

Education Digital Equity Initiative

LEARNING MANUAL

LOW-COST AND OFFLINE SOLUTIONS FOR DIGITAL
LEARNING (FOR STUDENTS IN RURAL SCHOOLS)

Funded by:



Foreign, Commonwealth
& Development Office

Produced by:



ABOUT AREAi

Founded in 2014 and registered in Nigeria with the Corporate Affairs Commission (CAC) in 2017, Aid for Rural Education Access Initiative (AREAi) is a non-governmental, for-purpose organization that works with and in under-resourced schools and marginalised communities, providing technical and infrastructural support to scale learning outcomes and drive tangible academic achievement for poor and vulnerable children as well as youth from low-income families. Since inception, AREAi has established itself as one of Nigeria's leading educational organizations with a firm focus on working collaboratively with local stakeholders and governmental organisations to secure equal educational access and high-quality education for low-income primary and secondary students and children in hard-to-reach and rural communities. With thematic focus areas on digital equity, literacy skills development, girls' education and youth-led innovation in education, the organization's different programs have impacted over 16,000 beneficiaries across 23 communities in about 8 states of the country.

Project Lead and Executive Director: Gideon Olanrewaju

Project Associate Lead: Yetunde Abiodun Omotosho

Project Team: Olajide Charles Falajiki, Godwin Osama, Ifeoluwa Ariyo-Agbaje, Motunrayo Fatoke

Photography credit: Faje Kashope, Faith Oguiche, Jennifer Bekes

Illustration credit: Olamide Agunbiade, Aderemi Temitope

Contact: info@areai4africa.org , +2347061169861

Websites: www.areai4africa.org ; <https://equity.areai4africa.org/>

Address: Impact Cove, No 4 Sefado Close Wuse 2 Abuja Nigeria

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PROJECT OVERVIEW

The Education Digital Equity Initiative is an information-based project that seeks to address digital exclusion by providing and widely disseminating series of evidence-based, comprehensive education materials that lays out simple steps and ideas for rural schools, remote communities, community-based initiatives and low-income families to adopt in accessing remote learning materials, online education resources options and digital learning opportunities in a post COVID19 pandemic era. The project adopted a multi-stakeholder approach, to drive digital equity through a fact-finding survey and information access strategy, and to create awareness about existing and emerging technologies capable of facilitating the sustainable expansion of basic, affordable digital learning and teaching access for the poor and excluded. The project is funded by the United Kingdom's Foreign, Commonwealth and Development Office under the Prosperity Fund's Digital Access Programme.

ABOUT THIS LEARNING MANUAL

The manual highlights various examples of home-based and active remote learning solutions to support learners in rural schools and remote communities with accessing educational content or engaging in learning activities. Nine of the most effective low-cost offline channels of distance learning are being illustrated for easy and widespread adoption. It is expected that the use of this manual will close the gap in access to quality information for approaches for offline learning at community levels. Community leaders, parents, teachers and school heads are also encouraged to adapt the ideas expressed in this manual to ensure the inclusive provision of learning opportunities to their children and students.

9 EFFECTIVE LOW-COST OFFLINE CHANNELS OF DISTANCE LEARNING


TOOLS	TARGET USERS	ADVANTAGES AND DISADVANTAGES	COST
Radio	Primary and Secondary students	<ul style="list-style-type: none"> Does not require internet Access might be limited Permits feedback Reception can be poor 	Relatively low
Television	Primary and Secondary students	<ul style="list-style-type: none"> Does not require internet Combines audio and visual aids 	Cost is relatively high for students, must be available at household level.
Talking Books and Pen	Primary students	<ul style="list-style-type: none"> Does not require internet Comparatively cheaper to tablets Allows learning in multiple languages. 	A complete set costs around 30,000 naira
SMS Technology	Secondary students	<ul style="list-style-type: none"> Does not require internet No smartphone access required 	Costs between 300 to 500 naira to access monthly.
Home Learning Kits	Primary and Secondary students	<ul style="list-style-type: none"> Does not require internet No device is required 	Cost is very cheap
Educational Tablets	Primary and Secondary students	<ul style="list-style-type: none"> May require the internet Can hold large volume of content 	Price ranges between 20,000 to 30,000
Digital Book Reader	Primary and Secondary students	<ul style="list-style-type: none"> May require the internet Contains books, videos and games 	Price ranges between 5000
Virtual Reality	Secondary students	<ul style="list-style-type: none"> Does not require internet Access can be limited 	Costs can be very high for students, can be provided by schools
Open Educational Resources	Secondary students	<ul style="list-style-type: none"> May require the internet 	Free to access



The Talking Book and Pen consists of a digital pen and a specially printed book.


When the pen touches text or pictures in the book, it reads out the corresponding audio, including interactive games, quizzes, multi-language translations, etc. Talking Book and Pen helps children to develop literacy and numeracy skills through structured educational content. The books are written in different languages such as French, Arabic, Spanish, Hausa, Igbo, and Yoruba. It is currently available in Nigeria and can be obtained for as low as 25,000 naira.

To buy the talking books and pen, you can visit <http://maviseducation.com/store/>



Our Teacher, since our school was closed, our children have stopped attending English and Math Lessons. How can you help us?

Don't worry yourself Alhaja and Mama Chinoso. I also heard they could not join the classes on Zoom or Microsoft Teams.



This device in my hand is called a Talking Pen. It doesn't require, and cannot connect to, the internet in order for it to work. Danladi and Chinoso can use it to learn their literacy and numeracy lessons and do exercises in a fun and engaging manner.


This must be really good. I see that it also has an ear-piece. I would definitely get one for Danladi. He would continue to use it to learn how to read and write.



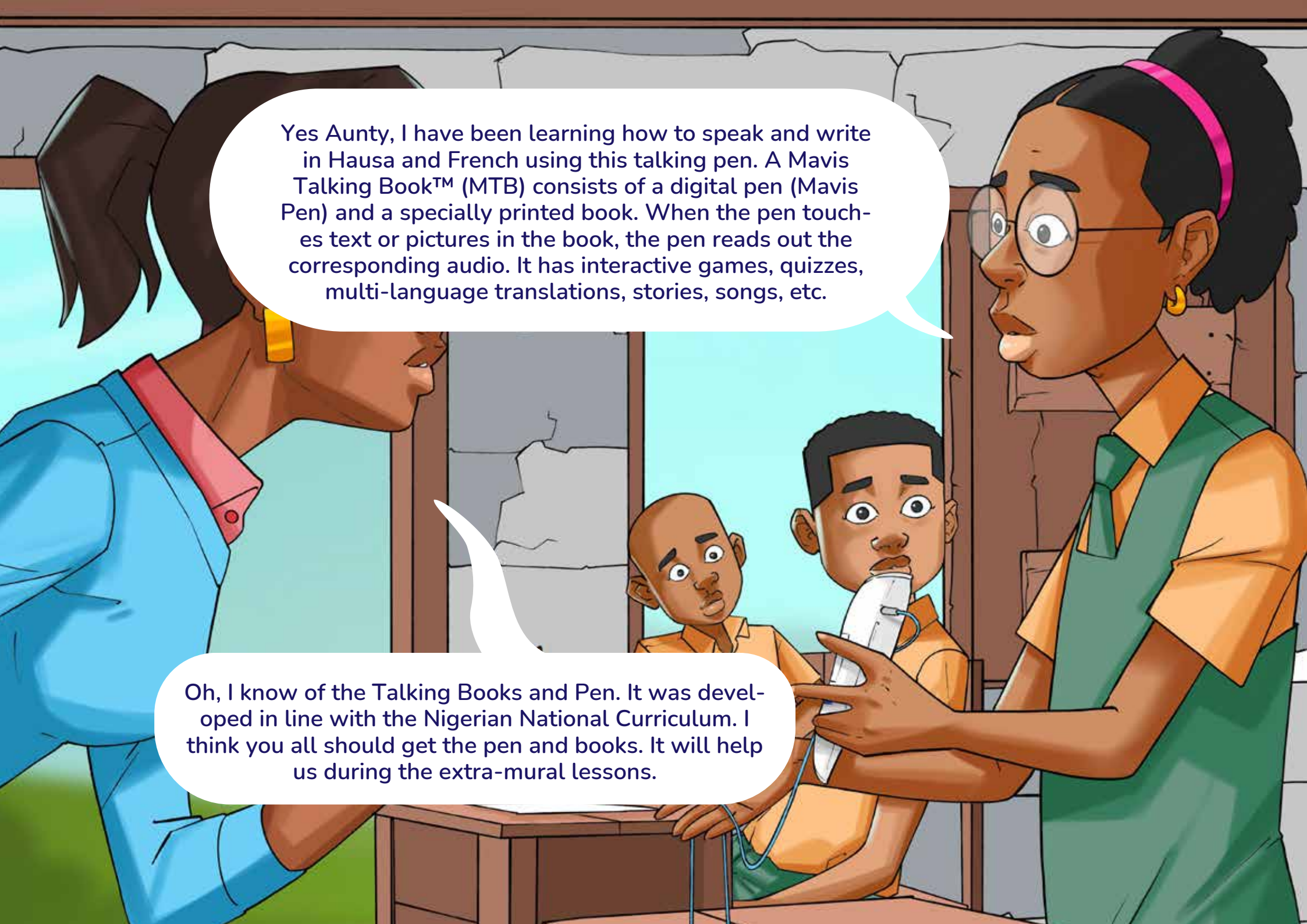
Danladi, is this what you have been using to study since we stopped going to school?

Yes Adewale! : A Talking Book contains about 100 Books. By using it to learn, I can now construct sentences, respond to questions and even read comprehension passages. I like the pen because it can speak in Hausa, English, Yoruba and Igbo.

I think all the students in our class should know about this. I would ask my mother to get one for me.



It's so good to welcome you all back from the long holidays. I hope many of you have been learning at home during the break?



Yes Aunty, I have been learning how to speak and write in Hausa and French using this talking pen. A Mavis Talking Book™ (MTB) consists of a digital pen (Mavis Pen) and a specially printed book. When the pen touches text or pictures in the book, the pen reads out the corresponding audio. It has interactive games, quizzes, multi-language translations, stories, songs, etc.

Oh, I know of the Talking Books and Pen. It was developed in line with the Nigerian National Curriculum. I think you all should get the pen and books. It will help us during the extra-mural lessons.

SMS and USSD Technology

How to use

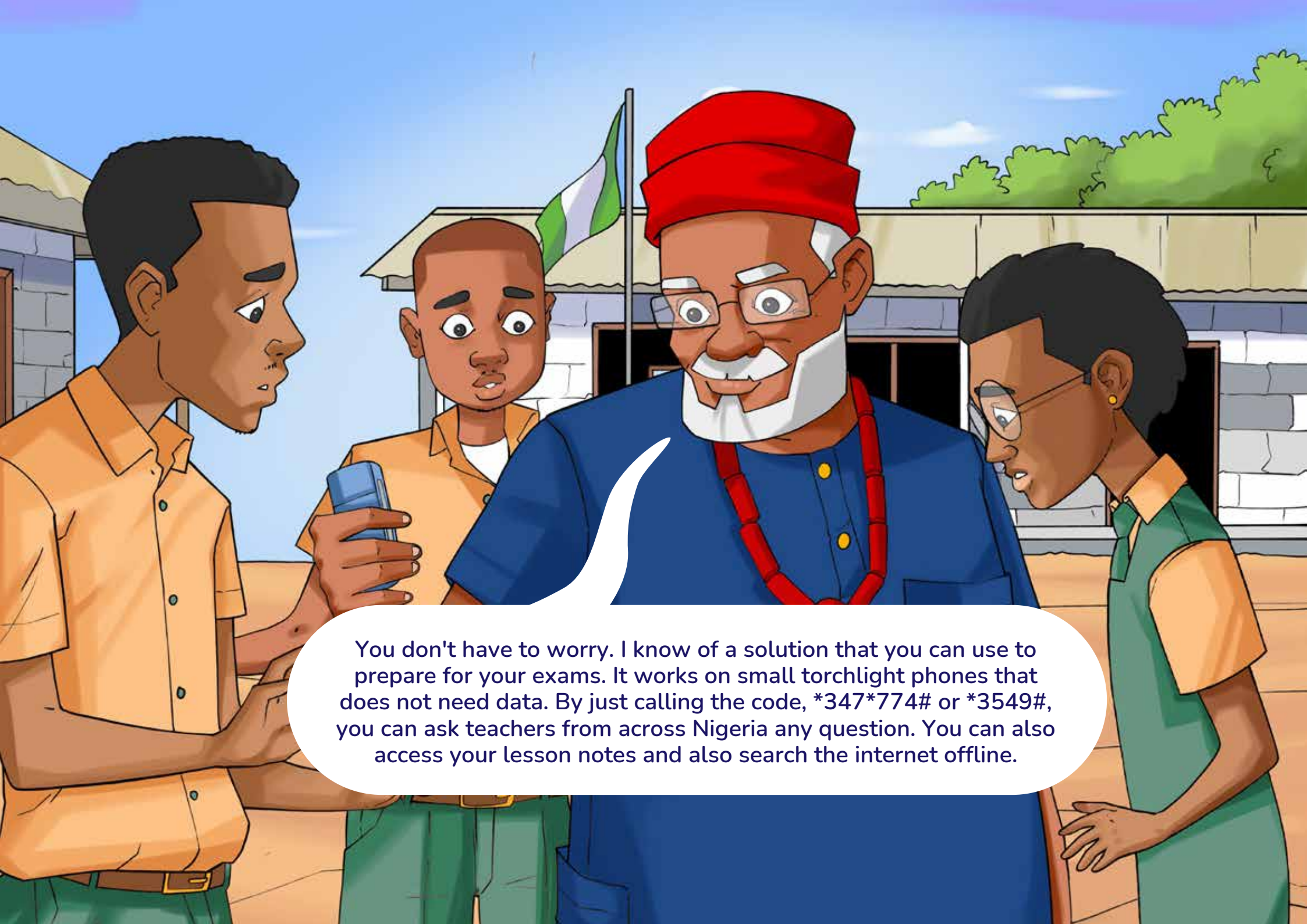
Do you know with small torchlight phones that do not need data or the internet, it is possible for you to interact with teachers from across Nigeria? But HOW?

- In Nigeria, you can dial *347*774# or *3549# to access various types of learning content.
- You can read your class notes, search the internet offline, receive assessment questions both multiple-choice and open-ended - by text, and get feedback on your responses to know whether it is right or wrong.
- You can pay as low as 100 naira per week and 300 naira per month as subscription fees to use this solution
- You can learn in any of local language or select any subject or topic of your choice while navigating through the USSD or SMS functions.



My dear students, it is almost time for your final exams. We would not be opening the school for your coaching and revisions. All learning has been moved online.

But how are we going to study and revise in order to pass our exams? We don't have computers, tablets or smartphones to learn online.




You don't have to worry. I know of a solution that you can use to prepare for your exams. It works on small torchlight phones that does not need data. By just calling the code, *347*774# or *3549#, you can ask teachers from across Nigeria any question. You can also access your lesson notes and also search the internet offline.



Dad, can I please use your Nokia 3310 phone?
I want to study for my UTME exam by practising
past questions with the DigiLearns SMS
app.




Frank, I have a lot of questions from all the lessons and exercises I have been studying in my textbooks and on the App the Chief told us about. Can you help me, please?



Abdullahi, that's quite simple. You dial the USSD code to use the "Ask-a-Teacher " feature to send your questions to any of our teachers for any of the 20 subjects. They would respond to you in less than 30 minutes via SMS.

That sounds so cool, Frank. I can use this with the "offline google feature" that allows us to search the internet for the meaning of words without connecting to the internet.

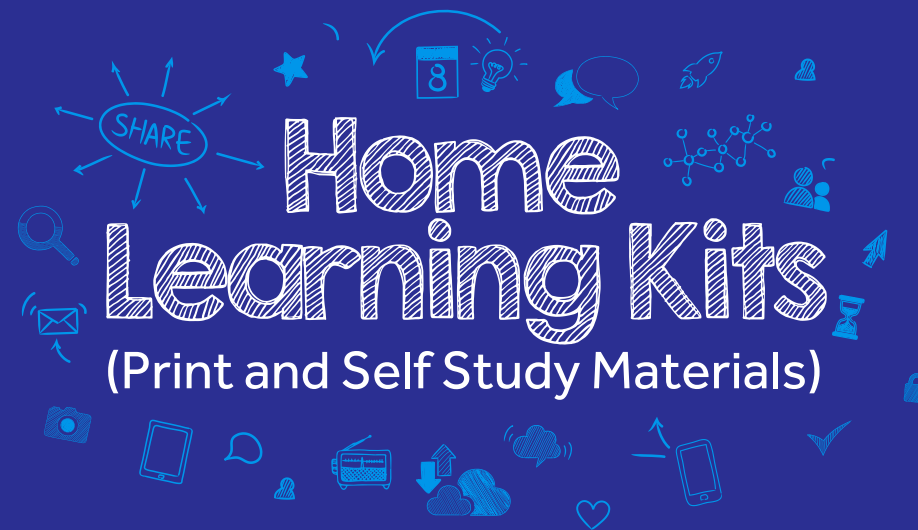


I am sure Mr. Solomon can answer this Chemistry question for me. Let me use DigiLearns.

What is the boiling point of ethanol?

What a great question from Frank, let me respond to him right away.


The Boiling point of ethanol is 78.5°C



To promote children's continuous learning at home and for back-to-school plans, students can be supported with physical lesson notes, textbooks and other printed learning materials that can help facilitate learning for them even without the internet. These materials can be made by the students themselves or with the support of their parents, elder siblings, teachers or caregivers. If well designed for use, a home Learning kit connects what children learn at home and in school.

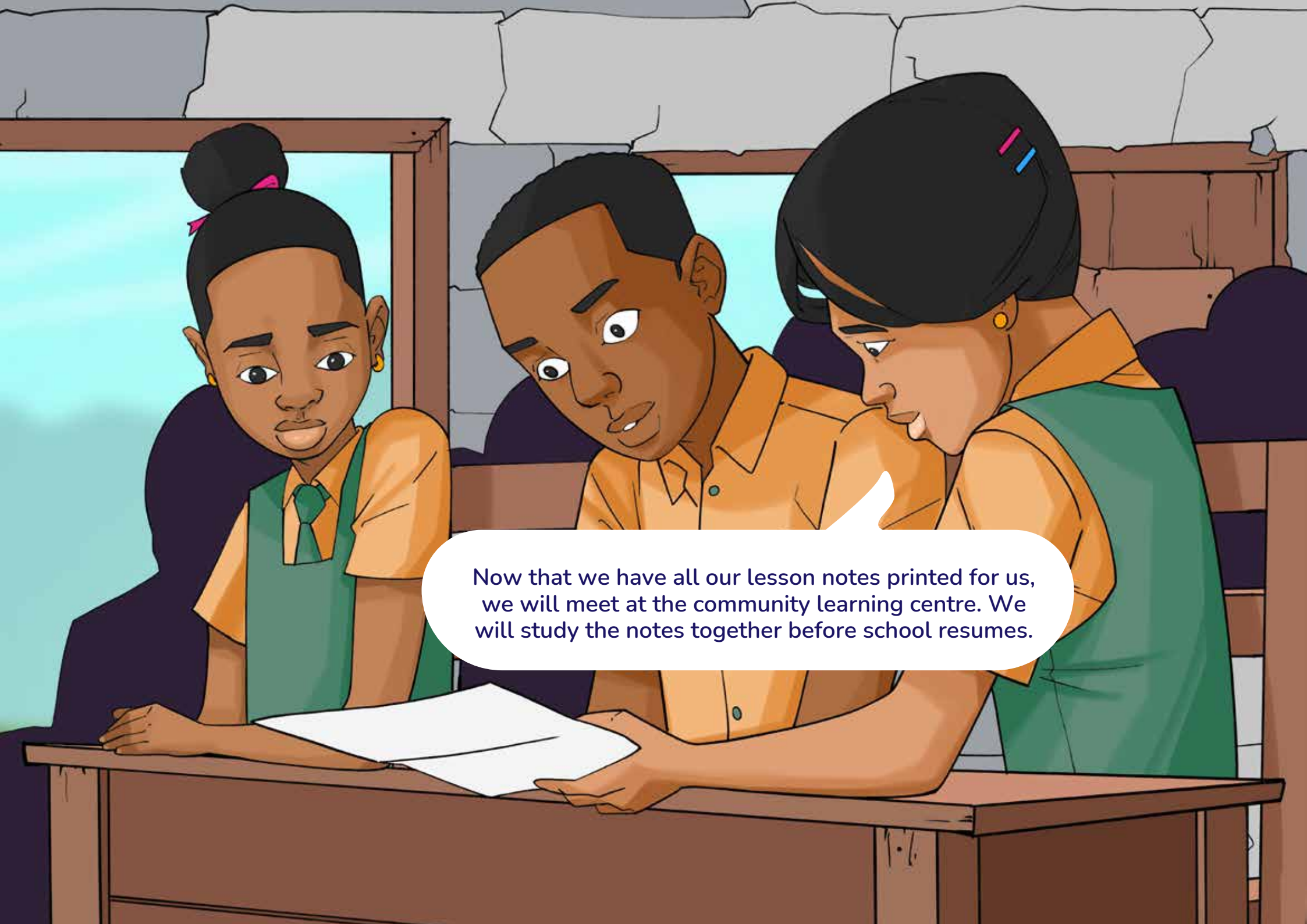


Dear students, I received your letter of request. You want us to support you and your friends with reading resources when you are home during the lockdown. The school has provided you with home learning kits.

An illustration of three students in a classroom. On the left, a boy with short dark hair and a green vest over an orange shirt looks surprised with his hand to his mouth. In the center, a boy with glasses and an orange shirt holds a white paper. On the right, a girl with her hair in two buns, wearing a green vest over an orange shirt and a green tie, looks on. They are all looking at the paper. In the background is a large blackboard with a wooden frame. The floor is a reddish-brown color.

So Chidinma, all the notes we are supposed to learn in class have been printed to help us self-study at home.

Thank you so much Olamide. I would take them now to sort and distribute them to all our classmates.



Now that we have all our lesson notes printed for us, we will meet at the community learning centre. We will study the notes together before school resumes.

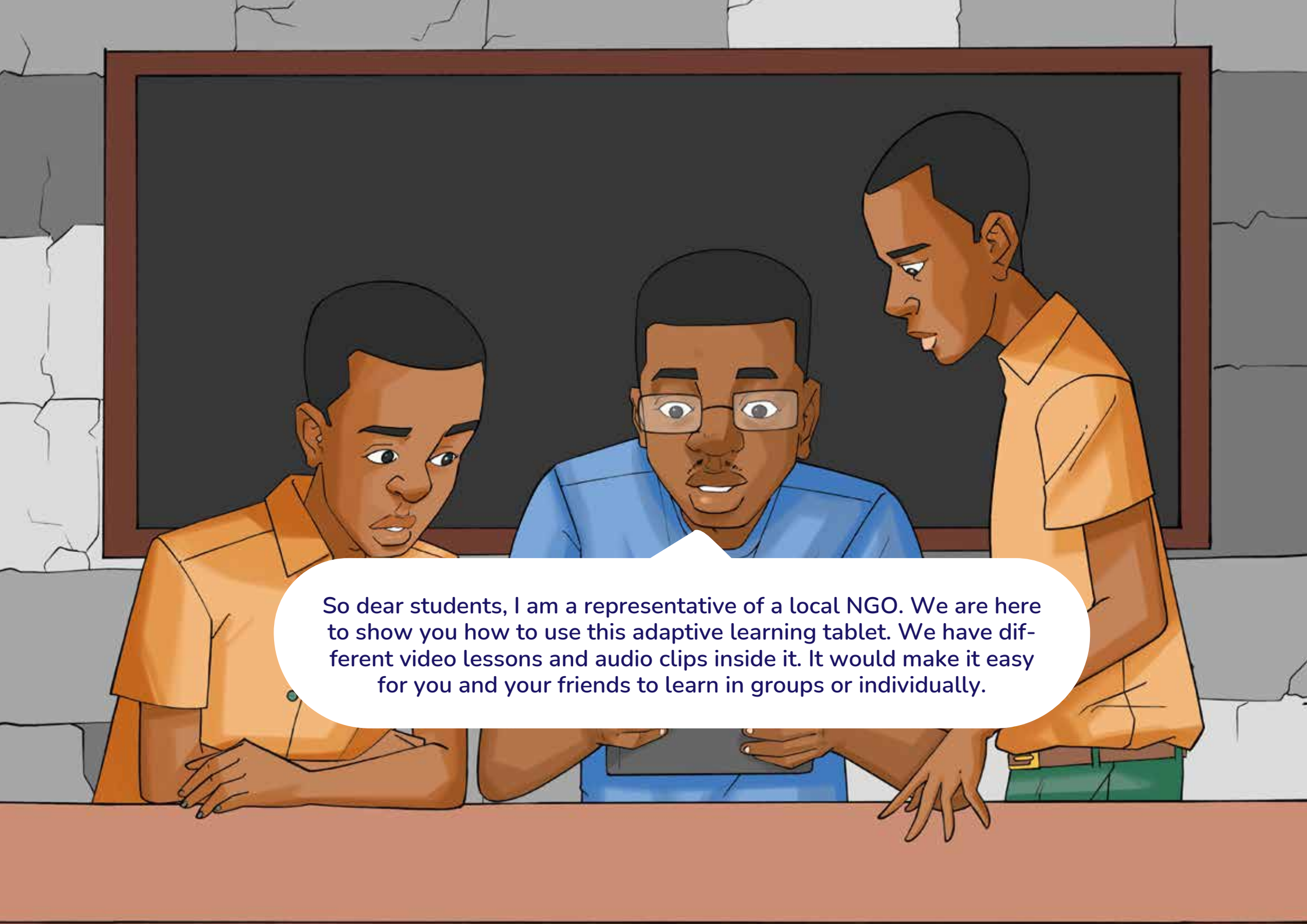


Mummy, here's my home learning pack. I am going to study "Pollination" which is the next topic to be taught in our Biology Class.

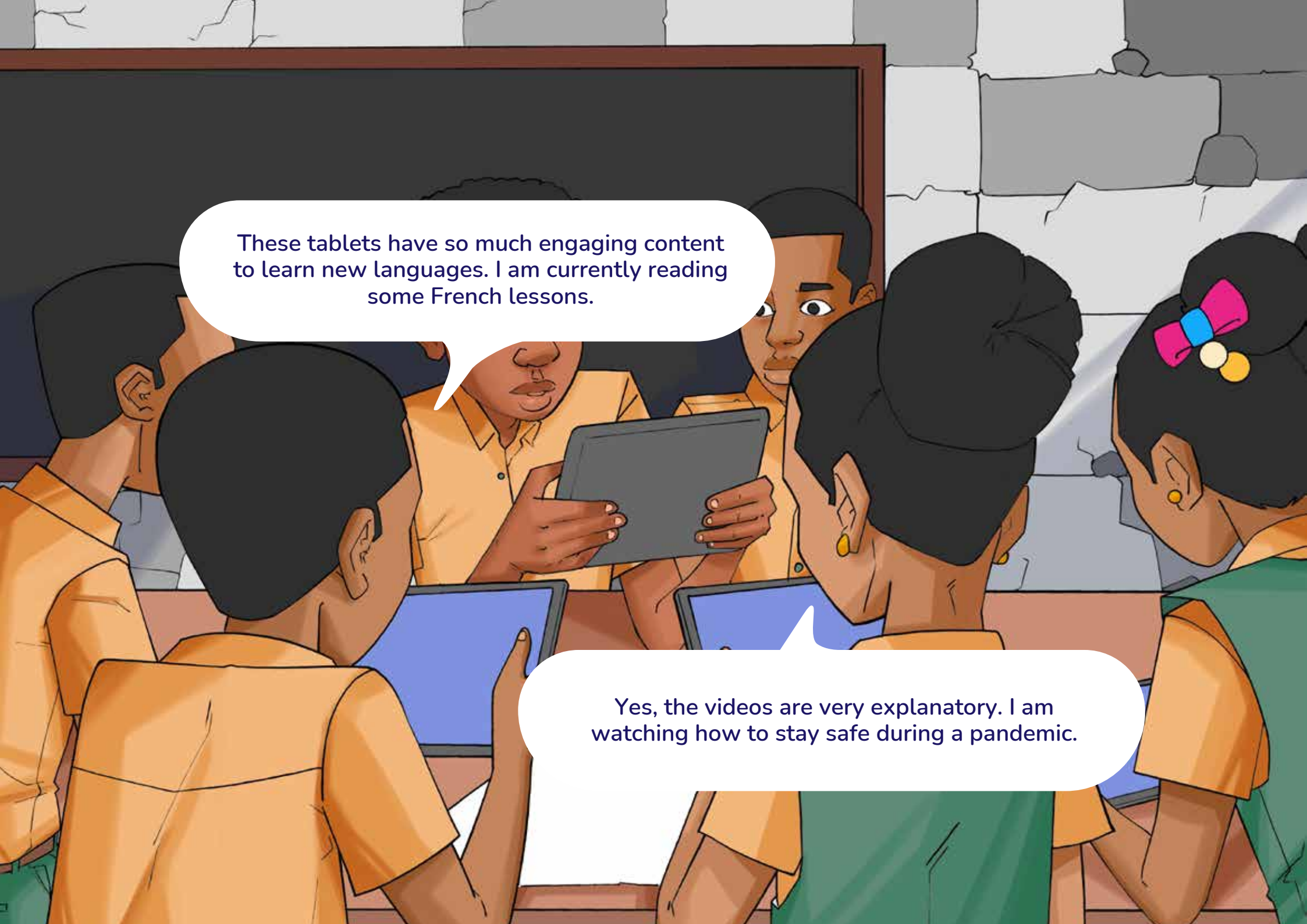
Look at the differences between Cross-Pollination and Self-Pollination here. Do you understand it? Do you want me to explain it to you? Biology is my favorite subject.

Educational tablets are digital devices preloaded with specific educational software and content designed for delivering quality learning experience to children most especially those in remote contexts where internet penetration is low or unavailable. There are different types of tablets that can either work online or offline.

In Nigeria, ULesson is a typical example of a learning tablet that offers access to learning materials for primary and secondary students. It cost 3500 naira for monthly subscription fees for students that are resident in Nigeria.



So dear students, I am a representative of a local NGO. We are here to show you how to use this adaptive learning tablet. We have different video lessons and audio clips inside it. It would make it easy for you and your friends to learn in groups or individually.

An illustration of a group of students in a classroom. In the center, a boy in an orange shirt holds a tablet, showing it to a girl in an orange shirt and a girl in a green shirt. Another boy in an orange shirt is in the foreground, also looking at a tablet. A girl with a pink and blue bow in her hair is on the right. They are all gathered around a desk. In the background, there is a blackboard and a wall with some peeling paint.


These tablets have so much engaging content to learn new languages. I am currently reading some French lessons.

Yes, the videos are very explanatory. I am watching how to stay safe during a pandemic.



What have you planned to support us with this year as chairman of the Parents and Teachers Association?

Myself and other parents have decided to partner with a local computer centre. We will donate more electronic tablets to the school. Our children can use it to learn at home and in school.

An illustration of two young boys sitting on a dark grey couch. The boy on the left, wearing a red t-shirt and light blue pants, is holding a tablet and looking at it. The boy on the right, wearing a green t-shirt and blue pants, is looking at the tablet. In the background, there are orange curtains on the left, a window showing a blue sky, and a framed picture of purple horses on the wall.


I am so happy we can continue to learn at home since the pandemic started. All our textbooks and lesson notes have been stored on this tablet.

I like the tablet more because I don't have to connect it to the internet to work and it can be charged through the solar panel.

Digital Book Reader

A digital Book Reader is an electronic device that contains a large library of free digital learning resources that is accessible for learners in underserved communities. It is likened to an e-book reader that allows you to carry thousands of books at a time and access a library of millions more on a device that is smaller than a paperback, lasts for weeks on a single charge, and gives you a better reading experience than a tablet or phone. For example, World Reader provides free access to a global collection of high-quality digital books through its digital book reader that does not require internet connectivity to access them.

An example of a cheap digital book reader is the Amazon Kindle Paper White which costs 15,000 on local online stores like Jumia or Konga.



Brother Muda, please can you please help me install the World reader App on your book reader device? I want to read free sports, educational, religious, fiction, and nonfiction books?

Of course., I would help you. You can also read books from all across the world in 44 different languages and across 70 genres. The app can also work without the internet.



Now that I have the book reader, I can catch up with Zuri and Zara on the Literature-in-English modules that they have on their tablets and laptops.



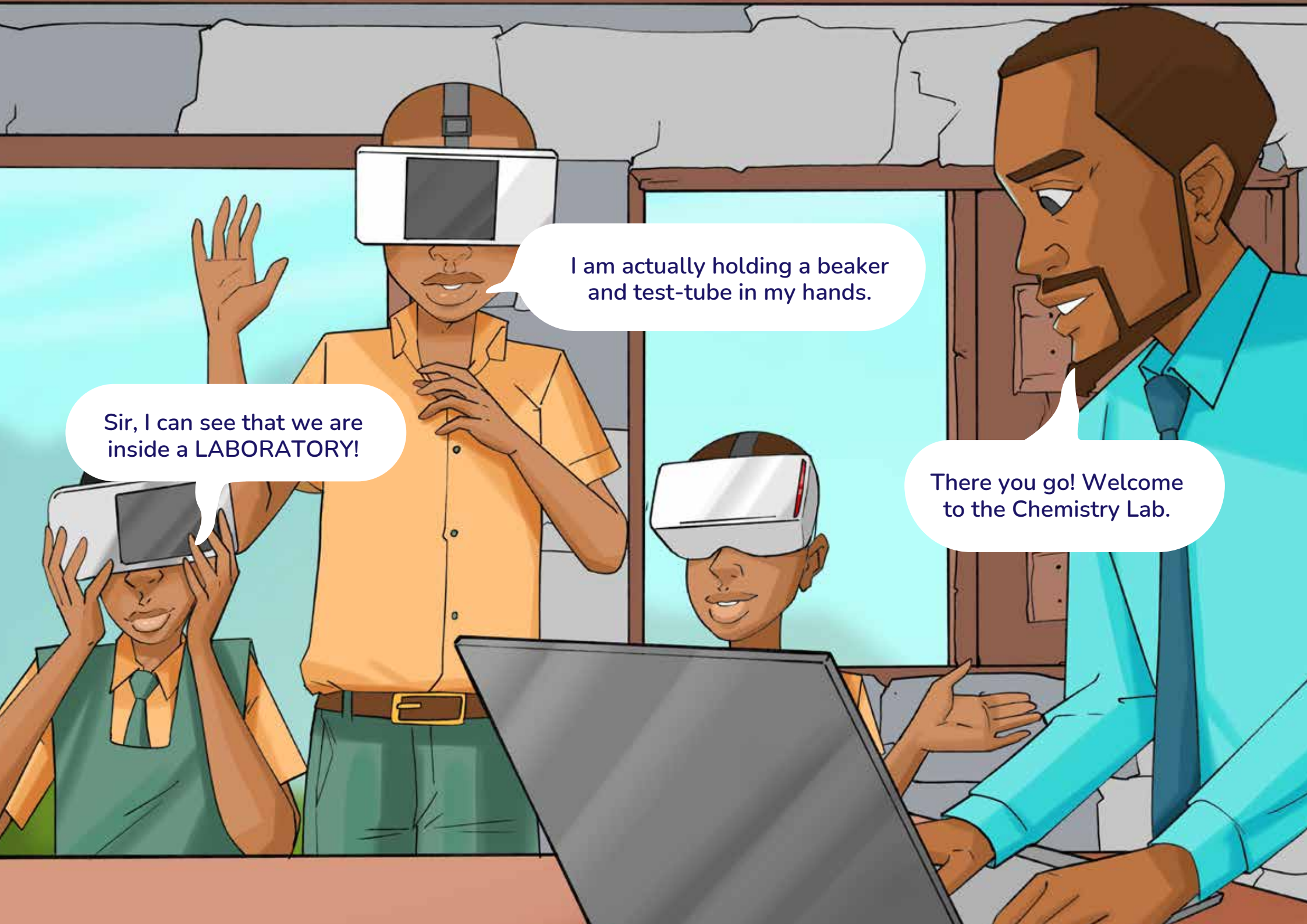
Virtual reality is a fascinating way to travel using nothing more than the power of technology. With a headset, VR lets you look around a virtual space as if you're actually there, or play a game as though you're really in it. Virtual Reality is a modern technology that enables children to learn anything in motion from where they are but in a real world experience. It models real world objects and gives users a unique view similar to or completely different from the real world, enabling users to participate in experiential learning.



Sir, we need your help to practice for our science experiments but there are no apparatus in the school.

oh, do not worry about that. Have you ever heard about VR?

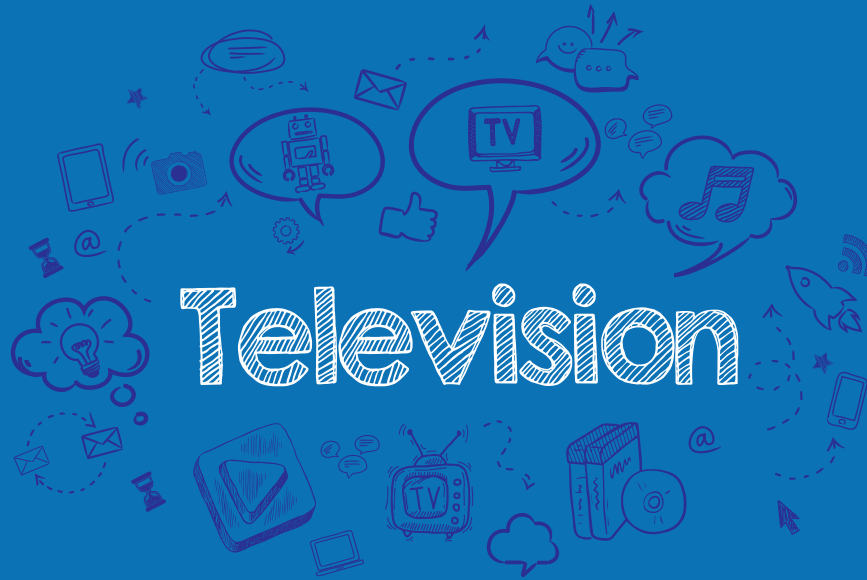
You mean Virtual Reality, Sir?



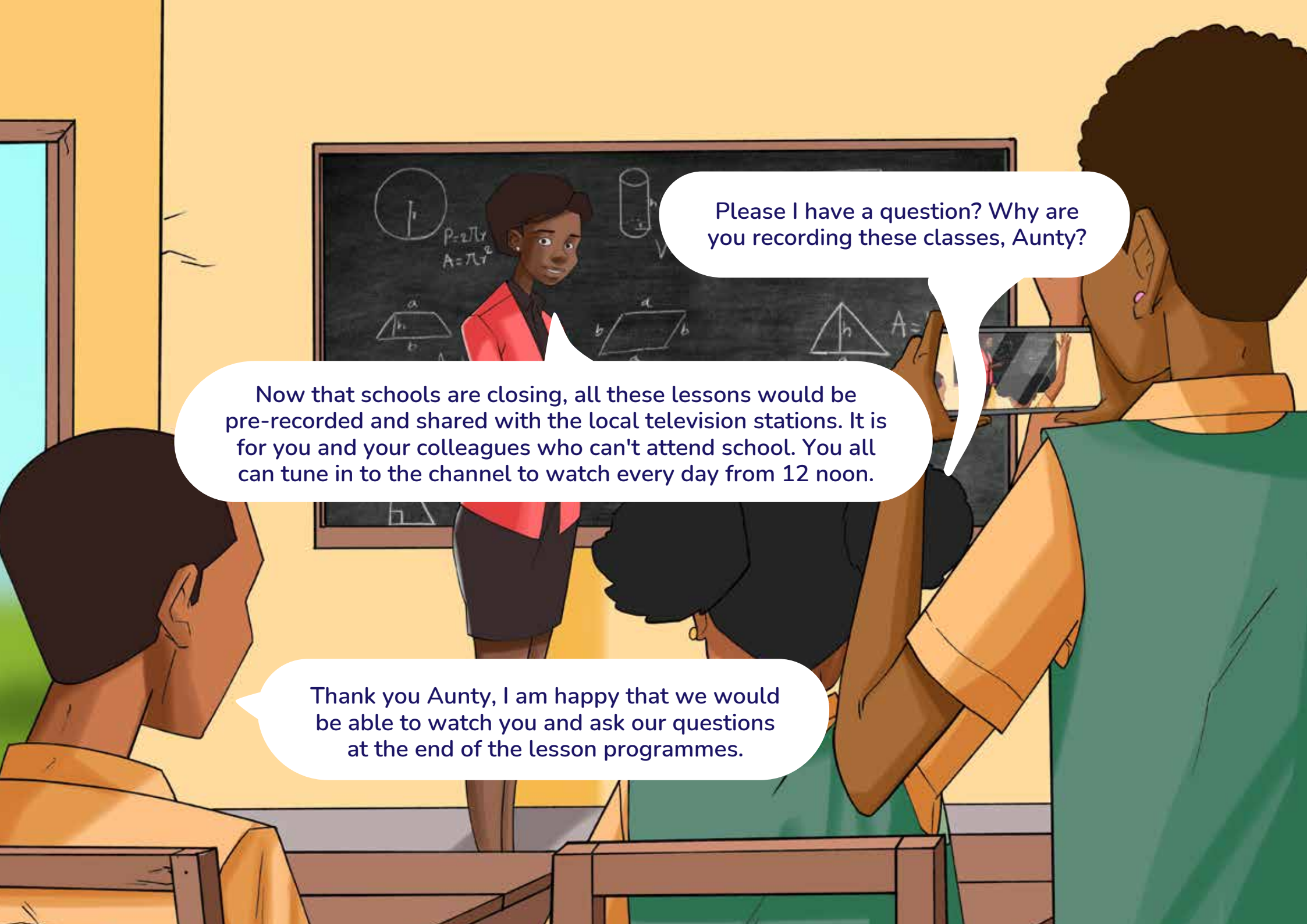
Sir, I can see that we are inside a LABORATORY!

I am actually holding a beaker and test-tube in my hands.

There you go! Welcome to the Chemistry Lab.



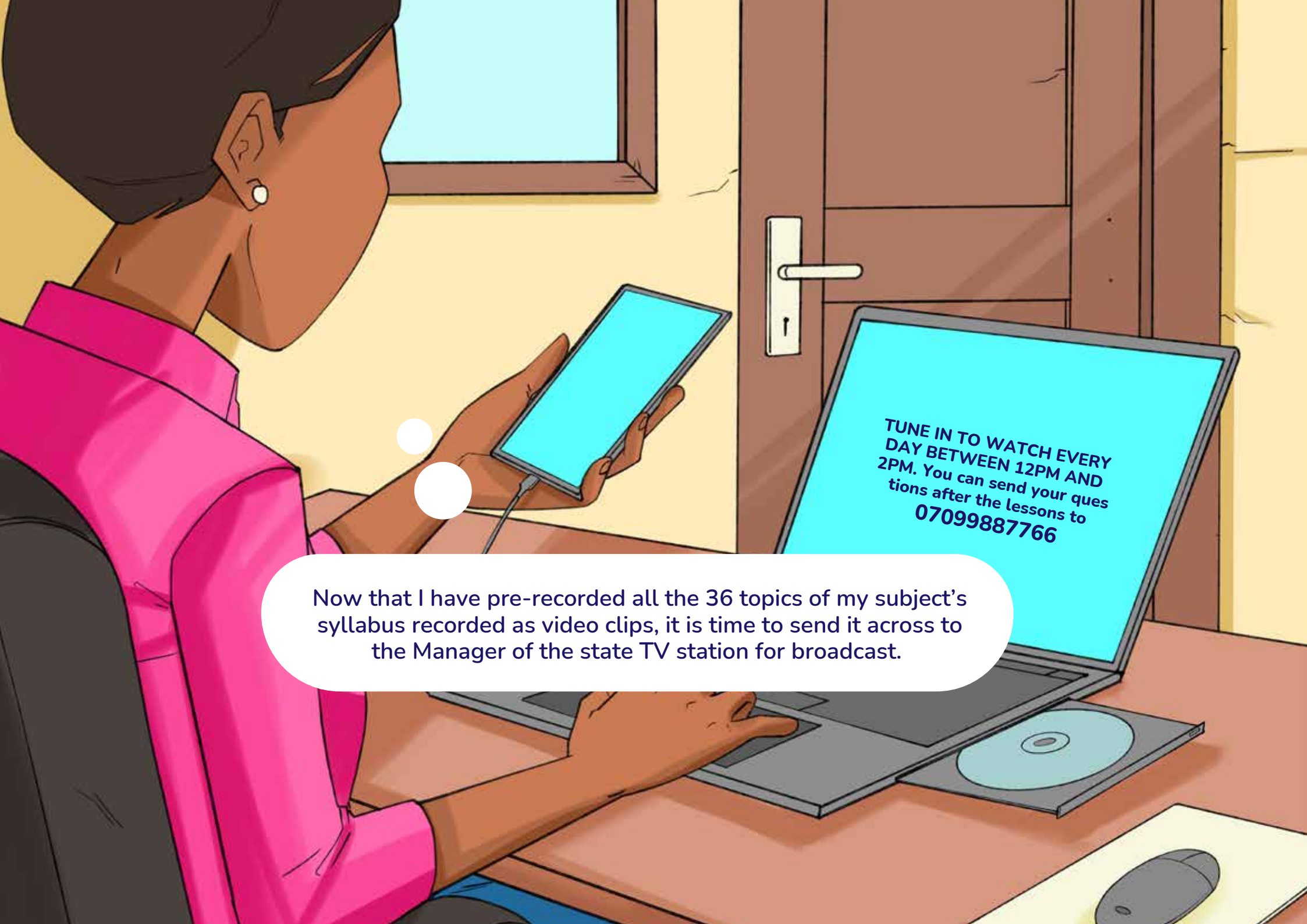
Children can learn using television through informative videos, TV shows, or documentaries that teachers can show during a lecture. Governments can also plan and broadcast recorded lesson programmes across television states. Usually, a teacher or an educator broadcasts live from a television station and learners join the live education from their home or a learning center. So, communities can also broadcast live lessons in mock classroom settings or broadcasting existing pre-recorded materials. Through interactive television lessons, children can learn anything, anywhere and anytime, even in local communities that are rural and hard to reach.



Please I have a question? Why are you recording these classes, Auntie?

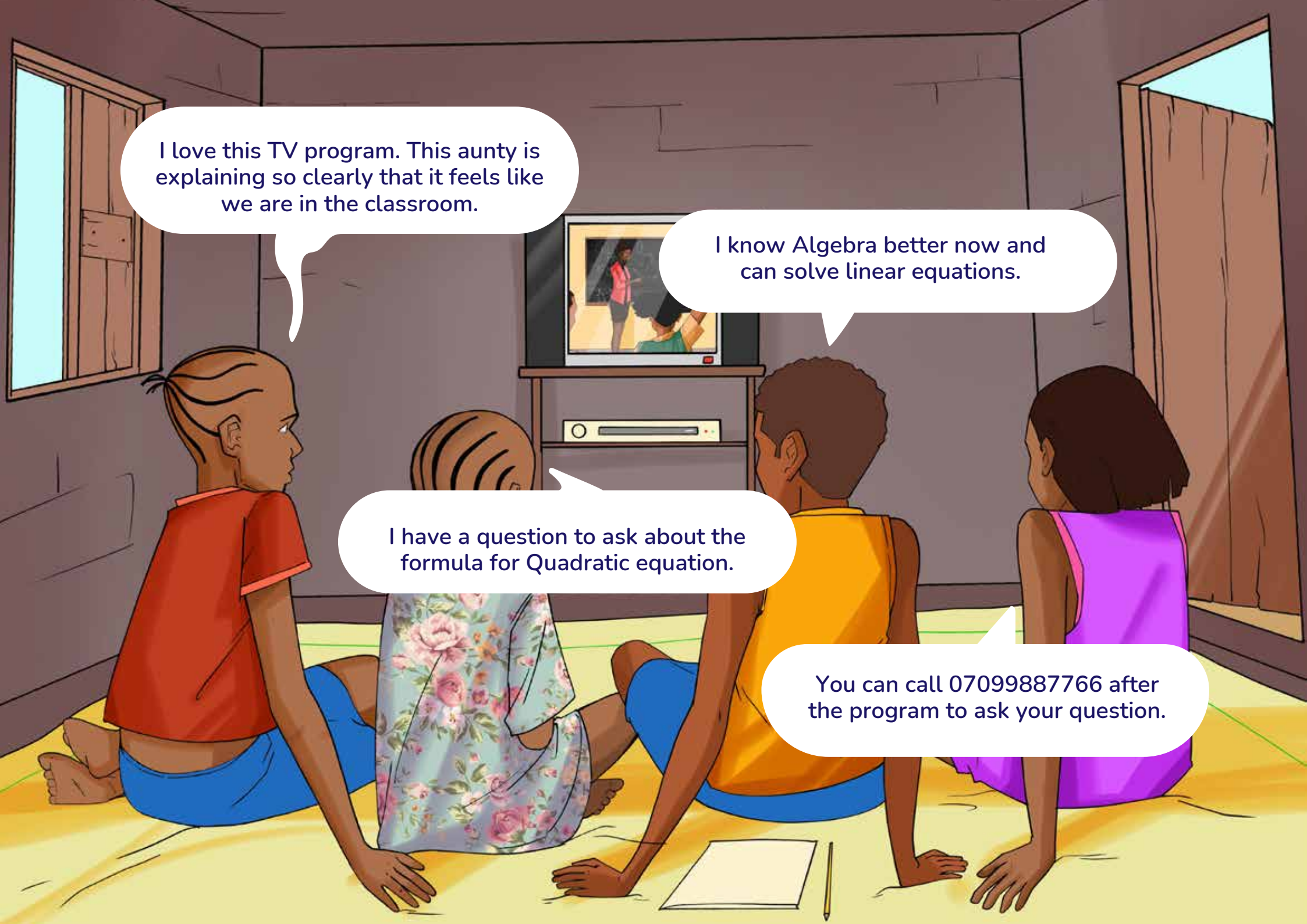
Now that schools are closing, all these lessons would be pre-recorded and shared with the local television stations. It is for you and your colleagues who can't attend school. You all can tune in to the channel to watch every day from 12 noon.

Thank you Auntie, I am happy that we would be able to watch you and ask our questions at the end of the lesson programmes.



**TUNE IN TO WATCH EVERY
DAY BETWEEN 12PM AND
2PM. You can send your ques-
tions after the lessons to
07099887766**

Now that I have pre-recorded all the 36 topics of my subject's syllabus recorded as video clips, it is time to send it across to the Manager of the state TV station for broadcast.



I love this TV program. This aunty is explaining so clearly that it feels like we are in the classroom.


I know Algebra better now and can solve linear equations.

I have a question to ask about the formula for Quadratic equation.

You can call 07099887766 after the program to ask your question.


Open Education Resource Portals

Open Educational Resources (OER) are any type of educational material that is freely available for teachers and students to use, adapt, share, and reuse. With no extra costs, students can actually learn using these platforms. Some examples of platforms or portal that enables access to open Educational Resources (OER) includes Wikipedia, Wikimedia commons and Wikibooks.

An illustration of a yellow auto-rickshaw with a black canopy. A driver wearing a yellow cap and uniform is seated on the right, holding a smartphone. A passenger in a teal shirt is seated on the left. The vehicle is parked on a dirt road next to a building with a corrugated metal roof. A speech bubble from the passenger asks the driver about teaching without internet. Another speech bubble from the driver responds that he has downloaded learning materials for offline use.

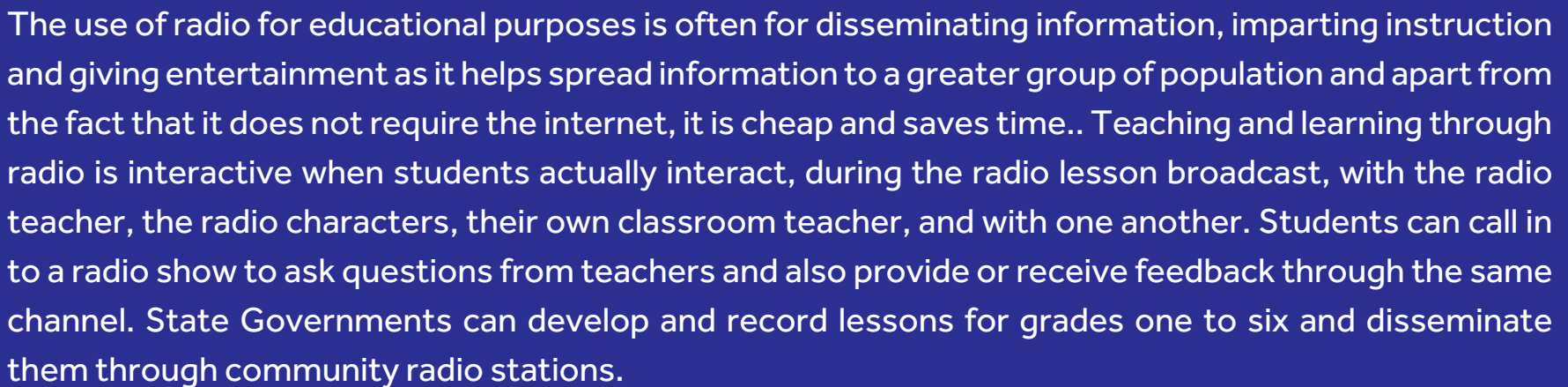
Oga Corper, this village you are going to do not have internet o. How would you be able to teach your students?

Oga driver, I have several learning materials on my phone that I have downloaded that I can use without data.



Corper, you told us that there are platforms where we can access books, videos, stories and games that are for free?

Yes, there are alot of them that you can access on any kind of phone or device. For example, let's look at Wikimedia on my phone here.



Examples of Daily Radio Lesson Programmes across Nigeria


Radio Channels	Days and Time	Focus Subjects
Radio Nigeria Enugu 92.9FM	Monday to Friday 11am – 12pm	Primary Classes
Ekiti 91.5 FM	Monday to Friday 3.10pm – 4pm	Primary Classes
Wazobia FM 95.1FM	Monday to Friday 12pm – 1pm	Secondary Classes
Eko 89.7FM	Monday to Friday 10:30am – 1pm	Primary 3, 4, 5 and 6 Classes
Freedom FM 99.5FM Kano	Wednesday and Friday 11:30am – 12:30am	Secondary Classes
Naija 102.7FM	Monday to Friday 11am – 12pm	Secondary Classes
Wazobia FM 95.1FM	Monday and Wednesday 11am – 12pm	Primary Schools
Radio Gotel 91.1FM Yola	Monday and Wednesday 11am – 12pm	Secondary Classes
Radio Lagos 107.5FM	Monday to Thursday 9am – 11.55am	Primary Classes
Peace FM 102.5FM Borno	Tuesday and Wednesday 09:30am-10:30am	Primary Classes

Note:

- Many of these radio programmes were operational during the school closures between March and October 2020. It is believed that several of them continues to air across the stations till date.
- Wazobia FM airs in Abuja, Kaduna, Jos, Minna, Lafia and Suleja



Now I see how Bibian and Bolanle have been learning at home. I need to also use Papa's radio to listen to this lesson?

An illustration of a young man with dark skin and short black hair, wearing a blue short-sleeved button-down shirt and dark blue trousers. He is sitting on a wooden bench outdoors, leaning against a large tree trunk on his right. He is holding a yellow notepad on his lap with his left hand and a yellow pencil with a blue eraser in his right hand, writing on the notepad. In front of him is a small orange portable radio with a silver handle and a small antenna. The background shows a simple building with a brown door and a window, and a dirt path. Three speech bubbles contain text.

Welcome to LearningonAir FM.
My name is Sisi Nene and in today's Basic
Science class, our topic is "Hygiene"

Do not forget to call 07099887766 at
the end of the program to ask questions.
We will provide answers instantly.

This sounds so clear than in the
classroom! I will tell Papa to buy
me my own radio so I can continue
to learn at home.

ACKNOWLEDGEMENTS

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FOUNDATION





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