Teacher Training Materials for Junior Secondary Mathematics

Sierra Leone

> These teacher training materials were developed as part of a randomised controlled trial (RCT) investigating the impact of AI-assisted learning in Sierra Leone (LearnLM Team, Google and Fab AI, 2026). The training is designed specifically for the context of junior secondary mathematics instruction using the Guided Learning tool in Gemini App. While the pedagogical principles and frameworks described may be adapted for other settings, we have no validated proof of the effectiveness of the presented training protocol. The specific activities, examples, and protocols were developed in conjunction with Filip Bar (Research Consultant) and tailored by Fab AI for this particular study and should not be considered a general-purpose teacher training curriculum without appropriate contextualisation.

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About the Training

Time Commitment for Teachers

The expected commitment is 5.25–5.75 hours with three breaks after each module. The recommended schedule is:

- Introduction + Module 0
- 5 min break
- Module 1
- 20–30 min break
- Module 2
- 20–30 min break
- Module 3

Training Description

In this training participants will learn how to work with Samsung A9 Galaxy tablets and the fundamentals of Guided Learning in the Gemini app, a tool designed to support teaching and learning. It is designed for teachers in Sierra Leone bearing in mind their limited experience with access to technology. The training will provide practical strategies, templates, examples and hands-on activities to integrate the Guided Learning mode in the Gemini App into daily classroom practice with a focus on mathematics. Its aims are:

1. Teach the participants how to operate Samsung A9 Galaxy tablets and the Gemini app.
2. Enable all participants to run basic maths lessons based on the Guided Learning mode of Gemini 2.5 Pro.
3. Demystify generative AI and have the participants develop a basic understanding of possible advantages but also dangers of generative AI in education.
4. Teach the participants how to build powerful prompts and empower them to design their own AI based activities and lessons with Gemini.

Training Structure

This short course consists of five modules.

- **Module 0** teaches the practicalities of how to work with the Samsung A9 tablet and the Gemini app with Gemini 2.5 Pro in Guided Learning mode. Participants have their first experience with the Guided Learning mode.
- **Module 1** introduces the Guided Learning mode of Gemini proper. It provides an introduction to generative AI and the advantages but also possible dangers of generative AI use by students.
- **Module 2** prepares and supports the teachers to get their classes ready for Gemini based lessons. Besides providing an example lesson teaching the students how to work with tablets and the Gemini app in Guided Learning mode, it contains example lessons on teaching typing mathematics and teaching students how to ask smart questions, which is key for a successful and productive use of the current Gemini Guided Learning mode.
- **Module 3** is designated for creating concrete Gemini based lessons in the classroom. The teachers are supplied with two example lessons and a template they can use to build their own Gemini based maths lesson for any maths topic of their choice. The training concludes with training teachers in writing effective prompts. Although they can rely on the basic template provided,

the last section serves to empower them to start exploring and using AI in the classroom independently.

The teachers participating in this meeting should be encouraged to hold weekly meetings to reflect on their experience and share successful practice working together with the Guided Learning tool in the classroom. EducAid staff will be present at those meetings to help with any problems and issues the teachers encountered in their lesson and need help with.

Required Material

- Printouts of the Guide to the Samsung Galaxy A9 tablet and the Gemini app for teachers. One printout per participating teacher.
- One tablet per participating teacher including protective cover and charger.
- One laptop for each teacher who will be accessing Gemini through a computer.

General Guidance for Course Delivery

- Keep it interactive, engaging and relevant to the teaching practice of the respective teacher group.
- Focus on concrete applications. Have the teachers try out hands-on examples themselves, rather than just showing them examples yourself.
- Engage in discussions and listen to teachers' opinions. Dispel confusion and misunderstandings about what AI is and what it isn't.
- Provide examples of your own good practice and share experience. Make it relevant to classroom teaching.
- Identify teachers in the cohort, if any, who have experience with GenAI and LLMs, in particular. Involve them by asking them to contribute first, share their best practice and build on their answers. (If there are no such teachers, look out for the most engaged/interested ones.) The ultimate aim is to get all participating teachers actively involved.
- Avoid teaching teachers like you would teach a class of students. Bear in mind they are adults.

Module 0: How to Work with Tablets and the Gemini App

Duration: 60 minutes

This module serves as a hands-on introduction to how to operate the Samsung Galaxy A9 tablets and how to launch the Gemini app with Gemini 2.5 Pro in Guided Learning Mode. It should be taught interactively, where the participating teachers each have a tablet or laptop, are paired with a partner, and complete the activities themselves using the guide in their workbook.

Should a teacher encounter a problem they cannot solve, they should ask their partner for help first. If both teachers cannot resolve the problem they should ask help from the EducAid staff. Depending on the type of problem encountered the EducAid staff should:

- *share the problem with all the teachers,*
- *ask if any teachers knows how to resolve it, and*
- *explain how to resolve it by either summarising the solution given by a teacher, or show and explain it themselves.*

EducAid staff should distribute the tablets. The tablets should be disconnected from the Wi-Fi. The Gemini App should be set to Gemini 2.5 Flash.

Teachers who will use a computer to access Gemini should be given access to a laptop. They will get a separate set of exercises to start Gemini in a browser and switch it to Guided Learning tool.

Activities for Tablet Users

Use the guide in your workbook on how to operate the Samsung Galaxy A9 tablet to do the following activities.

Activity 1: Switch the Tablet On

Switch the tablet On.

Activity 2: Volume and Mute

Change the volume and mute the tablet.

Activity 3: Connect to Wi-Fi

Connect the tablet to the Wi-Fi.

Activity 4: Find and Launch Gemini

Find and launch the Gemini App.

Activity 5: Switch to Guided Learning

Switch the Gemini App to Guided Learning mode.

> *Note that this involves changing to 2.5 Pro. EducAid staff and participating field monitors should check this has been done, and point out to teachers that this will be important to check, as students might intentionally or unintentionally switch it to the other AI model during lessons.*

Activity 6: Try out Guided Learning

Try out Guided Learning.

> *EducAid staff is to check that the Guided Learning mode has been set correctly (including setting Gemini to 2.5 Pro) before a teacher can proceed.*

1. When the AI asks you what topic they want to learn about, enter the prompt *"JSS1 maths in Sierra Leone"*.
   > *EducAid staff can suggest to JSS2 teachers that they can type "JSS2 maths in Sierra Leone".*
2. The AI will offer you a selection of topics. Pick one topic and type it into the chat.
3. Interact with the AI freely trying out 2–3 of the following suggestions:
   - Pick a topic or concept your students struggle with, and pretend to be one of your students who is struggling and ask Gemini for help.
   - Ask it for help to create a lesson on a specific topic of your choice.
   - Try to distract Gemini from discussing the topic you chose and see how it responds.
   - Ask Gemini to teach you a topic or concept and test how well it explains it to you from your teacher's point of view.
   - Ask Gemini to create a set of problems for a topic of your choice and then help you solve one.

> *EducAid staff should give sufficient time for this activity, so all participating teachers can try out at least two of the suggestions.*

Activity 7: Reflection and Discussion

Share how you have tested the Guided Learning and share your experience. What insights have you gained? What observations have you made? Have you encountered any problems? Did Gemini do a good job, or has it made mistakes?

Activity 8: Switch off Guided Learning

Switch off Guided Learning and just use plain Gemini 2.5 Pro.

> *EducAid staff is to check that the Guided Learning tool has been successfully switched off before a teacher can proceed.*

1. Enter the prompt *"JSS1 maths in Sierra Leone"* again and check the different output compared to before.

   > *EducAid staff can suggest to JSS2 teachers that they can type "JSS2 maths in Sierra Leone".*

2. Try to lead the same conversation you had with the Guided Learning tool and note the differences in Gemini's output and behaviour.

Activity 9: Reflection and Discussion

How has your experience with Gemini 2.5 been compared to the Guided Learning tool? How was it different?

> *EducAid staff should highlight the shorter outputs, and the implementation of good pedagogical principles when the Guided Learning tool is switched on. Stress the importance that students should ALWAYS work with the Guided Learning tool only.*

Activities for Computer Users

Use the guide in your workbook on how to operate Gemini in the web browser on your laptop to complete the following activities.

Activity 1: Start the Browser

Start the browser and log into your assigned Google account.

Activity 2: Launch Gemini

Launch Gemini in the browser.

Activity 3: Switch to Guided Learning

Switch the Gemini to Guided Learning mode.

> *Note that this involves changing to 2.5 Pro. EducAid staff should check this has been done, and point out to teachers that this will be important to check, as students might intentionally or unintentionally switch it to the other AI model during lessons.*

Activity 4: Try out Guided Learning

Try out Guided Learning.

> *EducAid staff is to check that the Guided Learning tool has been set correctly (including setting Gemini to 2.5 Pro) before a teacher can proceed.*

1. When the AI asks you what topic they want to learn about, enter the prompt *"JSS1 maths in Sierra Leone"*.
2. The AI will offer you a selection of topics. Pick one topic and type it into the chat.
3. Interact with the AI freely trying out 2–3 of the following suggestions:
    - Pick a topic or concept your students struggle with, and pretend to be one of your students who is struggling and ask Gemini for help.
    - Ask it for help to create a lesson on a specific topic of your choice.
    - Try to distract Gemini from discussing the topic you chose and see how it responds.
    - Ask Gemini to teach you a topic or concept and test how well it explains it to you from your teacher's point of view.
    - Ask Gemini to create a set of problems for a topic of your choice and then help you solve one.

> *EducAid staff should give sufficient time for this activity, so all participating teachers can try out at least two of the suggestions.*

Activity 5: Reflection and Discussion

Share how you have tested the Guided Learning and share your experience. What insights have you gained? What observations have you made? Have you encountered any problems? Did Gemini do a good job, or has it made mistakes?

Activity 6: Switch off Guided Learning

Switch off Guided Learning and just use plain Gemini 2.5 Pro.

> *EducAid staff is to check that the Guided Learning tool has been successfully switched off before a teacher can proceed.*

1. Enter the prompt *"JSS1 maths in Sierra Leone"* again and check the different output compared to before.
2. Try to lead the same conversation you had with the Guided Learning tool and note the differences in Gemini's output and behaviour.

Activity 7: Reflection and Discussion

How has your experience with Gemini 2.5 been compared to the Guided Learning tool? How was it different?

> *EducAid staff should highlight the much longer outputs, and the lack of good pedagogy when the Guided Learning tool is switched off. Stress the importance that students should ALWAYS work with the Guided Learning tool only. Also explain that the version of the App the students will have on their tablets will not require switching, as it will be set to the right tool by default.*

Module 1: Introduction to Generative AI and the Guided Learning Tool

Duration: 45 minutes

Module Goal: The two main objectives of this module are for teachers to experience and understand that Generative AI is a tool that can have both positive and negative effects in education, and the fundamental difference between a standard AI chatbot and the purpose-built Guided Learning tool. The hands-on activity is the most critical part; it is designed to create a powerful "aha!" moment that fuels the subsequent discussion. Your role is to facilitate this discovery, not to lecture.

Your Approach as a Facilitator:

- ***Be a Guide, Not an Expert:*** *Use simple, relatable analogies (like the provided "multiple-choice vs. essay student") to explain concepts. Frame this as a shared exploration of a new tool.*
- ***Center on Activity 1:*** *The activity where teachers compare the two modes is the core of this module. All discussions should stem from this shared experience.*
- ***Lead the Discussion with Questions:*** *Instead of listing concerns, start by asking the teachers what they observed. Use their own findings as the entry point to discuss crucial topics like academic integrity.*

Running Activity 1:

- *Before starting, ensure you are comfortable with switching the Guided Learning tool on and off and starting a new chat in Gemini.*
- *Guide the teachers through the activity step-by-step. Be prepared to provide one-on-one help to those who struggle with the mechanics of the tablets and the Gemini app.*
- *Encourage teachers to genuinely role-play as a struggling student. This will make the contrast between the two modes more dramatic and memorable. The key is for them to feel the difference in the AI's behaviour.*

Key Message to Reinforce: *This module must clearly establish why the study exclusively uses the Guided Learning tool. The activity provides the evidence. Continuously link back to it, emphasising that the standard mode gives answers (like the Whispering Stone), while the Guided Learning tool builds knowledge (like a good teacher).*

What is Generative AI?

EducAid staff should present the content of this section to the teachers. The written explanation is also contained in their workbook as reference. The key is to communicate it in a way to facilitate a basic understanding of what Generative AI is, how it can help, but also how it can be detrimental to the students. It is important that teachers have a comprehensive picture about the discussion of AI in education, so they can make responsible decisions when it is good and when not good to use it in their teaching.

A Simple Explanation of Generative AI and Its Potential in Education

Generative AI is a type of artificial intelligence that can create new and original content. Instead of just analysing or categorising information, it can generate text, images, music, and more.

Think of it like this: traditional AI is like a student who can answer multiple-choice questions by recognising the correct answer from a list. Generative AI, on the other hand, is like a student who can write a full essay on a topic, creating new sentences and paragraphs to explain their ideas.

It learns from a vast amount of data, like text and images, to understand patterns and structures. Then, it uses that knowledge to produce new content that is similar to what it has learned, but is entirely new. This technology is behind many new tools that can write texts, create presentations, and even generate computer code.

Addressing Common Questions and Concerns About AI in the Classroom

> *The subsequent activity is done by the teachers. EducAid staff moderate the resulting discussions, both about the different experience of Gemini vs the Guided Learning tool, and about the concerns of using AI in education.*

Activity 1: Mr. Koroma's Farm

Participating teachers are to role play as one of their students and use Gemini with Guided Learning tool first on and then off to help them solve a JSS2 maths problem.

Problem:

> *A farmer named Mr. Koroma has a rectangular plot of land for his cassava farm. The plot is 30 metres long and 20 metres wide.*
>
> 1. *Mr. Koroma wants to put a fence around the entire farm to protect his crops from animals. What is the total length of the fence he needs?*
> 2. *If the special fencing wire costs 1,000 Leones for every metre, what will be the total cost for Mr. Koroma to fence his entire farm?*

Instructions:

With Guided Learning Mode on:

1. Switch Gemini into Guided Learning mode.
2. Ask Gemini "Help me with a maths problem". Gemini will ask you what problem you need help with.
3. Type the maths problem stated above into the Gemini app.
4. Role play one of your students struggling with the problem and observe how Gemini responds.

With Guided Learning Mode off:

1. Start a new conversation with Guided Learning mode off.
2. Ask Gemini "Help me with a maths problem". Gemini will ask you what problem you need help with.
3. Type the maths problem stated above into the Gemini app.
4. Observe Gemini's output and compare it to the Guided Learning Mode.

Discuss how Gemini has been behaving differently when Guided Learning was switched on and then off.

Activity 2: Activity and Discussion

The aim of this activity is for the teachers to better understand the benefits as well as the risk of using AI in education. It also aims at dispelling some myths about AI.

Objective: To explore our ideas, hopes, and concerns about using AI in education in a fun and interactive way. This game will help us separate the facts from the fiction.

Instructions:

- In your workbook you have statements about Gemini and its use in the classroom.
- I will read a statement aloud.
- In your pairs, you will have 30 seconds to discuss if you think the statement is TRUE or FALSE.
- When I say "Show me," one person from each pair will hold up a hand: Thumbs Up for TRUE, Thumbs Down for FALSE.
- We will see what the whole group thinks, and then we will discuss the correct answer together. We will use what we learned from the "Mr. Koroma's Farm" activity to help us.

The Statements:

Statement 1

"AI is like a perfect calculator; it knows everything and is always 100% correct."

× **FALSE**

This is a common myth. While Gemini is very knowledgeable, it learns from a huge amount of information created by humans, and sometimes it can make mistakes or present information that is incorrect or outdated. This is called a "hallucination." It is important that we and our students always think critically about the information it provides and check it against what we already know to be true.

Statement 2

"AI will eventually replace the need for human teachers in Sierra Leone."

× **FALSE**

This is a very common fear, but it is unfounded. An AI can provide information, but it cannot replace the connection, encouragement, understanding, and care that a human teacher provides. A healthy teacher-student relationship is essential for learning and development. Gemini is a tool for you to use; it is an assistant, not a replacement.

Statement 3

"The main purpose of a tool like the Gemini is to reduce the amount of interaction between a teacher and their students."

× **FALSE**

The goal is the opposite. The Wise Guide should handle some of the repetitive parts of practice, freeing you, the teacher, up for more meaningful interactions. While students are working with their "guide," you can walk around, see who is truly struggling with a concept, and provide targeted, one-on-one human support where it is needed most. It is another teaching aid, like a chalkboard or a textbook.

Statement 4

"The Gemini AI can think for itself and has feelings, just like a person."

× **FALSE**

This is a myth we often see in movies. In reality, the Wise Guide is a very advanced pattern-matching tool. It has learned the patterns in all the text and books it was trained on, so it can predict what words should come next to form a helpful sentence. It does not have thoughts, beliefs, or feelings. It is a very sophisticated machine, not a living being.

If at some point students happen to discover that Gemini has the ability to solve the problems for them and explain its solution, instead of reprimanding them, teachers should have a conversation with the students explaining to them why they still need to do the work themselves and learn the necessary skills.

The Story of Kai and the Whispering Stone

> *EducAid staff should read out the subsequent story to everyone and recommend teachers to use it when they think it is the right teaching moment to share it with their students to highlight responsible AI use.*

Depending on the context teachers might want to read their students the following story:

The Story of Kai and the Whispering Stone

In the hills above Kabala, there were two young friends, Kai and Musa. Both were bright students, but they were very different. Musa loved the challenge of a difficult maths problem, spending hours figuring out the steps. Kai, however, was impatient. He wanted the answer, and he wanted it now.

One day, while walking home from school, Kai found a strange, smooth stone near an old cotton tree. It was cool to the touch and hummed with a faint energy. When he got home, he sat down to do his maths homework. He was stuck on a problem about calculating the area of an irregular-shaped farm. Frustrated, he held the stone in his hand and whispered, "I wish I knew the answer to this."

To his amazement, a soft, clear voice whispered back from the stone, giving him the exact number. Kai was shocked, but delighted! He wrote it down. The next day, the teacher praised him for getting the most difficult question right.

From that day on, Kai used the Whispering Stone for everything.

Maths homework? The stone gave him the answer. An essay for English? The stone dictated the perfect paragraphs. A question in class? Kai would secretly hold the stone and whisper, and the answer would come to him.

Musa noticed the change. "Kai, you are so fast now!" he said. "How do you do it? You must be studying so hard." Kai just smiled and tapped his pocket, where the stone was hidden.

Soon, the end-of-term exam was announced. It was a very important exam, the one that would show the teachers what every student had truly learned.

The night before the exam, Kai felt confident. He held his stone. "Tell me the answers for tomorrow's maths exam," he whispered.

The stone replied softly, "I can only answer questions that are asked. I do not know the questions of tomorrow."

A shiver of fear ran down Kai's spine. For the first time, he realised his problem. He had all the answers from the past few months, but he had none of the knowledge. He didn't know the method for calculating the area of a circle, the steps for solving for 'x', or the reason why one formula was used instead of another. He had simply been copying what the stone told him. He tried to study his old homework, but the answers were just numbers on a page; they meant nothing to him.

The next day in the exam hall, the paper was laid in front of him. He looked at the first question: "A goat is tied to a post with a rope 7 metres long. What is the total area of grass the goat can graze?"

Kai's heart sank. He knew the stone would have given him the answer in a second, but he didn't have the stone, and even if he did, it couldn't help him now. He couldn't remember the formula for the area of a circle. He couldn't remember if he was supposed to multiply by pi or by the radius squared. He looked over at Musa, who was already deep in concentration, drawing a small diagram, writing down the formula, and carefully working through the steps.

Kai panicked. He couldn't answer the first question, or the second, or the third. The numbers and symbols looked like a foreign language. All the praise he had received now felt like a heavy weight of shame.

When the results came out, Musa had one of the highest scores in the class. Kai had failed.

That afternoon, a humbled Kai went to find his friend. He told Musa everything about the Whispering Stone. Musa listened patiently.

"Kai," Musa said, not with anger, but with kindness. "The Whispering Stone is like trying to build a house by only having a picture of the finished building. You might know what it looks like, but you don't know how to lay a single brick, how to mix the cement, or how to make the foundation strong. When the first big storm comes, the house will fall."

He continued, "Learning is not about finding the answer quickly. It is about building the foundation, brick by brick. Every problem I struggled with, every mistake I made—that was me learning how to build. Now, my foundation is strong. Yours can be too, but you must start laying the bricks yourself."

From that day on, Kai put the Whispering Stone away. He started asking Musa for help, not for the answers, but for the steps. It was hard and slow, but with every problem he solved himself, he felt a brick being laid in his own foundation of knowledge.

The Lesson for You:

AI can be like Kai's Whispering Stone. If you only use it to get the final answer, you are not learning. You are simply copying. And when the time comes for you to solve a problem on your own—in an exam, or in your future job—you will be like Kai in the exam hall, with no foundation to stand on.

Use Gemini like a guide, like a wise teacher who asks you questions and helps you find the steps. Use it to help you lay your own bricks, so that the knowledge you build is strong, sturdy, and truly yours.

Introducing the Guided Learning Tool

The Guided Learning tool of Gemini App is an AI from Google that is specifically designed for learning. It is built on the principles of learning science to create a more personalised and effective learning experience.

Activity 3: Connecting the Dots — Naming What We Experienced

Objective: To move from experiencing the Gemini app to understanding its key features. In this activity, we will connect what you just saw in your previous activities (like "Trying out Gemini" in Activity 6 and "Mr. Koroma's Farm" in Activity 1) to the general benefits Gemini can have for learning.

Instructions:

1. On the board, I will write down five key features of the Guided Learning tool, which you also find in your workbook.
2. In your pairs, you will have 5–7 minutes to be "detectives." Your job is to look back at your chat history from the last activity on your tablet.
3. For each feature, try to find one piece of evidence—one example from your conversation with Gemini that shows that feature in action—and write them into the respective column in your workbook.
4. We will then share our findings as a group.

Key Feature	**What it means...**	**Find the Evidence!**
1. Best Practice Pedagogy	Teaches like a good teacher: asks questions, doesn't just give answers.	
2. Personalised Learning	Adapts its help based on your questions and needs.	
3. Curriculum Support	Can help teachers plan lessons or create problems.	
4. Interactive Content	Creates a back-and-forth conversation, not a one-way lecture.	
5. Student Progress	The chat shows a record of learning, revealing where a student might be struggling.	

As regards point 3, evidence can only be found if the teacher decided to use Gemini in the Module 0 activity to ask for help creating a lesson. EducAid staff should present this section to all the teachers. The teachers will have it in their workbook and can make additional notes.

EducAid staff should also address point 5 explicitly. Teachers don't have to read the chat of the student to understand their progress. It is sufficient if they come to the student pair and prompt Gemini with: "Give me a summary of my learning progress. State my strong and weak points."

Module 2: Getting Started with the Guided Learning Tool in the Classroom

Duration: 75 minutes

Module Goal: This module shifts the focus from the teachers' own use of Gemini to their role as educators implementing it in the classroom. The primary goal is to build teachers' pedagogical confidence. They should leave this module feeling equipped with a concrete plan and practical strategies for introducing the tablets and the "Wise Guide" to their students for the very first time.

Your Approach as a Facilitator:

- ***Facilitate, Don't Lecture:*** *Your role is to guide discussions, not to provide all the answers. The teachers' own experiences and anticipated challenges are the most valuable content in this module.*
- ***Focus on Pedagogy over Technology:*** *The technology is just a tool. Keep bringing the conversation back to teaching and learning. Frame every activity around the question: "How does this help your students become better mathematicians?"*
- ***Validate Concerns:*** *Teachers will have valid concerns about classroom management, student distraction, and technical issues. Acknowledge these concerns, create space for them to be discussed, and use the provided lesson plans as a starting point for finding practical solutions together.*

Running the Activities:

- ***Anticipate Problems First (Activity 1):*** *Start by letting the teachers brainstorm all their potential worries. This gets their concerns out in the open and makes the subsequent review of the lesson plans more meaningful, as they will be looking for solutions to the problems they just identified.*
- ***Use the Lesson Plans as a Case Study (Activity 2 & Activity 3):*** *Present the example lessons not as a perfect script, but as a "first draft" for them to critique and improve. Encourage them to adapt and own the material.*
- ***Champion "Smart Questions" (Activity 4):*** *This section is the most important pedagogical part of the module. You must sell the why. Emphasise that teaching students to ask good questions is the single most important skill for making Gemini a powerful learning tool instead of just a gadget. Be prepared that this may be a new concept for many, and use the simple, practical activities provided to make it feel achievable.*

Key Message to Reinforce: *The main takeaway for teachers should be that they are still in complete control of the learning in their classroom. The tablet is a new tool, but their teaching skills, classroom management, and ability to guide students are what will make it successful. Empower them to be the experts on their own students and to adapt everything they learn here to fit their unique context.*

Teaching Students Accessing and Navigating the Guided Learning Tool

Launch and set up Gemini in Guided Learning tool from Module 0. Teachers should be prompted to do it themselves.

Activity 1: Brainstorming

Teachers should discuss how they would teach their students to work with a tablet and the Gemini App. What problems are they expecting? How will they tackle them? If they will be teaching in a computer room with internet access, what problems do they expect there?

EducAid staff should moderate the discussion, note down the concerns and provide help and support so each teacher feels prepared to use the tablets and Guided Learning with their students. This should be done before teachers scrutinise the example lesson provided. EducAid teaching staff should also relay the concerns and expected problems to the staff helping in the classroom, so they are prepared and can support the teachers.

Example Lesson: Meeting Your "Wise Guide" for the First Time

Activity 2: Review and Discuss the Lesson Plan

Teachers are to read through the example lesson below and discuss it with each other.

1. Discuss the example lesson in your pair. What do you think about the lesson? What problems do you anticipate when running this lesson with your class? How would you adapt it for your classes and students?
2. Share and discuss your observations, insights and suggestions with the other teacher pairs. Take notes for your own delivery of this lesson.

> *EducAid staff should moderate the discussion, listen to the teachers, answer questions, address concerns and take note of the problems the teachers anticipate. They should relate it back to the previous discussion and concerns raised in the brainstorming activity.*

Lesson Plan: Meeting Your "Wise Guide" for the First Time

Here is an example lesson you can follow to introduce your class to working with the tablets and the Gemini app in Guided Learning mode.

To help the students to understand the purpose of the Gemini Guided Learning mode in the lessons and their learning we refer to it as the "Wise Guide Gemini". Feel free to adapt the name for your own classrooms so your students find it easier to understand its purpose.

Target Audience: JSS1 and JSS2 Students (First-time users) **Time:** 45 Minutes

Objective: By the end of this lesson, every student pair will be able to:

- Turn on the tablet.
- Launch the Gemini app ("Wise Guide Gemini").
- Switch it to Guided Learning.
- Type a simple question and receive a response.

Classroom Reality: Up to 70 students, working in pairs.

Materials:

- Chalkboard or large paper
- One Galaxy Tab A9 per pair (prepared, distributed and collected by EducAid staff)

Teacher & Staff Roles:

- **Teacher:** Leads the entire lesson, gives all instructions, and manages the learning activity.
- **Field Monitor Staff:** Manages the orderly distribution and collection of tablets and provides one-on-one technical help to pairs who are stuck.

Step 1: The Hook — A Brain Teaser (5 minutes)

(This happens BEFORE tablets are distributed to ensure full attention)

Teacher: "Good morning, class! Today is a very special day. We are going to meet a new learning partner. But first, a riddle for your minds. Listen carefully:" (Writes the riddle on the board.)

"I am a number with two digits. The sum of my two digits is 9. I am also a multiple of 6. What number am I?"

> *EducAid staff should advise teachers to adapt the problem to their respective class and level. It should be difficult enough so that the students will not be able to find the answer by themselves easily. Teachers should prepare a second challenging problem for their class, just in case a bright student does figure out the answer to the first one.*

Teacher: (Takes a few guesses from the class). "Hmm, some good ideas! It's a tricky one. What if you had a 'Wise Guide' who could help you solve puzzles like this without giving you the answer directly? Today, we are going to learn how to talk to that guide called 'Gemini'."

Step 2: Tablet Distribution & Rules of the Tool (5 minutes)

(The teacher gives instructions while field monitors distributes the tablets)

Teacher: "The EducAid staff will now bring one special tool to each pair. This is a learning tablet. It is not a toy. Listen to our three important rules:"

- **One Job Only:** "This tablet has only ONE job: to help us learn maths with our Wise Guide Gemini."
- **Work with Your Partner:** "One person will be the 'Driver' who touches the screen. The other will be the 'Navigator' who reads the problem and helps decide what to ask. You will switch roles later."
- **Flat on the Desk:** "The tablet must always stay flat on your desk. Do not lift it up."

Field Monitor Staff: Systematically distributes one tablet (screen off) to each pair.

Teacher: Pairs up students and assigns roles of 'Driver' and 'Navigator' in each pair.

Step 3: Guided Practice — The First Interaction (27 minutes)

(The teacher leads this in a step-by-step, "I say, you do" format)

Part A: Waking Up the Guide (2 mins)

Teacher: "Everyone, find the long button on the right side of your tablet. This is the Power Button. Drivers, please press and hold it for a few seconds until the screen lights up." (Teacher and Staff circulate to help). "You should see the Home Screen."

Part B: Finding the Wise Guide's Door (2 mins)

Teacher: "On the screen, you will see a few symbols. They are called icons. Your mission is to find the door to our Wise Guide. It looks like a colourful star. Once you find it, Drivers, please tap it once with your finger." (Staff helps pairs find the icon).

Part C: Entering the Learning Room (3 mins)

Teacher: "The Wise Guide has opened. We need to make sure that we talk to the wisest one. Navigators, find where it says 'Gemini' on the screen." (Teacher and Staff help. The Teacher can also ask other pairs who found it to help those pairs who cannot find it.)

Teacher: "Found it? Good! Now check under it. Does it say '2.5 Pro'? If it does, good! That's the wisest one of the Wise Guides Gemini. And that's the one we want to be asking for guidance. If it doesn't, Drivers, please tap once on 'Gemini' with your finger. A list will appear. Tap on '2.5 Pro'. You have selected the wisest guide. Well done!" (Teacher and Staff circulate to check everyone has selected Gemini 2.5 Pro.)

Teacher: "Now we need to go to the special room for learning. Look for a button with either three dots or reading 'Tools' at the bottom of the screen. Drivers, please tap it once with your finger."

Teacher: "You will see a list with room names popping up on your screen. Drivers, tap on the one that says 'Guided Learning'."

Teacher: "The screen should now look simple, with a space marked by a rectangular shaped box to type. At the bottom you should see an open book symbol in blue with the text 'Learn'. You are now in the right place!"

Part D: Learning to Talk — Typing and Sending (20 mins)

Teacher: "Now we must learn how to speak to the Guide. Drivers, tap on the area that says 'What do you want to learn?'. A keyboard should appear at the bottom of the screen."

Teacher: "Let's say hello. With your Navigator helping you find the letters, I want you to type: H-E-L-L-O."

Teacher: "Now, to send your message, look for a button that looks like a paper airplane (→) or says 'Send'. Tap it."

Teacher: "The Wise Guide Gemini should say hello back! Now, let's use this to solve our riddle. With your partner, I want the Drivers to type this exact question:" (Writes on the blackboard.)

"Can you help me solve a maths riddle?"

Teacher: "The Guide will say yes. Now, type the riddle into the Guide. It will guide you what you should do first. If it helps, great! Go and do what the Guide has told you to do and answer his question. If you are confused, ask it this smart question: 'What is the first step?' "

Teacher: "Keep following what the Guide tells you to do and answer the Guide's questions. If you need more help, type: 'I need more help'. If you don't understand what the Guide is trying to make you do, or what it says, type 'I don't understand'."

Teacher & Field Monitor Role: This is the most important part. They circulate and help pairs with typing, sending, and asking that first question. The goal is for every pair to successfully interact with the AI about the riddle.

EducAid staff should advise teachers to have the second challenge ready for groups that work through the first problem quicker than the rest, so each group stays occupied throughout the lesson. Should a group finish with both problems, teachers should task them to use the Guide to recap a tricky maths topic from the last year.

Teachers and staff should be advised to keep checking that all students are using Gemini for getting help with the problem and nothing else.

Step 4: Sharing & Reflection (5 minutes)

Teacher: "Okay, time is nearly up! What was the first step the Wise Guide suggested?" (A student will likely say "Find all the numbers whose digits add up to 9").

Teacher: "Excellent! And what did you do next?" (A student might say "We checked which of those numbers could be divided by 6").

Teacher: "Perfect! Who found the final answer?" (Students will call out "36!"). "You see? The Wise Guide didn't give you the answer, but it helped you find the path. That is how we will use it to become better mathematicians."

Step 5: Tablet Collection (3 minutes)

Teacher: "You have all done an amazing job meeting your Wise Guide today. Now it is time for the tablets to rest."

Parallel Action: While the teacher is giving these closing remarks, the Field Monitor Staff begins their systematic collection of the tablets. This is the most efficient way to end on time.

Teacher: "To turn the screen off, just give the power button one quick press. Please make sure the tablet is flat on your desk, ready for collection. Next time, we will use our new skill to solve even more interesting problems and learn about new topics."

Teaching Students How to Type Maths in Gemini

After having held your introductory lesson a second lesson should be dedicated to teach your students how to type maths.

Activity 3: Review and Discuss the Lesson Plan

Teachers are to read through the example lesson below and discuss it with each other.

1. Discuss the example lesson in your pair. What do you think about the lesson? What problems do you anticipate when running this lesson with your class? How would you adapt it for your classes and students?
2. Share and discuss your observations, insights and suggestions with the other teacher pairs. Take notes for your own delivery of this lesson.

EducAid staff should moderate the discussion, listen to the teachers, answer questions, address concerns and take note of the problems the teachers anticipate.

Lesson Plan: Teaching Our Fingers to Speak Maths

Target Audience: JSS1 and JSS2 Students (first time typing maths) **Time:** 45 Minutes

Objective: By the end of this lesson, every student pair will be able to:

- Switch between the letter and number/symbol keyboards.
- Locate and type basic mathematical symbols (+, -, *, /, =).
- Translate simple word problems, including basic algebra, into mathematical questions for the "Wise Guide."

Classroom: Up to 70 students, working in pairs.

Materials:

- Chalkboard with a "Translation Key" drawn on it.
- One Galaxy Tab A9 per pair (prepared, distributed and collected by Field Monitors).
- Notebooks or paper and pens for the students.

Teacher & Staff Roles:

- **Teacher:** Leads the lesson, provides all instructions, and frames the activity as a "translation game."
- **Field Monitor Staff:** Manages tablet logistics and provides critical one-on-one technical support, helping students find buttons and navigate the keyboard.

Step 1: The Hook — Two Languages (5 minutes)

(This happens BEFORE tablets are distributed)

Teacher: "Good morning! Today, we will become translators. We speak English, but our Wise Guide speaks 'Maths Language'. We will learn to translate our words into its language."

Teacher: (Draws a "Translation Key" on the board.)

- The word *plus* becomes `+`
- The word *minus* becomes `-`
- The word *times* becomes `*` (a star)
- The word *divided by* becomes `/` (a slash)
- The word *equals* or *is* becomes `=`

Teacher: "This is our key. It will help us talk to the Wise Guide."

Step 2: Tablet Distribution & Role Assignment (5 minutes)

(The teacher gives instructions while EducAid staff distributes the tablets)

Teacher: "The EducAid staff will now bring your translation tool. Remember the rules: keep it flat on the desk."

Teacher: "With your partner, decide who will be the 'Driver' first (the one who touches the screen), and who will be the 'Navigator' (the one who reads from the board and helps find the keys)."

Step 3: Guided Practice — Keyboard Treasure Hunt (10 minutes)

(The teacher leads this as a lock-step activity, ensuring everyone keeps pace.)

> *EducAid staff should stress that switching to Guided Learning mode needs to be done by students working on a computer only. The app in the tablet should be in Guided Learning mode by default.*

Part A: Starting the Guide (3 mins)

Teacher: "Everyone, turn on your tablet. Find the colourful star for our Wise Guide and tap it. Then tap 'Guided Learning' as we practised before." (Staff assists).

Part B: Finding the Number Keyboard (3 mins)

Teacher: "Tap the space to type and make the letter keyboard appear. Now, find the secret button to switch to Maths Language. It says '?123' at the bottom left. Drivers, tap it."

Teacher: "You should see numbers! Tap the 'ABC' button to go back to letters. Practice this two times: switch to numbers, then back to letters. Make sure both you and your partner can do it."

Part C: The Symbol Translation Challenge (4 mins)

Teacher: "Go to the number keyboard. Our first challenge: Find and type the plus sign (+)."

Teacher: "Good. Now erase it. Next, find and type the minus sign (-)."

Teacher: "Now, the tricky ones. Find the divided by slash (/) and the multiplied by star (*)."

Teacher: "Last one. Find the equals sign (=). This one is very important."

Teacher & Staff Role: Circulate quickly, providing hands-on help. The focus is on ensuring every pair can locate these five key symbols.

Step 4: Putting It All Together — Asking Maths Questions (20 minutes)

(This is the main application phase. The teacher walks around and checks that every pair is on task and understands what they need to do. For larger classrooms of 40+ students the teacher should direct older students and pairs who are quicker to help the younger ones, who struggle.)

Teacher: "You are now expert translators! Erase everything. We will give the Wise Guide three challenges. Work with your Navigator to translate and type."

Challenge 1 (Warm-up):

Teacher: "Translate this sentence into Maths Language: What is 15 divided by 3?" (Pairs should type: `15 / 3` and press send).

Challenge 2 (JSS1 Algebra):

Teacher: "Now for a new rule. When we say 'a number', our translation is the letter 'x'. You will need to switch back to the letter keyboard for this."

Teacher: "Translate this full mathematical sentence: A number plus 5 equals 12." (Pairs should type: `x + 5 = 12` and press send).

Teacher: "The Wise Guide will understand this and can help you solve it! This is a very powerful new skill."

Teacher: "Follow the instructions of the Wise Guide and solve for x! Remember. If you don't understand what it wants you to do, Drivers should type 'I need more help'."

Teacher: "Navigators should follow the instructions of the Wise Guide and do the working in their own notebooks!"

> *EducAid staff need to stress to the teachers that they need to get students to do the work in their notebooks. They shouldn't just spectate. They need to do the work!*
>
> *EducAid staff should warn teachers here that some students might discover that by constantly asking 'I need more help' Gemini will ultimately solve the problem for them. If students start abusing the tool, it is a good teaching moment to tell them the story of Kai and the Whispering Stone.*

Challenge 3:

Teacher: "If you have finished, try this expert translation: 2 times a number is 18." (Pairs should type: `2 * x = 18` and press send).

Challenge 4 (Optional — for faster pairs):

Teacher: "If you have finished the third exercise, you can use your Wise Guide for more practice. Drivers, type 'Give me more exercises on JSS1 algebra like this'." (If you are teaching a JSS2 class, replace 'JSS1' with 'JSS2'.)

Step 5: Tablet Collection & Praise (5 minutes)

Teacher: "Excellent work! Today you have learned to speak a new language. You didn't just type numbers; you typed full mathematical sentences, like 'x + 5 = 12'. This is a huge step!"

Parallel Action: While the teacher is giving these closing remarks, the Field Monitor Staff begins the orderly collection of the tablets.

Teacher: "Please give the power button one quick press to turn the screen off. You should be very proud. You are now ready to use this tool to explore all kinds of maths."

Teaching Students to Ask Smart Questions

You are about to introduce a powerful learning tool to your students. But like any tool, its usefulness depends on how it is used. The biggest challenge—and the greatest opportunity—is teaching our students how to ask good questions.

Think of Gemini not as a book with all the answers, but as a Wise Guide on a journey. If a traveler is lost, they don't just ask the guide, "Where is the destination?" They ask, "What is the next step I should take?" or "I see two paths, which one is correct for my journey and why?"

Our goal is to turn our students from passive answer-seekers into active explorers of knowledge. This guide will give you practical activities to teach them this essential skill.

> **Activity 4: Discussion**
>
> Teachers should discuss their experience with teaching students to ask smart questions and share best practice. Where do students struggle and why? How can a teacher help them to ask smart questions that propel them in their understanding?
>
> > *EducAid staff should expect that many teachers have not considered teaching this as a skill in their classrooms yet. If teachers struggle with starting a discussion amongst themselves, EducAid staff should discuss the importance of teaching students to ask smart questions and move on with the course.*

2.4.1 The Three Types of Smart Questions

Before students can ask good questions, they need to know what a good question looks like. We can teach them three simple types. You can introduce these one by one or all together.

1. **The "Starting" Question** *(When you don't know where to begin)*

This is for when a student looks at a problem and feels completely lost. These questions help them take the very first step.

Examples:

- "What is the most important information in this problem?"
- "Can you help me understand what the question is asking me to find?"
- "What is the first step I should take to solve this?"
- "Is there a formula I should remember for this type of problem?"

2. **The "Stuck in the Middle" Question** *(When you've started but hit a wall)*

This is for when a student has done some work but cannot figure out the next step. These questions must be specific.

Examples:

- "I have calculated the perimeter, but now I'm confused about how to find the cost. What do I do next?"
- "I used the formula 2(L+W) and got 100 metres. Is that correct before I move on?"
- "Why did we have to multiply in this step? I thought we should divide."
- "I tried this step, but my answer seems strange. Can you help me find my mistake?"

3. The "Look Deeper" Question *(When you want to understand 'Why')*

This is the most powerful type of question. It is for students who have the answer but want to build a stronger foundation of knowledge.

Examples:

- "Can you explain why this formula works?"
- "Is there another way to solve this same problem?"
- "Can you give me a different example of a problem where I would use this same method?"
- "What is the difference between 'perimeter' and 'area' again?"

2.4.2 Classroom Activities to Teach Smart Questioning

Here are some practical, low-tech activities to train your students.

Activity 5: Create a "Smart Questions" Classroom Poster

Objective: To create a constant visual reminder of good questioning in the classroom.

1. Take a large piece of paper or dedicate a section of your chalkboard.
2. Title it: "How to Talk to Our Wise Guide (Gemini)" or "Our Smart Questions Chart".
3. Divide it into two sections: "Smart Questions to Ask" and "Questions to Avoid."
4. Under "Smart Questions," list the three types: Starting, Stuck in the Middle, and Look Deeper, with one or two examples for each.
5. Under "Questions to Avoid," write in big letters:
   - "What is the answer?"
   - "Just solve it for me."
   - "I don't know." (Encourage them to be more specific about what they don't know).
6. Refer to this poster every time you work on a problem as a class.

Activity 6: Teacher Think-Aloud (Modeling the Process)

Objective: To show students what the process of asking questions looks like in practice.

1. Choose a maths problem (like the "Fencing a Cassava Farm" problem chosen here).
2. Stand at the front of the class and pretend you are a student talking to Gemini (the chalkboard). Ask the questions you would want students to ask Gemini aloud, and answer them yourself on the blackboard pretending Gemini has told you the answer.
3. Think aloud: "Okay, I'm starting this problem. I feel a little stuck. What's a good 'Starting Question'? Ah, I will ask: 'What is the first step I should take?' " (Write the first step on the board). "Good. Now I have the perimeter. But the next part asks for cost. I'm stuck again. I'll ask a 'Stuck in the Middle' Question: 'I have the perimeter, which is 100m. What do I do next to find the cost?' " (Solve the problem). "Excellent, I have the final answer. But I want to understand better. I'll ask a 'Look Deeper' Question: 'Can you give me another example where I need to find the perimeter and then calculate a cost?' "

4. By doing this, you are modeling the exact thinking process you want your students to follow.

Activity 7: Paired Practice — "Learner and Guide"

Objective: To give students hands-on practice in asking and answering guided questions.

1. Pair students up. Give them a maths problem to solve.
2. Designate one student as the "Learner" and the other as the "Wise Guide."
3. Give a detailed model answer to the Wise Guide students, which explains both how to approach the problem and a step-by-step solution.
4. While the Wise Guides are studying the answer, the Learners are thinking about the problem.
5. **The Learner's Rules:** They must solve the problem. If they need help, they can only ask their partner one of the "Smart Questions" from the poster. They cannot ask for the final answer.
6. **The Wise Guide's Rules:** They can never give the final answer. They must answer the Learner's question with a hint, a suggestion, or another question. (e.g., If the Learner asks, "What's the first step?", the Guide can reply, "Have you tried drawing a picture of the farm?").
7. After 5–7 minutes, have the partners switch roles with a new problem. This activity teaches both how to ask for help and how to give it constructively.

Conclusion for Teachers:

Teaching students to ask questions is more important than teaching them to find answers. This skill will serve them not just in your maths class, but in all subjects and throughout their lives. Be patient, model the behaviour you want to see, and praise students for asking thoughtful questions, even more than you praise them for getting the right answer. You are not just teaching mathematics; you are building problem-solvers.

Activity 8: Group Discussion

Teachers are to read through the activities above and discuss first in their pair and then in the whole group:

1. Which of the suggested activities would you use in your class, and which rather not? Why?
2. When and where could you teach about Smart Questions in your lesson planning?

EducAid staff should advise teachers to do Activity 5 of creating a poster about Smart Questioning by the end of the second week of the trial and before the end of the third week the latest. Field Monitors in schools should check that teachers have taught this lesson within this timeframe.

Beyond that teachers should be encouraged to demonstrate smart questioning to students in Teacher-Think-Aloud style as in Activity 6 regularly when solving example problems on the board.

Module 3: The Guided Learning Mode in Action

Duration: 90 minutes

Module Goal: This is the most important module of the training. The goal is to transition teachers from being learners to becoming confident practitioners. They must leave this session with a concrete, self-designed lesson plan that they feel ready and able to implement in their own classroom. This module is about empowerment and practical application.

Your Approach as a Facilitator:

- ***Build Confidence Through Practice:*** *The core of this module is the hands-on activity where teachers build their own lesson plans. Your role is to act as a supportive coach, providing feedback and encouragement.*
- ***Address Practical Realities:*** *Use the "Tips" section to proactively start a discussion about real-world classroom challenges like student mischief and slow typing. Frame these as manageable situations that require good teaching strategies.*
- ***Emphasise the "Why" of the Study Rules:*** *When you address the rule about not using Gemini outside of the specified maths lessons, it is critical to explain the reason. Frame it as protecting the integrity of their valuable contribution to the research. It's a way to ensure their hard work provides meaningful results.*

Running the Activities:

- ***Model First, then Create:*** *Ensure teachers understand the provided lesson templates by discussing them first. Then, immediately give them the task of creating their own. This "I do, you do" approach is very effective for adult learners.*
- ***Provide Individualised Support:*** *During the lesson planning activity, circulate and spend time with each pair. Look at their lesson objectives and their chosen prompts. Ask them questions like, "How will this prompt help your students achieve that objective?" This personalised coaching is crucial for building confidence.*
- ***Make Prompting Tangible:*** *The activity of building up a prompt from basic to complex is designed to be very concrete. Ensure teachers see the difference in Gemini's output with each added layer of instruction. They need to take away that while using the Guided Learning tool only the educational and regional context needs to be provided to the prompts. The prompts delivered to students should be concise and precise.*

Key Message to Reinforce: *The central message of this module is: "You are the expert in your classroom." The templates, tips, and tools are here to support their expertise, not replace it. They should feel empowered to adapt everything they have learned to fit the needs of their JSS1 and JSS2 students. By the end, every teacher should have a tangible lesson plan in their hands, ready for the first week of the study.*

Teaching a Basic Lesson with Guided Learning

EducAid staff should present the subsequent content to the teachers. The written explanation is also contained in their workbook as reference.

It is possible to turn any lesson into a Guided Learning-based lesson with Gemini. As part of the study we ask you to teach half of your maths lesson in a week with the tablets and Gemini Guided Learning.

In this section we provide you with a standard framework that you can use and two example lessons—one for teaching a new concept or topic (Example A), and one for consolidating and practicing a topic (Example B). Please adapt them to the respective maths topic you want to teach and the level of your class.

At the beginning and end of your Gemini based lesson Field Monitors will be present to distribute and collect the tablets. The staff will be on stand-by outside your classroom during the lesson. If at any point, you or your students happen to encounter technical difficulties with the tablets you cannot resolve, ask your assigned Field Monitor for help.

EducAid staff is to stress the last point, and answer any questions and address any concerns of the teachers here. It is important to stress that the Field Monitors in schools are for technical assistance. They are not there to observe or assess the teachers.

Tips:

- At the beginning your students might be slow, as the typing will take them some time. They will get better with more practice, so make sure that each student in a pair gets to type. (Make them switch roles every lesson, at least.)
- Asking smart questions to get effective help from the AI is key. Make sure to help students with asking the right questions when you are checking on the pairs. Use the Thinking-Aloud technique asking smart questions frequently when demonstrating how to tackle a problem in class.
- Expect students to get curious about the tablet and Gemini, and do mischief by trying to manipulate the settings, switching the Guided Learning off, or not being on task when talking to Gemini. It is at these times that conversations have to be had about their motivation to learn and their behaviour. Make it clear to them that education is fundamentally about themselves. Not following your instructions means they are sabotaging themselves, so ask them why they would ever want to do that.

EducAid staff should initiate a discussion where teachers can share their concerns about what kind of mischief they expect their students to cause with the tablets and Gemini, and share strategies on how to best handle such situations.

It is important to stress that although excluding misbehaving students from using the tablets in a lesson and having them do separate work instead, is a possibility, it should be avoided and only used sparingly, if no other intervention has been successful.

Important

You must not use Gemini, and any resources generated by it outside your maths lessons. Doing this will severely compromise the scientific investigation we are conducting in Sierra Leone.

Activity 1: Study the Example Lessons and Template

Work through both example lessons A and B and then study the lesson template in the next section. In your pairs discuss the different lessons and the template.

1. How would you teach those topics without Gemini?
2. Where do you think Gemini adds value?
3. How would you adapt the example lessons when delivering them to your classes?
4. Does the template make sense, and how would you use it for planning other JSS1/JSS2 math lessons as Gemini based lessons?

EducAid staff should provide the teacher pairs with sufficient time to go through the examples and have a discussion. They should circulate through the pairs, listen to the discussions, note down and answer their questions.

At the end EducAid staff should explain the template to the whole class (including the additional comments mentioned there). It is also a good time to share the most important questions asked and answer them with the whole class.

It is very important for the success of this study that the teachers understand and are confident with working with this template to teach Gemini based lessons.

Example A: Teaching a New Concept

Example A: Teaching a New Concept — Introduction to Simple Interest

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Lesson topic: Introduction to Simple Interest

Teacher Preparation:

Lesson Objectives: By the end of the lesson...

- ...what should they know? They should know the definitions of Principal, Rate, and Time in the context of simple interest.
- ...what should they understand? They should understand that simple interest is an extra amount of money calculated based on these three key parts.
- ...what should they be able to do? They should be able to identify the Principal, Rate, and Time in a simple word problem.

Introduction: I will introduce the topic with a relatable story about a local businesswoman taking a loan to start a business selling groundnuts. This makes the abstract concept of 'interest' tangible.

Learning Tasks & Gemini Prompts: The main task is for students to discover the three key terms of simple interest.

Prompt for Task: "I am a JSS1 maths student in Sierra Leone and want to learn about Simple Interest." (This is a broader discovery prompt).

Smart Question Stems (to write on the board):

- "What is...?"
- "Can you give me an example of...?"
- "What does the word...mean here?"
- "Why is...important?"

Step 1: Start with a Hook or an Introduction (10 minutes)

Teacher: "Good morning, class. Today we're going to talk about money and how it can grow. Imagine your aunt wants to start a small business selling groundnuts. She needs 50,000 Leones to start, so she goes to a community bank. The bank agrees to lend her the money, but

after one year, she has to pay back the 50,000 Leones, plus a little extra for the service. Why do you think she has to pay back more than she borrowed?"

Students: Listen to the story, think about the question, and share their ideas. (e.g., "It's a fee," "It's the bank's profit"). The teacher moderates the brief discussion.

Teacher: "Exactly! That extra money has a special name: Interest. Today, our Wise Guide will help us become detectives and discover the three secret ingredients that make up Simple Interest."

Field Monitors: Will use this time to systematically distribute the tablets to each pair of students.

Step 2: Main Part — Guided Discovery with Gemini (20 minutes)

Teacher:

- "Please work with your partner. For this lesson, one of you will be the 'Driver' who types, and the other will be the 'Navigator' who helps read, write down the answers the pair comes up with, and think of questions. You will swap roles next lesson."
- "Navigators, have your notebooks open, and be ready to write down answers to the questions asked by the Wise Guide."
- "Drivers, please turn on the tablet, tap the colourful star to open our Wise Guide." (If working on a computer and not a tablet: "Switch to 'Guided Learning' as practised before.")
- "Your task today is to discover the three key parts of Simple Interest. Drivers, please type this prompt into the Wise Guide:"

  "I am a JSS1 maths student in Sierra Leone and want to learn about Simple Interest."

- "The Wise Guide will start teaching you. Your job as a pair is to find the names of the three most important words. Use the smart question stems on the board to help you. For example, you can ask, 'What are the key parts of simple interest?' or 'Can you explain the first part with an example?' " (The teacher points to the stems on the board).

After students start working, the teacher walks around the classroom to:

- Check that pairs are on task (in Guided Learning mode) and do work in their notebooks.
- Help pairs who are stuck, perhaps by suggesting a good question like, "Ask the Guide what the money you start with is called."
- Stretch fast-working pairs by challenging them: "Now that you know what 'Rate' is, ask the Guide why the rate is important for the bank."

Students:

- Work in their pairs, start the Gemini app (and switch it to Guided Learning tool, if working on a computer).
- The Driver types the initial prompt provided by the teacher.
- The Navigator writes down answers to the questions of the Wise Guide in their notebook.
- Both students read the Wise Guide's response and discuss what to ask next using the smart question stems on the board. They work together to discover and understand the terms Principal, Rate, and Time.

- Both students write down in their notebooks the definitions they have discovered.
- They ask the teacher for help if they get stuck.

Field Monitors: On standby outside the classroom, if any technical help is needed.

Step 3: Check and Consolidate (10 minutes)

Teacher:

- "Okay, detectives, time is up! Let's see what you discovered. Which pair can tell me the first secret ingredient of Simple Interest?" (A student says "Principal"). "Excellent! In your own words, what does 'Principal' mean?" (The teacher writes a student-generated definition on the board.)
- The teacher repeats this for 'Rate' and 'Time', taking answers from different pairs around the room.
- To assess progress, the teacher asks: "Now for a quick check. In our story about the aunt, what was the Principal?" (Students should answer "50,000 Leones"). This tests one lesson objective.
- As a consolidation exercise the teacher says: "Listen carefully to this new story. A farmer takes a loan of 100,000 Leones for 2 years at an interest rate of 10% per year. In your notebooks, I want you to write down what is the Principal, the Time and the Rate." Checking the notebooks will allow the teacher to assess how well each student has met the lesson objectives.

Students: Present their definitions when called upon and discuss their findings with the class and do the consolidation exercise.

Field Monitors: On standby outside the classroom.

Step 4: Wrapping up and Plenary (5 minutes)

Teacher: "You have all done a fantastic job today. You used the Wise Guide to discover the three key parts of Simple Interest: Principal, Rate, and Time. You learned not just what they are, but how to ask questions to find information for yourselves. This is a very powerful skill."

Students: Listen to the summary.

Field Monitors: Enters the classroom and begins the systematic and orderly collection of the tablets from each pair.

Example B: Consolidating and Practicing a Concept

Example B: Consolidating and Practicing a Concept — Practicing with Perimeter

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Lesson topic: Practicing with Perimeter

Teacher Preparation:

Lesson Objectives: By the end of the lesson...

- ...what should they know? They should know the formula for the perimeter of a rectangle and the steps required to solve a multi-step problem.
- ...what should they understand? They should understand that a complex problem must be broken down into smaller, manageable parts (e.g., find perimeter first, then find the number of paint cans, then find the total cost).
- ...what should they be able to do? They should be able to accurately calculate the perimeter of a rectangle and use that result to determine the total cost of a related task.

Introduction: I will start with a quick, energetic recap of the perimeter formula to activate prior knowledge and link it directly to the day's challenge.

Learning Tasks & Prompts: The main task is the multi-step football pitch problem. For this lesson, students will not be given an initial prompt. Instead, they will be taught to use the Wise Guide as a helper when they get stuck, creating their own prompts (smart questions).

Smart Question Stems (to write on the board):

- "I have calculated the perimeter. What should I do next?"
- "Can you give me a hint for Part B?"
- "I am confused about how to find the number of paint cans."
- "I think I need to divide [number] by [number]. Is that correct?"

Step 1: Start with a Hook or an Introduction (10 minutes)

Teacher: "Good morning! Let's get our brains warmed up. Who can remind me what the word 'perimeter' means?" (Listens for answers). "Excellent. And for a rectangle, what is our fast formula to find it?" (Guides students to recall Perimeter = 2 × (Length + Width) and writes it on the board). "Today, you will use this formula to solve a real-world challenge for our school."

Students: Listen to the teacher, actively participate in the recap, and answer the teacher's questions.

Field Monitors: Will use this time to systematically distribute the tablets to each pair of students.

Step 2: Main Part — Guided Discovery with Gemini (20 minutes)

Teacher:

- "Please work with your partner. For this lesson, if you were the Driver last time, you are now the Navigator, and if you were the Navigator, you are now the Driver."
- "Your main task is written on the board. It is a challenge about building a new football pitch. Please work together in your notebooks to solve it."
- "Today, we use our Wise Guide differently. Do not ask it for the answer. Try to solve the problem first. Only if your pair gets stuck, open the Wise Guide, switch to Guided Learning tool, and ask it a smart question for help."
- (Points to the board) "Here are some examples of smart questions you could ask if you are stuck. For instance, if you have the perimeter but don't know what to do next, you can ask, 'I have calculated the perimeter is 300m. What is my next step to find how many paint cans I need?' "

The problem on the board:

> *Our school's football pitch is 100 metres long and 50 metres wide. We need to paint the white boundary lines around the entire pitch. One can of paint covers 30 metres of line and costs Le 5,000. How much will it cost to paint the entire boundary?*

After students start working, the teacher walks around and:

- Checks that students are trying to solve the problem in their notebooks first.
- Helps students who are stuck to phrase a good, specific question for the Wise Guide.
- Stretches students who finish quickly by asking them: "Ask the Wise Guide what would happen to the cost if the price of paint increased by 1,000 Leones per can."

Students:

- Work in pairs to solve the football pitch problem in their notebooks.
- If they get stuck, they open the Gemini app and switch it to Guided Learning.
- The Driver inputs the specific "smart question" the pair has agreed upon.
- Students interact with the Wise Guide to get a hint or clarification on the specific step they are struggling with, then return to their notebooks to continue solving the problem.
- They ask the teacher for help if they cannot phrase a good question for the Guide.

Field Monitors: On standby outside the classroom, if technical help is needed.

Step 3: Check and Consolidate (10 minutes)

Teacher:

"Okay, time is up. Let's discuss what we found. What was the very first step everyone had to complete?" (Students answer: Find the perimeter). "And what was the perimeter of our football pitch?" (Students answer: 300 metres).

"Excellent. The next step was the trickiest. How did we find out how many cans of paint we needed?" (Guides a student to explain they needed to divide the total perimeter by the distance one can covers: 300 / 30 = 10 cans).

To assess the class, the teacher asks: "And so, what was the final total cost for the paint?" (Students answer: 50,000 Leones). The teacher confirms the answer, clarifying the final multiplication step (10 cans × 5,000 Leones).

Students: Present and discuss their steps and final answers when called upon.

Field Monitors: On standby outside the classroom.

Step 4: Wrapping up and Plenary (5 minutes)

Teacher: "Great work today. You all practiced how to break a big problem down into smaller steps. Most importantly, you learned how to use the Wise Guide not for answers, but for help when you are stuck on one specific step. This is how real problem-solvers work."

Students: Listen.

Field Monitors: Enters the classroom and begins the systematic and orderly collection of the tablets from each pair.

Lesson Template

Template for a Standard 45-Minute Lesson with Gemini Guided Learning Tool

---

Materials: Chalkboard or large paper; notebooks and pens for students; Galaxy Tab A9 with Gemini app (one per pair)

Teacher Preparation:

Think of what you want the students to take away from the lesson. Ask yourself the following questions: By the end of the lesson...

- ...what should they know?
- ...what should they understand?
- ...what should they be able to do?

This will help you to be clear about your lesson objectives.

Think how you want to introduce the topic.

Think of learning tasks that you want the students to do in the lesson. You can use the same tasks as if you were to teach the lesson without Gemini.

> *EducAid staff should point out that teachers can ask Gemini in Guided Learning tool to give them suggestions. Refer back to Activity 6 in Module 0 as an example. It is important to prompt it properly, which is going to be taught at the end of this module.*

For each task you want the students to do with Gemini you need to prepare a prompt the students should type into Gemini (unless you give the students a problem and want them to interact with the Guided Learning mode freely).

Think of smart question stems that you would like your students to ask Gemini when working with the Guided Learning mode.

Lesson Structure:

1. Start with a Hook or an Introduction

Teacher: Briefly introduce the topic of the lesson. This can be either by giving a problem, short motivation, story or simple introduction to the topic of the lesson and linking it to what has been taught previously.

Students: Listen to the teacher, think and participate actively and answer the teacher's questions.

Field Monitors: Will use this time to distribute the tablets to the students. (One per pair.)

2. Main Part — Guided Discovery with Gemini

Teacher:

- Divides up the pairs in students who will type (Drivers) and students who will help (Navigators) making sure that they swap roles regularly (every lesson, at least)
- Instructs students to open tablets/start the computer, start Gemini (and switch to Guided Learning tool, if they are working on a computer.)
- Gives students one or multiple tasks that they should complete with the help of the Guided Learning tool. Each task should come with a prompt the students need to type into the Guided Learning tool.

Basic templates for such prompts are:

Teach me a concept:

Prompt template

> *I am a [Level] maths student in Sierra Leone and want to learn about [Topic]*

Help me practice:

Prompt template

> *I am a [Level] maths student in Sierra Leone. Give me practice questions for [Topic]*

(Depending on your class, replace [Level] with JSS1 or JSS2 and replace [Topic] with the topic you want them to learn or practice in this lesson.)

EducAid staff should explain what teachers need to do exactly to adapt the prompt template based on the previous and possibly some more examples.

Teachers should be aware that using the second prompt to help students practice will mean each pair will have different practice questions. As Gemini will guide them to the final answer, there is no need for checking answers with the class.

A teacher can use the above prompt to have Gemini creating practice questions during their preparation, which they then can set the whole class, if they don't want the pairs to be working individually.

EducAid staff should also point out that the logic behind the prompts and how teachers can build their own prompts will be explained in the next part of this module.

- Discuss examples of smart questions with the students that they could use and ask Gemini, and write some examples of stems of smart questions on the board.
- After the students start working with Gemini, the teacher walks around and:
  - Check they are on task, use Gemini (in Guided Learning tool), and write down their work in their notebook.
  - Help students who are struggling with asking the right questions to Gemini, or are stuck.
  - Stretch students who are quick to complete the task by asking them to ask smart "why" questions to Gemini.

Students:

- Work in pairs, start the Gemini app (and switch it to Guided Learning tool, if working on a computer using Gemini in the browser.)
- Come up with smart questions
- Work on the assigned tasks with the help of the Guided Learning tool
- For each task the student typing ("Driver") should input the prompt shared by the teacher
- The other student ("Navigator") should make notes.
- Students interact with Gemini by asking questions, trying to understand the provided answers and answer Gemini's follow up questions
- Students should ask the teacher for help, if they are stuck

Field Monitors: On standby outside the classroom, if technical help is needed.

3. Check and Consolidate

Teacher:

- Discusses each task and what the students have learned with the class
- Tests and assesses the progress of the class, and how well the lesson objectives have been met

Students: Present and discuss their work, and show their learning

Field Monitors: On standby outside the classroom.

4. Wrapping up and Plenary

Teacher: Summarises the main learning points of this lesson for the students and praises the students who have worked well.

Students: Listen.

Field Monitors: Collects the tablets.

EducAid staff should make sure the lesson template and example lessons are broadly understood before moving on to the next activity, where the teachers will consolidate their understanding of the template by designing their first Gemini based maths lesson.

Activity 2: Design Your First Gemini Lesson

1. Pick the topic from either JSS1 or JSS2 maths you are going to be teaching next week. Use the provided template to prepare a Gemini based lesson for this topic. Focus on the Teacher Preparation section and work through the five points noting down your answers.
2. Once you are done, discuss and share within your pair.
3. Test your prompts with Gemini in the Guided Learning tool.

EducAid staff should circulate through all the pairs, check how well working with the template has been understood by each teacher, clarify any confusion, misunderstandings and answer questions, as well as provide feedback.

At the end of this exercise EducAid staff should confirm that everyone has a plan for their first Gemini based maths lesson.

Crafting Effective Prompts

To get the best results for your students, you must learn to give the "Wise Guide" (Gemini) the best possible instructions. Think of it like this: if you give vague directions to a taxi driver, you might not end up where you want to go. If you give clear, specific directions, you will arrive at your exact destination. Giving a good prompt is giving our Wise Guide clear directions.

The Importance of Good Prompts for Our Students

Gemini is a smart tool, but it does not automatically know what it is like to be a student in Sierra Leone. If you just ask it to "teach fractions," it might use examples with dollars, or pizza, or scenarios that do not connect with your students' lives. This can be confusing and unhelpful.

By crafting a good prompt, we are teaching Gemini how to be a good teacher for our students. We can tell it to use Leones, to talk about farming or market selling, and to be patient and encouraging, just like you are in the classroom. A good prompt ensures the learning is relevant, effective, and feels right for Sierra Leone.

From Basic to Effective Prompts

In our lesson templates, we used two very useful basic prompts:

- To teach a concept: "I am a JSS1 maths student in Sierra Leone and want to learn about Simple Interest."
- To help practice: "I am a JSS2 maths student in Sierra Leone. Give me practice questions for Perimeter."

Note that we didn't just say "I want to learn about Simple Interest" or "Give me practice questions". We included the educational and regional context of the students, so the answers Gemini produces in the Guided Learning tool are tailored to them and their current level.

Within the Guided Learning tool these basic prompts are sufficient for classroom use. This is because the Guided Learning tool is designed for teaching. When using Gemini without the Guided Learning tool these prompts would not lead to the desired outcomes.

> *EducAid staff should refer back to Activity 1 in the previous module where teachers used the same prompt for Guided Learning tool on and off, and see that the outcome was vastly different.*

In this last module we want to empower you to be able to use Gemini (and any other chatbot like it) effectively regardless of the tool. For this you need to be able to write effective prompts. Starting from these basic prompts we can make them much more powerful and reliable by adding more detail. The following four principles show you how to upgrade these basic prompts into expert prompts.

The Four Principles of Prompt Improvement

Activity 3: Testing Prompt Improvements

1. Switch the Guided Learning tool off and just use plain Gemini.
2. Start with the basic prompt "Teach me about Simple Interest" and have a short conversation with Gemini.
3. For each of the four improvements listed below do the following:
   (a) Start a new conversation with Gemini.
   (b) Enter the suggested example prompt.
   (c) Have a short conversation with Gemini and notice its different responses and behaviour with each improvement.

4. Discuss what problem you foresee trying to use prompts like in the example under point 3 “Break it down into steps” in your classroom?

> *EducAid staff is to facilitate this discussion. It is important that the teachers understand the following points (also listed at the Three Golden Rules for Creating Prompts):*
>
> - *If they test out a prompt they have created and Gemini (in whichever tool, including the Guided Learning tool) does not provide the desired answers or behaviour, they need to refine their prompt based on the principles explained in this section.*
> - *They should work incrementally: start basic (providing the essential context) and only add complexity, if it is needed.*
> - *The prompts they want to share with their students need to be short, as they have no means of sharing prompts other than students typing it into Gemini themselves, and the longer the prompt the more valuable classroom time is lost.*

1. Give it a persona it should enact

Tell Gemini who it should be. This sets the tone for the entire conversation.

> **✓ Good — with persona**
>
> “*You are a patient and encouraging maths teacher from Sierra Leone. Use your expertise to help a JSS1 student understand the basics of Simple Interest for the first time.*

> **× Vague — no persona**
>
> “*Teach Simple Interest to a JSS1 student.*

2. Provide the respective context and be specific

This is the most important step for making the lesson relevant to our students. Tell the Gemini about their world.

> **✓ Good — with context**
>
> “*You are a patient and encouraging maths teacher from Sierra Leone. Use your expertise to help a JSS1 student understand the basics of Simple Interest for the first time. Use local examples with Sierra Leonean Leones (Le) involving farming or market selling. Follow the JSS1 maths syllabus.*

> **× Lacks context**
>
> “*You are a patient and encouraging maths teacher from Sierra Leone. Use your expertise to help a JSS1 student understand the basics of Simple Interest for the first time.*

3. Break it down into steps

Students, especially when learning a new topic, can be overwhelmed by long explanations. Tell the Wise Guide to teach in small, manageable chunks and to check for understanding.

✓ **Good — with step-by-step structure**

> *You are a patient and encouraging maths teacher from Sierra Leone. Use your expertise to help a JSS1 student understand the basics of Simple Interest for the first time. Use local examples with Sierra Leonean Leones (Le) involving farming or market selling. Follow the JSS1 maths syllabus.* ***Always break your explanations down into small, simple steps. Avoid long answers. Before explaining a multi-step concept, propose a short plan like, "First, we will learn about Principal. Then, we will look at Rate. Does that sound good?" and wait for the student to agree before continuing.***

× **Counter-example**

> *(Any of the previous, less detailed examples)*

4. Provide Examples of what you want to see

This is linked to breaking it down into steps. You are showing Gemini the style of teaching you want. The instruction to propose a plan like, "First, we will learn about Principal. Then, we will look at Rate. Does that sound good?" is a perfect example of this. It models the interactive, student-focused behaviour we want to see.

Important to know

Behaviour that is not specified in the prompt is left to chance. Gemini might follow the desired behaviour for some conversations and not follow it for others. By writing a detailed prompt, you ensure that you get more helpful responses.

Three Golden Rules for Creating Prompts

Remember these three key messages when you create prompts:

1. **If it doesn't work, change the instruction, not the tool.** If Gemini gives a confusing or unhelpful response, your first step is to improve your prompt. Add more detail, be more specific, or give it a better persona. A better prompt leads to a better answer.
2. **Start simple, then add what you need.** Begin with a basic, clear prompt like we used in our lesson templates (e.g., "I am a JSS1 student in Sierra Leone, teach me about fractions"). Only add more details—like telling it to use stories or break down steps—if the simple prompt isn't giving you the results you want.
3. **For students, short and simple is best.** Every word your students have to type is valuable classroom time. When creating prompts for them to use, make them as short and clear as possible to get the lesson started quickly. Save the longer, more detailed prompts for your own preparation.

Final Q&A and Wrapping up

> *Before closing, EducAid staff should briefly go over each of the modules, summarise what has been covered and state the most important takeaways. Staff should assess how confident the teachers are with meeting the objectives of each module, and answer a final round of questions.*

References

LearnLM Team, Google and Fab AI. Teaching with Gemini: Measuring the impact of Guided Learning on student mathematics progress in Sierra Leone, May 2026. URL http://goo.gle/LearnLM-SierraLeone-May26.

Supplementary Materials

Supplementary A: EducAid Staff Training Outline

Overall Goal

To fully prepare EducAid staff to confidently and effectively deliver the "Enhancing Teaching with the Guided Learning Tool" training to JSS1 and JSS2 maths teachers in Sierra Leone.

Total Estimated Duration: Approximately 6.25 hours

- Part 1: Independent Preparation: 2.5 hours
- Part 2: Live Training Session: 3.75 hours (including breaks)

Part 1: Independent Preparation (2.5 hours)

Objective: For staff to familiarise themselves with the entire teacher training curriculum and gain personal, hands-on experience with the tools before the live session.

Tasks:

1. **Read the Entire Document:** Thoroughly read the complete "Enhancing Teaching with the Guided Learning Tool in the Gemini App" document from start to finish.
2. **Perform Key Activities:** Using a Galaxy Tab A9, personally complete the following essential hands-on activities from the document:
    - Module 0: Complete all tablet user activities (Activities 1–9), including switching on the tablet, connecting to Wi-Fi, launching Gemini, setting it to 2.5 Pro in Guided Learning tool, and interacting with it using the suggested prompts.
    - Module 1: Complete the activity comparing Guided Learning tool on vs. off with the "Mr. Koroma's Farm" problem.
    - Module 3: Test the basic and upgraded prompts from the "Crafting Effective Prompts" section to experience the difference in Gemini's behaviour.
3. **Prepare Questions:** As you read and perform the activities, note down any questions, points of confusion, or areas where you anticipate teachers might struggle.

Part 2: Live Training Session (3.75 hours)

Objective: To conduct a step-by-step walkthrough of the teacher training, focusing on facilitation strategies, key pedagogical messages, and addressing all staff questions.

Agenda:

(15 mins) — Introduction & Goals

- Welcome and overview of the training's purpose.
- Clarify the role of EducAid staff as facilitators and coaches.
- Review the agenda for the live session.

(40 mins) — Module 0: Mastering the Tool [Field Staff to attend]

- **Content Review:** Quickly review the hands-on tablet operations.
- **Facilitation Strategy:**
  - Discuss the "Staff Guidance" for this module: how to manage an interactive, hands-on session.
  - Emphasise key checks for teachers: ensuring tablets are set to Gemini 2.5 Pro.
  - Brainstorm potential technical issues and how to troubleshoot them.
  - Brief Field Staff on standard lesson plans
- **Staff Q&A:** Address questions from the preparation phase regarding tablet operation.

(30 mins) — Module 1: The 'Why' of Guided Learning

- **Content Review:** The core activity (GL on vs. off) and the "Kai and the Whispering Stone" story.
- **Facilitation Strategy:**
  - Discuss how to facilitate the "Aha!" moment when teachers compare the two modes.
  - Practice how to lead the discussion on AI concerns, using the activity as the starting point.
  - Stress the importance of the key message: why the study only uses Guided Learning.
- **Staff Q&A:** Address questions about AI concepts and handling teacher concerns.

(10 mins) — Break

(45 mins) — Module 2: Preparing Teachers for the Classroom

- **Content Review:** The three core skills: introducing tablets, typing maths, and asking smart questions.
- **Facilitation Strategy:**
  - Discuss how to manage the brainstorming activity on anticipated classroom problems.
  - Review the two example lesson plans, focusing on how to guide teachers to critique and adapt them.
  - Emphasise the pedagogical importance of the "Smart Questions" section and how to make the activities (poster, think-aloud) engaging.
- **Staff Q&A:** Focus on classroom management and practical implementation strategies.

(45 mins) — Module 3: Putting it all into Practice

- **Content Review:** The lesson plan template and the principles of effective prompting.
- **Facilitation Strategy:**
  - Focus on the most critical activity: coaching teachers as they create their own lesson plans. Discuss how to provide constructive feedback.
  - Clarify the difference between simple prompts for students (in GL) and complex prompts for teachers (in standard mode).
  - Role-play how to explain the research protocol (e.g., not using Gemini outside of lessons) firmly but respectfully.
- **Staff Q&A:** Address questions on lesson planning and prompt engineering.

(10 mins) — Break

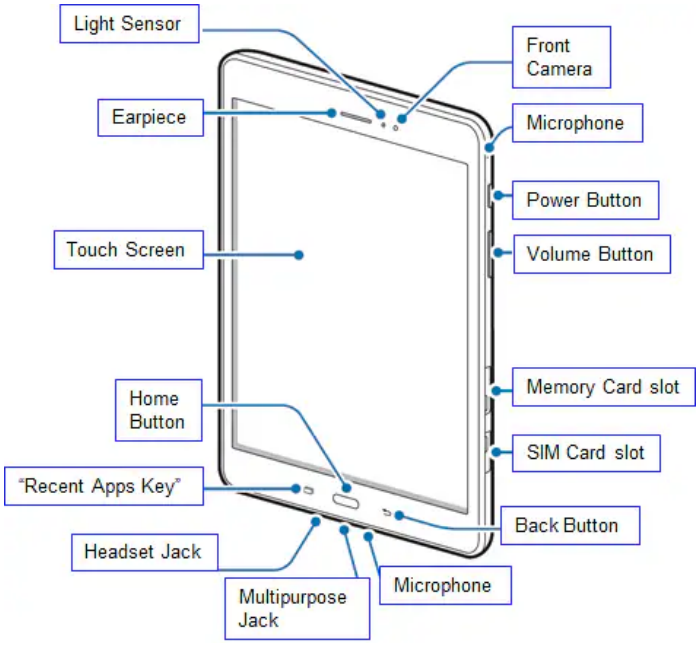
(30 mins) — Final Q&A, Logistics & Wrap-Up

- Address any remaining questions from the entire document.
- Discuss the logistics for the live teacher training: materials preparation, scheduling, and the role of in-school support staff.
- Final summary of key takeaways and reinforcing confidence in the staff's ability to deliver the training.

Supplementary B: Galaxy Tab A9 Guide (Field Staff)

This guide will help you use your new Samsung Galaxy Tab A9 tablet. This tablet is a powerful tool to support your teaching, especially with the Guided Learning tool of the Gemini App. Please follow these steps carefully.

Part 1: Getting to Know Your Tablet and Switching It On/Off, and Volume Control



Identify Your Tablet:

- Hold your tablet comfortably. The large, flat side is the screen.
- Look around the edges for buttons and ports.

Locate the Power Button:

On the right-hand side of the tablet (if you hold it vertically with the camera at the top), you will find a longer button. This is the Power Button.

Switching On:

- Press and hold the Power Button for about 3–5 seconds.
- You will see the Samsung logo appear on the screen.
- The tablet will then start up and show you the Home Screen. This may take a moment.

Switching Off:

- When you are finished using the tablet for the day, it's good practice to turn it off completely to save battery.
- Press and hold the Power Button again for about 3–5 seconds.
- A menu will appear on the screen.
- Tap on "Power off" (you might need to tap it twice to confirm).
- The screen will go dark, and the tablet will be off.

Restarting (if needed):

If the tablet ever seems stuck or is not responding, you can restart it. Press and hold the Power Button for about 7–10 seconds until the Samsung logo appears again. This forces it to restart.

Controlling Volume and Muting:

- **Locate the Volume Buttons:** Just below the Power Button on the right-hand side, you will find two smaller buttons. These are the Volume Up (top one) and Volume Down (bottom one) buttons.
- **Increase Volume:** Press the top volume button to make sounds louder.
- **Decrease Volume:** Press the bottom volume button to make sounds quieter.
- **Mute the Tablet (Silence All Sounds):**
  - Press the Volume Down button repeatedly until the volume bar on the screen shows the lowest level and then changes to a "Mute" icon (often a speaker with a line through it, or a vibration symbol).
  - Alternatively, you can access the "Quick Settings" panel (swipe down from the top of the screen). Look for a speaker icon or sound icon. Tapping this icon will cycle through Sound, Vibrate, and Mute. Tap until you see "Mute" or the speaker with a line through it.
- **Unmute the Tablet:** Press either the Volume Up or Volume Down button once, or tap the Mute icon in the Quick Settings to switch back to Sound or Vibrate mode.

Part 2: Checking Internet Connection (Wi-Fi)

While your classrooms may not have constant internet, the Gemini app will need internet access to function, especially for generating new content in Guided Learning tool. Your tablets will be set up to connect when an internet source is available (e.g., during training sessions, or if a designated Wi-Fi point is provided for the study).

Find the "Quick Settings" Panel:

- Place your finger at the very top of the screen and swipe downwards.
- You may need to swipe down a second time to see the full panel.

Check for Wi-Fi:

- Look for an icon that looks like three curved lines getting wider (the Wi-Fi symbol).
- If the icon is blue or lit up, it means Wi-Fi is currently ON.
- If it's greyed out or dim, it means Wi-Fi is OFF.
- To turn Wi-Fi ON/OFF: Simply tap the Wi-Fi icon.

Connecting to a Wi-Fi Network (if required):

- If Wi-Fi is ON but not connected, press and hold the Wi-Fi icon for a few seconds. This will take you to the Wi-Fi settings page.
- You will see a list of available Wi-Fi networks.
- Tap on the name of the network you need to connect to (e.g., "STARLINK").
- If prompted, enter the password for that network (this will be provided to you by the EducAid staff).
- Tap "Connect". Once connected, the Wi-Fi symbol will show it's active, and the network name will appear below it.

Part 3: Navigating Apps and Launching Gemini

The Home Screen:

This is where you'll see your most used apps. You can swipe left or right on the screen to see different pages of apps.

Finding All Your Apps (The App Drawer):

From the Home Screen, swipe upwards from the middle of the screen. This will show you a list of all the apps installed on your tablet. You can swipe up and down in this list to see more apps.

Launching an App:

Once you see the app you want to open (like "Gemini"), simply tap on its icon.

Launching the Gemini App:

Look for the Gemini app icon. It usually has a distinct, colourful design (it might look like a star). Tap the Gemini app icon to open it.

Note that if everything works as intended then Gemini will already be set to 2.5 Pro and be in Guided Learning tool when launching the Gemini app on the tablet. The following instruction steps 5, 6 and 8 are only necessary, if it isn't.

Checking and switching to Gemini 2.5 Pro:

- On the top of the screen and in the middle under where it reads "Gemini", you should see "2.5 Pro", which should be the default setting.
- If that is not the case, tap on the writing. A menu will appear.
- Select "2.5 Pro" from the menu, and double check you can see it appearing at the top after selecting it.

Switching to Guided Learning (within Gemini):

- Once the Gemini app opens, you will see its main screen.
- Look for a button at the bottom of the screen that says "Guided Learning".
- If you don't see it there will be a button at the bottom of the screen with three dots. Tap on it. You should see a menu pop up.
- Tap on "Guided Learning" or the appropriate option. The interface will then change to show you the features designed for guided learning.

Using the Guided Learning tool:

- Launch the Gemini app (Step 4), check it is using Gemini 2.5 Pro (Step 5) and switch to Guided Learning (Step 6).
- Tap on the screen where it asks you "What do you want to learn?".
- Type in the topic you want to discuss with the AI, or ask your question.
- Your question will appear on the top right of the screen. You will see Gemini "Thinking" before it outputs the answer to your question and will ask you a question in return.
- Continue the conversation with Gemini. If you don't understand what it writes, or are confused, tell Gemini what you don't understand, or what you are confused about.

Switching off Guided Learning tool:

- Tap on the button with three horizontal lines.
- Tap on "New Chat". This will start a new conversation with Gemini.
- You can talk to Gemini as before, but it won't behave like a teacher anymore.

> **Important**
>
> Always make sure your students use the Guided Learning tool in the classroom. They must not be permitted to switch it off.

Part 4: Tablet Maintenance and Charging

Caring for your tablet will ensure it works well for the entire study period and beyond.

Charging Your Tablet:

- You will be provided with a charger specifically for this tablet. Always use the charger provided by EducAid staff.
- Locate the charging port on your tablet (usually at the bottom edge).
- Carefully insert the small end of the charging cable into the tablet's port.
- Plug the larger end of the charger into a working wall socket.
- You will see a battery icon on the screen indicating that it is charging.
- Charge the tablet fully before each day's use, if possible.
- It's generally best to disconnect the charger once the tablet is fully charged (shows 100%).

Keeping it Clean:

- Wipe the screen gently with a soft, clean cloth (like a spectacles cloth) to remove dust or fingerprints.
- Do not use harsh chemicals or water directly on the screen.

Protecting Your Tablet:

- Keep the tablet in a safe place where it won't fall or be stepped on.
- Use the protective case for your tablet at all times.
- Avoid placing heavy objects on top of the tablet.

Part 5: Important Warnings (What NOT to Do)

To ensure your tablet remains functional and safe, please DO NOT do the following:

- **DO NOT** drop the tablet. This can crack the screen or damage internal parts.
- **DO NOT** expose the tablet to water or any liquids. Water damage is severe and will make the tablet unusable. Keep it away from rain, drinks, and damp areas.
- **DO NOT** expose the tablet to extreme heat or direct sunlight for long periods. This can damage the battery and internal components. Do not leave it in a hot car.
- **DO NOT** open the tablet or try to repair it yourself. This will void any warranty and can cause further damage. If there's a problem, report it to EducAid staff.

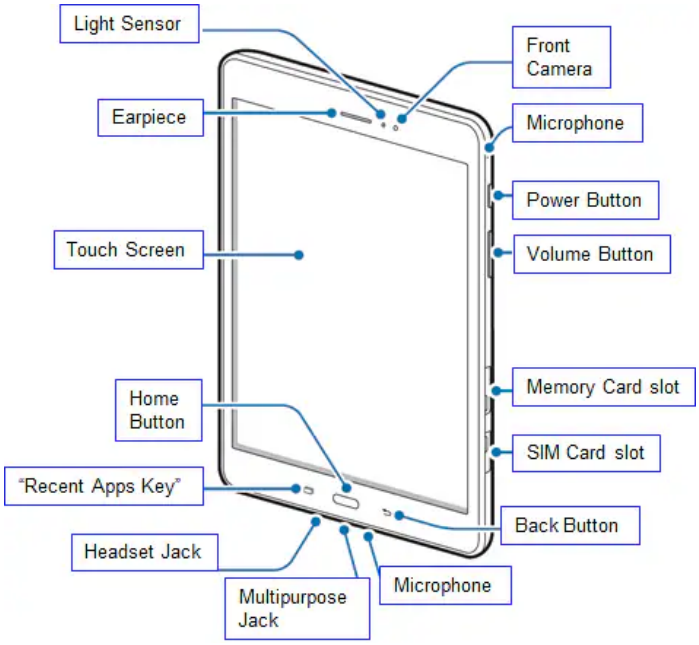
- **DO NOT** use any charger other than the one provided. Other chargers might not be compatible and could damage your tablet's battery or charging port.
- **DO NOT** install unofficial apps or software. Only use the apps pre-installed or specifically recommended by EducAid.
- **DO NOT** share personal or sensitive student information with the Gemini app or any other app. While the Guided Learning tool is designed for learning, always protect privacy.
- **DO NOT** tamper with internal components.

By following these instructions, you will be able to effectively use your Galaxy Tab A9 and the Gemini Guided Learning tool to enrich your maths lessons. If you have any questions or encounter problems, please inform the EducAid staff.

Supplementary C: Galaxy Tab A9 Guide (Teachers)

This guide will help you use your new Samsung Galaxy Tab A9 tablet. This tablet is a powerful tool to support your teaching, especially with the Guided Learning tool of the Gemini App. Please follow these steps carefully.

Part 1: Getting to Know Your Tablet and Switching It On/Off, and Volume Control



Identify Your Tablet:

- Hold your tablet comfortably.
- The large, flat side is the screen. Check that it is uncovered.
- Look around the edges for buttons and ports.

Locate the Power Button:

On the right-hand side of the tablet (if you hold it vertically with the camera at the top), you will find a longer button. This is the Power Button.

Switching On:

- Press the Power Button once to switch the tablet on.
- The tablet will show you the Home Screen.
- Alternatively, you can press the Home button.

Restarting (if needed):

If the tablet ever seems stuck or is not responding, you can restart it. Press and hold the Power Button for about 7–10 seconds until the Samsung logo appears again. This forces it to restart.

Controlling Volume and Muting:

- **Locate the Volume Buttons:** Just below the Power Button on the right-hand side, you will find two smaller buttons. These are the Volume Up (top one) and Volume Down (bottom one) buttons.
- **Increase Volume:** Press the top volume button to make sounds louder.
- **Decrease Volume:** Press the bottom volume button to make sounds quieter.
- **Mute the Tablet (Silence All Sounds):**
  - Press the Volume Down button repeatedly until the volume bar on the screen shows the lowest level and then changes to a "Mute" icon (often a speaker with a line through it, or a vibration symbol).
  - Alternatively, you can access the "Quick Settings" panel (swipe down from the top of the screen). Look for a speaker icon or sound icon. Tapping this icon will cycle through Sound, Vibrate, and Mute. Tap until you see "Mute" or the speaker with a line through it.
- **Unmute the Tablet:** Press either the Volume Up or Volume Down button once, or tap the Mute icon in the Quick Settings to switch back to Sound or Vibrate mode.

Part 2: Checking Internet Connection (Wi-Fi)

While your classrooms may not have constant internet, the Gemini app will need internet access to function, especially for generating new content in Guided Learning Mode. Your tablets will be set up to connect when an internet source is available (e.g., during training sessions, or if a designated Wi-Fi point is provided for the study).

Find the "Quick Settings" Panel:

- Place your finger at the very top of the screen and swipe downwards.
- You may need to swipe down a second time to see the full panel.

Check for Wi-Fi:

- Look for an icon that looks like three curved lines getting wider (the Wi-Fi symbol).
- If the icon is blue or lit up, it means Wi-Fi is currently ON.
- If it's greyed out or dim, it means Wi-Fi is OFF.
- To turn Wi-Fi ON/OFF: Simply tap the Wi-Fi icon.

Connecting to a Wi-Fi Network (if required):

- If Wi-Fi is ON but not connected, press and hold the Wi-Fi icon for a few seconds. This will take you to the Wi-Fi settings page.
- You will see a list of available Wi-Fi networks.
- Tap on the name of the network you need to connect to (e.g., "STARLINK").
- If prompted, enter the password for that network (this will be provided to you by the EducAid staff).
- Tap "Connect". Once connected, the Wi-Fi symbol will show it's active, and the network name will appear below it.

Part 3: Navigating Apps and Launching Gemini

The Home Screen:

This is where you'll see your most used apps. You can swipe left or right on the screen to see different pages of apps.

Finding All Your Apps (The App Drawer):

From the Home Screen, swipe upwards from the middle of the screen. This will show you a list of all the apps installed on your tablet. You can swipe up and down in this list to see more apps.

Launching an App:

Once you see the app you want to open (like "Gemini"), simply tap on its icon.

Launching the Gemini App:

Look for the Gemini app icon. It usually has a distinct, colourful design (it might look like a star). Tap the Gemini app icon to open it.

Note that if everything works as intended then Gemini will already be set to 2.5 Pro and be in Guided Learning tool when launching the Gemini app on the tablets of your students. You are most likely not going to need to do steps 5, 6 and 8 during this study. The following instruction steps are only necessary if you work with a tablet designated for the teacher, or if the app does not behave as planned.

Checking and switching to Gemini 2.5 Pro:

- On the top of the screen and in the middle under where it reads "Gemini", you should see "2.5 Pro", which should be the default setting.
- If that is not the case, tap on the writing. A menu will appear.
- Select "2.5 Pro" from the menu, and double check you can see it appearing at the top after selecting it.

Switching to Guided Learning tool (within Gemini):

- Once the Gemini app opens, you will see its main screen.
- Look for a button at the bottom of the screen that says "Guided Learning".
- If you don't see it there will be a button at the bottom of the screen with three dots. Tap on it. You should see a menu pop up.
- Tap on "Guided Learning" or the appropriate option. The interface will then change to show you the features designed for guided learning.

Using the Guided Learning tool:

- Launch the Gemini app (Step 4). (If you have a teacher tablet check it is using Gemini 2.5 Pro (Step 5) and switch to Guided Learning (Step 6).)
- Tap on the screen where it asks you "What do you want to learn?".
- Type in the topic you want to discuss with the AI, or ask your question.
- Your question will appear on the top right of the screen. You will see Gemini "Thinking" before it outputs the answer to your question and will ask you a question in return.

- Continue the conversation with Gemini. If you don't understand what it writes, or are confused, tell Gemini what you don't understand, or what you are confused about.

The following step is only possible on teacher tablets. The Gemini apps the students will have access to does not permit them to switch off the Guided Learning tool.

Switching off Guided Learning tool:

- Tap on the button with three horizontal lines.
- Tap on "New Chat". This will start a new conversation with Gemini.
- You can talk to Gemini as before, but it won't behave like a teacher anymore.

> **Important**
>
> Always make sure your students use the Guided Learning tool in the classroom. They must not be permitted to switch it off.

Part 4: Important Warnings (What NOT to Do)

To ensure your tablet remains functional and safe, please DO NOT do the following:

- **DO NOT** drop the tablet. This can crack the screen or damage internal parts.
- **DO NOT** expose the tablet to water or any liquids. Water damage is severe and will make the tablet unusable. Keep it away from rain, drinks, and damp areas.
- **DO NOT** expose the tablet to extreme heat or direct sunlight for long periods. This can damage the battery and internal components. Do not leave it in a hot car.
- **DO NOT** open the tablet or try to repair it yourself. This will void any warranty and can cause further damage. If there's a problem, report it to EducAid staff.
- **DO NOT** use any charger other than the one provided. Other chargers might not be compatible and could damage your tablet's battery or charging port.
- **DO NOT** install unofficial apps or software. Only use the apps pre-installed or specifically recommended by EducAid.
- **DO NOT** share personal or sensitive student information with the Gemini app or any other app. While the Guided Learning tool is designed for learning, always protect privacy.
- **DO NOT** tamper with internal components.

By following these instructions, you will be able to effectively use your Galaxy Tab A9 and the Gemini Guided Learning tool to enrich your maths lessons.

If you have any questions or encounter problems, please inform the Field Monitor assistant who will be ready to help outside your classroom.