost-efficient and effective program delivery. This work supports three annual cohorts of 10 Africa-based NGOs with expert AI training, coaching, grant funding, and technology tools. NGOs develop their own AI implementation plans over the course of the cohort.

After the cohort, they receive an implementation grant and ongoing coaching from Team4Tech experts in the region.

Yiya joined our 2025 learning cohort with some understanding of AI tools and were interested in leveraging AI to help make AirLearning even more accessible. AirLearning began as an offline virtual classroom accessible on basic keypad phones and radios, but Yiya noticed that many of their learners struggled with English. Yiya began translating course materials into Leblingo, learners' local language, but they wanted to do more to improve the accessibility of AirLearning courses for youth in hard-to-reach communities.

1. "Individuals using the Internet (% of population) - Uganda," World Telecommunication/ICT Indicators Database, International Telecommunication Union (ITU), url: <https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=UG>

2. Feature phones typically offer basic tools such as phone calls, text messaging, web browsing, and simple applications, but have less functionality than smartphones.

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# The AI Innovation

To increase the accessibility of AirLearning STEM courses, Yiya developed AirVoice, Africa's first AI tutor, accessible completely offline. Trained on Yiya's STEM and entrepreneurship curriculum, AirVoice can understand the speech of low-literacy learners and respond conversationally through a simple phone call—no internet needed. Learners can dial in on a basic feature phone to revisit topics such as material properties while building their own technologies. Remarkably, AirVoice feels so real that learners often believe they're speaking to a human teacher—one even asked if they could meet the AI tutor face-to-face.

The learning experience is designed to feel familiar: lessons are voiced in local accents, and the AI remembers each learner's progress. Students often describe it as "a patient teacher in my pocket." Most importantly, it works without the internet, making quality STEM education accessible to even the most remote village.



# Implementation

Yiya's team began its AirVoice pilot by designing the interactive voice-based curriculum with a focus on core STEM concepts. Yiya's AirVoice content was carefully crafted to be clear, engaging, and culturally relevant. The process involved testing different voice tones and pacing to optimize for audibility over a simple phone call. To support teachers, Yiya also incorporated features to automatically generate lesson scripts, reducing preparation time and ensuring consistent delivery. The pilot was one of the first of its kind, proving that low-bandwidth, voice-based AI could be a viable educational tool in a challenging environment.



The main challenge Yiya faced was the technical optimization required to ensure the voice-based AI worked effectively with minimal mobile connectivity.

OBSTACLES	HOW YIYA ADDRESSED THE CHALLENGES
<ul style="list-style-type: none"><li>• <b>Connectivity gaps:</b> Dropped calls in remote areas sometimes broke lesson flow.</li><li>• <b>Background noise:</b> Crowded homes and marketplaces made it harder for the system to “hear.”</li></ul>	Yiya adapted quickly—adding polite “repeat” prompts, working with telecommunications companies to subsidize calls, and exploring lower-cost AI models.

The key takeaway from Yiya's pilot is that technology must be adapted to the environment, not the other way around. By focusing on what was already widely accessible—the basic feature phone—Yiya created a scalable solution that works within the existing infrastructure. This approach of low-tech, high-impact innovation is a powerful lesson for organizations seeking to serve under-resourced communities.



## STUDENT SPOTLIGHT

Agnes, a student in Northern Uganda, described it this way: *“It’s different from radio, because the teacher talks back to me. I have a personal teacher in my pocket. I learn at my own pace.”*

# Looking Toward the Future

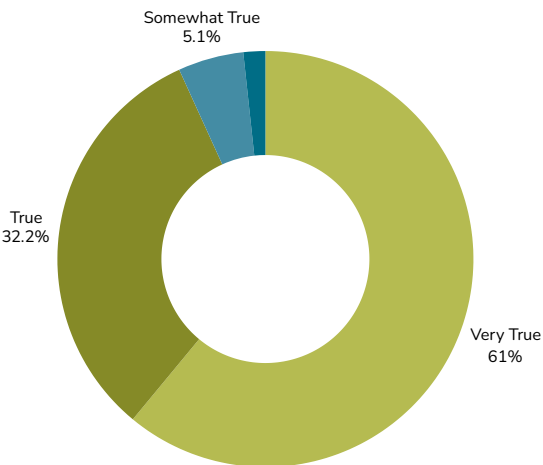
Early results show the AirVoice pilot has been a resounding success. Yiya AirVoice was piloted with 100 students in two districts in Uganda, and over 90% of learners in the pilot responded that they want to learn with Yiya AirVoice again. Yiya reports that students who had no prior access to STEM education are now actively engaging with interactive lessons in real-time. This has created a new pathway for learning that was previously nonexistent. The efficiency gain for teachers, who receive automated lesson scripts, is also a significant benefit, allowing them to focus on classroom instruction and student engagement. Additionally, 76% of students' interactions with the AI agent that Yiya developed were scored as “very accurate”. This means that AirVoice understood the learner and gave an expected and appropriate response. The model has shown that with simple technology, it's possible to deliver high-quality content at scale.

Yiya plans to scale their AirVoice pilot to a wider regional area within Uganda and also farther into rural areas in neighboring countries facing connectivity challenges. Yiya anticipates tackling this scale through strategic partnerships with telecom providers, governments, and donors.

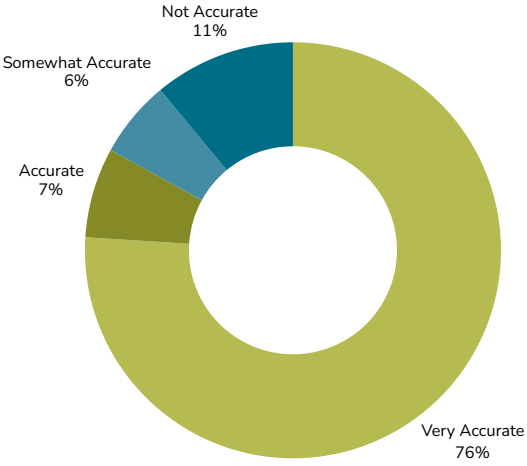
As they scale, Yiya plans to hold fast to their long-term vision: enabling every rural learner in Africa, whether or not they have the internet, to access high-quality, interactive education.



## "I want to learn again with Yiya AirVoice"



## AI Language Understanding



Survey feedback from over 100 students