yiya
AirScience

impact

REPORT

2020

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BACKGROUND OVERVIEW

EDUCATION IN UGANDA

Before COVID-19 came to Uganda, there were **3 major barriers** preventing many Ugandan youth from accessing secondary school education.

1. **COST** – Although Uganda has Universal Secondary Education, the costs for school fees, schoolbooks, uniforms, and other school supplies can be prohibitive. Families with multiple children often prioritize boy's education, leaving girl children un/under-educated.

2. **YOUTH AS BREADWINNERS**– According to the United Nations Population Fund (UNPF), 64% of youth are engaged in some form of employment and 11% of males aged 10-24 are the head of their household, the main breadwinner for their families.

3. **LACK OF QUALIFIED TEACHERS** – In rural areas, the nearest school could be a 2 hour walk away. Teachers' salaries are so low that they are forced to teach "full-time" in multiple schools at once, leading to high teacher absenteeism in each of the schools as teachers cannot be in multiple places at once.

EFFECT OF COVID-19 ON EDUCATION IN UGANDA

The COVID-19 pandemic hit Uganda in late March. All schools have remained **closed** since then, with the vast majority of learners spread in rural areas with **no access** to textbooks or learning materials, much less internet or mobile phones.

INTRODUCTION

YIYA AIRSCIENCE

OUR MISSION

To promote resilience and creative problem solving in African youth through experiential STEM education!

OUR COVID-19 RESPONSE

24.6%
OF YOUTH
AGED 10-19 YEARS OLD
ARE ENROLLED IN
SECONDARY SCHOOL

AirScience is Yiya's COVID-19 urgent response model to distribute education remotely, and thus safely, without internet! Our program has the potential to provide education to the **34,000,000 youth out of school throughout sub-Saharan Africa**. This is important considering only 24.6% of youth aged 10-19 years old are enrolled in secondary school.

HOW WE DO IT

87% of Ugandans have a working radio and 74% have at least one keypad phone in their household (BBC). Yiya broadcasts AirScience lessons via radio and integrates SMS messaging via USSD for engagement and quizzing. Yiya can maximize our reach and impact beyond students by engaging and educating families in the learning process. In 2018, adult literacy rate in Uganda was 76.5%. The combination of audio and text keeps the model inclusive for **ALL** low literacy learners.

87%
OF HOUSEHOLDS
HAVE A WORKING RADIO

74%
HAVE AT LEAST ONE KEYPAD PHONE

AirScience
GOALS
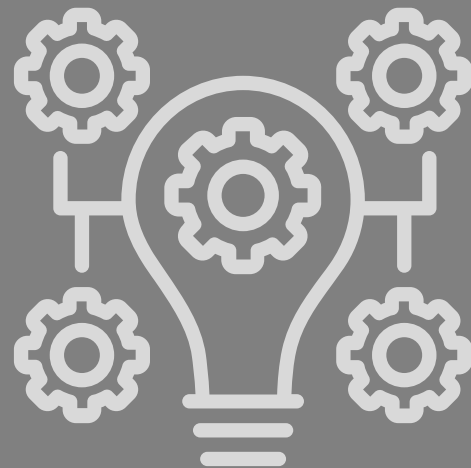
1

Improve creativity and problem-solving skills in Ugandan individuals

Support learners to solve problems in their local communities through STEM activities that utilize local resources.

2

Spark curiosity in STEM

Inspire scientific curiosity by engaging learners in practical technology and innovation activities.

3

Foster financial resilience

Provide accessible STEM education which can lead to job opportunities, income and self-reliance.

4

Build emotional resilience

Engage learners in STEM activities that lead to flexible thinking.

5

Increase community engagement via techno-preneurship

Train and aid learners to launch technology projects to solve problems within their communities.
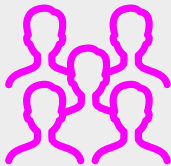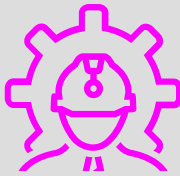
6

Decrease poverty in Africa

Reach all learners, no matter their location, and provide them with the tools and education to develop technology projects that transform their communities and create sustainable livelihoods, reducing poverty in Africa. 48% of individuals enrolled in AirScience live in villages.
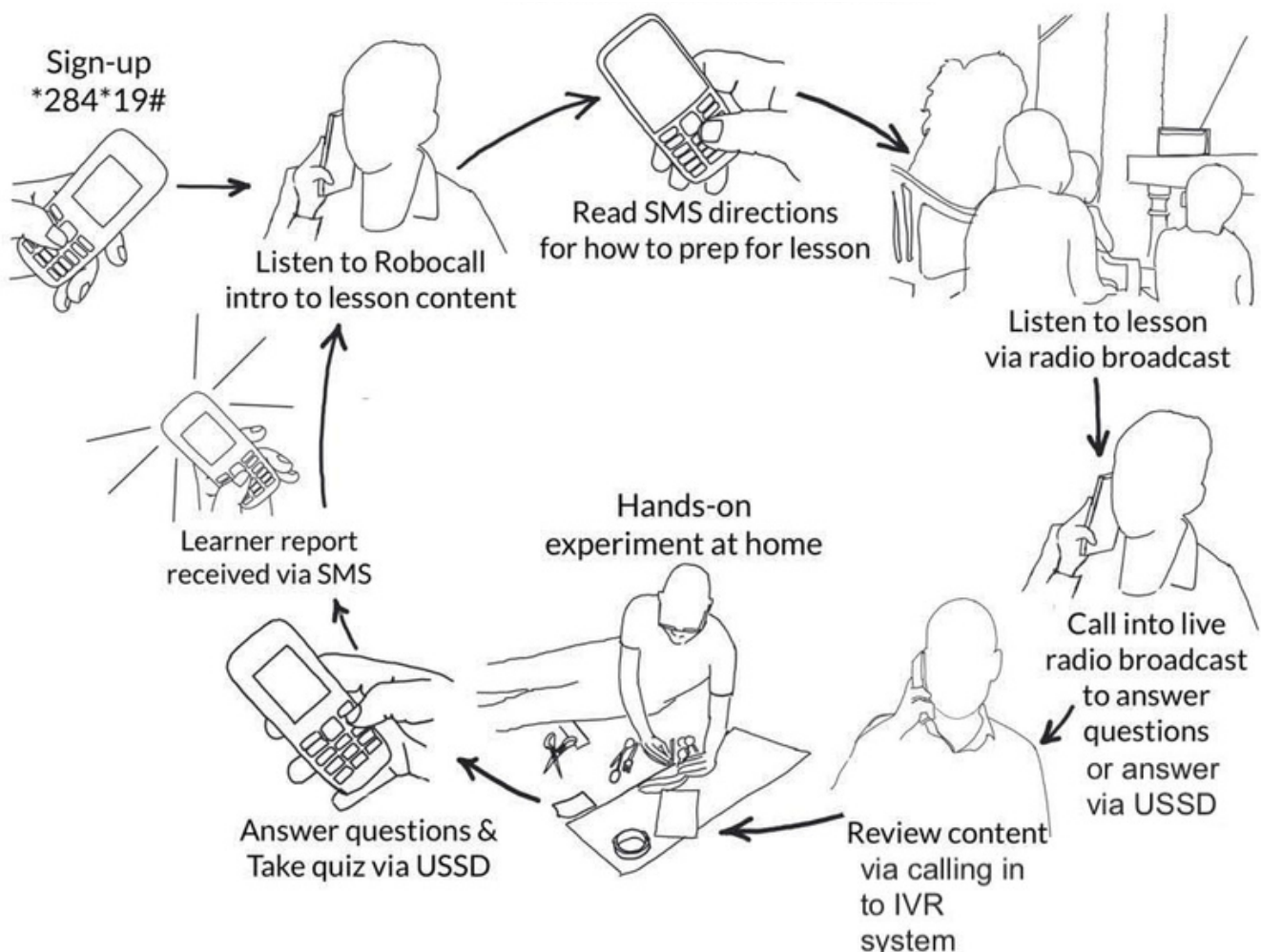
2021 KPIs

Key Performance Indicators

In 2021, Yiya strives to engage 50,000+ young people in practical technology and innovation activities through its AirScience program.

KPIS	CORRESPONDING GOALS
5,000 youth report use science & technology to solve a local community challenge using local resources.	• Improve creativity and problem-solving skills • Spark curiosity in STEM • Community engagement via techno-preneurship
1,000 youth report train at least 5 other community members in science & technology development.	• Spark curiosity in STEM • Community engagement via techno-preneurship
1,000 youth report launching an income-generating technology project by the end of the pilot.	• Foster financial resilience • Decrease poverty in Africa
At least 50,000 youth complete program registration, and at least 10,000 engage in the program each week.	• Improve creativity and problem-solving skills • Spark curiosity in STEM
80% of youth active in the program report interest in a career in STEM fields.	• Spark curiosity in STEM

YIYA LEARNING CYCLE

How do you have the greatest reach and the deepest impact?

1 KEEP IT SIMPLE

2 MAKE IT ACCESSIBLE TO ALL LEARNERS

3 TEST KNOWLEDGE

4 PROVIDE RESOURCES

Sign-up *284*19#

Listen to Robocall intro to lesson content

Read SMS directions for how to prep for lesson

Listen to lesson via radio broadcast

Call into live radio broadcast to answer questions or answer via USSD

Review content via calling in to IVR system

Hands-on experiment at home

Answer questions & Take quiz via USSD

Learner report received via SMS

LESSON PLANS were broken up into several skills to teach students **problem-solving, creativity** and **entrepreneurship.** They learned

- how to **conduct research** and **analyze data** using graphs and pie charts;
- to **identify business opportunities** and **design marketing strategies**, **pitching, costing** and **selling;** and
- important **science and math concepts** like **surface area to volume ratio**, **measurements**, **reflection and absorption** of heat energy, **heat radiation** etc.
- **how to make modifications** based on the **local materials available**.

WHAT DOES A TYPICAL LESSON LOOK LIKE?

Elements of a Yiya AirScience Lesson

AirScience radio script for Lesson 7:

Calculating the price of a solar food dryer

1. Speaker presents intro to lesson
2. Description of materials needed
3. Short family game to warm everyone up!
4. Intermission for questions (via USSD texts) and reminder to add mobile phone airtime
5. Lesson on costing and material choices and alternatives
6. Description of hands-on experiment with audio of students trying it out at home
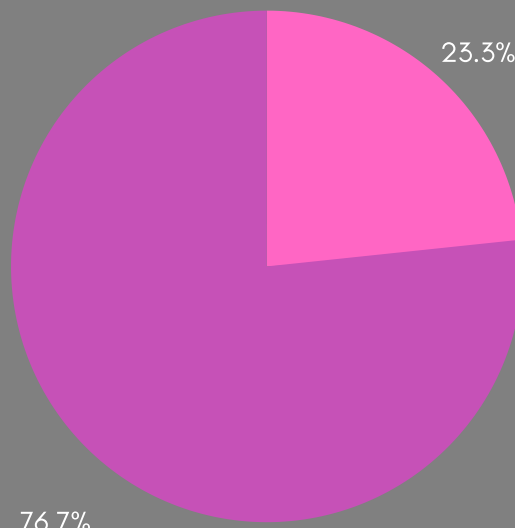7. Quiz via USSD texts to track knowledge
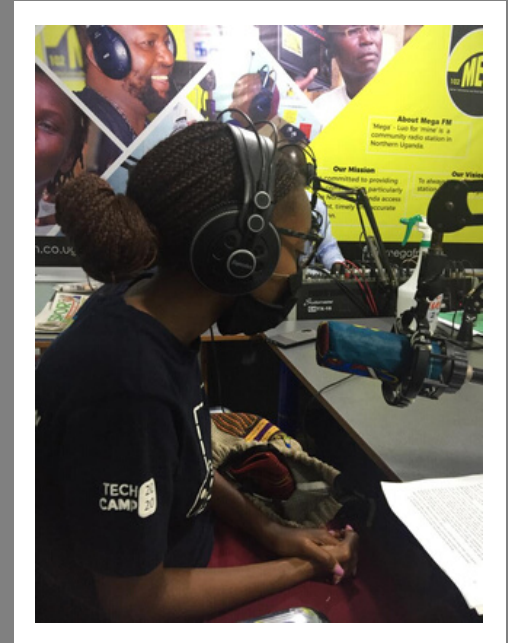
75%

of Yiya AirScience users are able to answer 70% of the USSD questions correctly

1

Hands-on activity PER WEEK

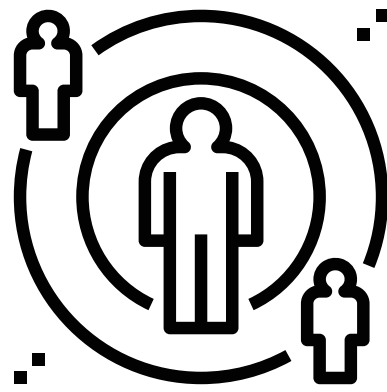## KNOWLEDGE RETENTION

23.3%

76.7%

SAMPLE QUESTION
MODULE 2 – LESSON 2

Q: How do food flasks prevent food from rotting?
(multiple choice)

A: Maintain a hot temperature so bacteria grows slowly
– 3743 students answered correctly

A: Prevent bacteria from getting into food
– 1139 students answered incorrectly

REACH & IMPACT

BEFORE COVID-19, UGANDA HAD

47%

OUT OF SCHOOL YOUTH

WHILE YIYA WAS ABLE TO REACH

400

SECONDARY SCHOOL STUDENTS PER YEAR

AFTER COVID-19, THROUGH THE AIR SCIENCE PROGRAM, YIYA WAS ABLE TO REACH

> 24,000 REGISTERED USERS

STUDENTS OF ALL AGES, TEACHERS, FAMILIES, ADULT LEARNERS, OUT OF SCHOOL YOUTH AND MORE

> 1200 SOLAR FOOD DRYERS WERE BUILT

STUDENT INNOVATION

USING LOCALLY AVAILABLE MATERIALS, STUDENTS MODIFY THE DESIGN OF THEIR SOLAR DRYER – DEMONSTRATING THEIR CREATIVITY, RESOURCEFULNESS AND RESILIENCE.

DIVERSE PARTICIPATION

Before Yiya AirScience, Yiya partnered with schools for onsite programs and worked to improve STEM education and hands-on experiences for students. With this new remote strategy, Yiya has the capacity to affect not only youths currently enrolled in school but also out of school youths and adult learners without immediate access to education.

BEFORE, Yiya gave educational access to

0

out of school youths

In less than a year since the start of the program, that number has increased to

8126

Of the

8126

out of school youths

>**30%**

FEMALE

Approx

1/2

of all participants

are adults over

20

"The program is very educative, profitable and important and I always enjoy listening to it and I have learnt a lot from it. The presentation and explanation is precise and on point."
– Oluku Denish

15.8%

of AirScience participants have finished high school

The Yiya AirScience program engages parents, teachers, and other adults who are listening, participating, and learning.
Virtual learning has created flexibility and accessibility – a powerful and unique upgrade from the classroom model.

STUDENT
SUCCESS

Yiya Staff/Teacher Sheeba delivering solar food dryer project materials to prize-winner Pauline
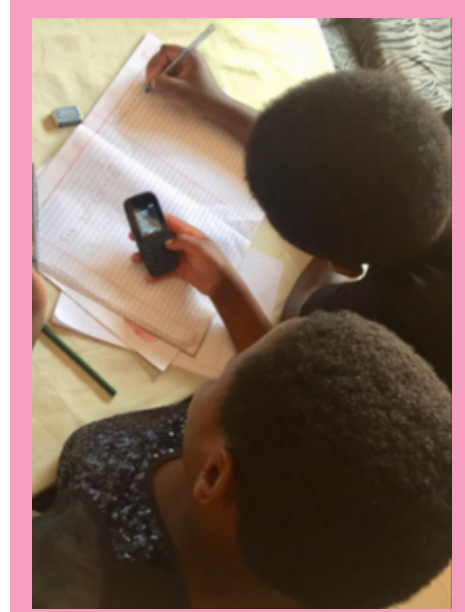
AirScience student Paul explaining how he made his solar food dryer

MEET
ALISON

9 year old from Lira won the prize for scoring 98% in the weekly Yiya AirScience Tech quiz. Alison wants to be a doctor.

MEET
PAULINE

from the Gulu district, she won the prize for scoring 98% in the weekly Yiya AirScience Tech quiz

What we need to scale Yiya AirScience:

- Yiya AirScience costs $8 per youth per technology

- Our goal is to reach 100,000 youth in 2021 and do 4 technology units

- Partnership with telecoms (zero-rating) would drop this cost to $2.50 per youth per technology

Our Plan for Sustainability

- Interactive voice response (IVR) system with recordings of all broadcast material

- Telecom partnership with mutual benefits
  - Revenue share
  - Marketing strategy

- Very economic cost per child ($0.08 per child per day!)

- Alignment to government priorities

2021 GOALS

- Inspire scientific curiosity by engaging 50,000+ young people in practical technology and innovation activities.
- Build creativity and improve resilience in young people through STEM activities that use the engineering design process.
- Train African youth to develop technology projects that transform their communities by solving local challenges and creating sustainable livelihoods.
- Reimagine remote delivery of interactive science and technology education that makes it accessible to all.

2021 PLAN – WHAT'S NEXT?

2020 has brought with it many challenges, which has allowed us to *practice what we preach*, by innovating and implementing solutions to have the same if not greater impact. Multiple studies show that the best innovations emerge from constraints. The 2020 restrictions and limitations gave rise to the AirScience program. In less than one year, we increased our reach multiplied and our impact spread across the country to youth and adults alike.

Moving forward in 2021, we will begin administering surveys through USSD –- **pre, during, and post-program surveys to track KPIs in knowledge gains, lesson application, income from technology implementation and design innovation from use of local resources.**

Using the Yiya's KPIs listed above, we will be tracking growth and development using validated measuring tools and secondary research to track:

- Curiosity in STEM
- Creativity
- Financial Resilience
- Perseverance
- Life Satisfaction
- Community Engagement
- Problem-solving ability

This year, the pandemic affected everyone. Yiya was able to pivot, and in doing so, not only managed to overcome it, but INCREASED our reach and IMPACT by 60x! They say leaders thrive in times of crisis. The Yiya team has proven their mettle, and are ready to reach over 1 million students of all ages over the next 2 years.

Yiya was even selected as one of the finalists for the prestigious MIT SOLVE Competition in the Learning for Women and Girls Category!

We couldn't have done it without you! **THANK YOU** for working alongside us on this journey and for your continued support!