

AI in Education Workshop

UNICEF Innovation Camp 2025

22 October, 2025 | 15:15-17:00

Niall McNulty, AI Product Lead

Workshop Structure: The 3 x Formula

Today we'll follow this structure:

Instruction



Core concepts explained clearly

45 minutes

Demonstration



Watch it work in real-time

15 minutes

Practice



Try it yourself with guidance

45 minutes

Workshop Objectives

By the end of today's session, we will have covered the following:

1. Understand AI fundamentals and current advances in educational AI
2. Identify global trends and tools for AI in education
3. Use text files to create shareable teaching content for AI chatbots
4. Understand context engineering and 'sovereign' pedagogy principles
5. **DEMO:** Generate formative assessments with AI
6. **DEMO:** Explore WhatsApp chatbot solutions for teacher support
7. **BUILD:** Develop a context file for personalised AI assistance
8. **BUILD** Create re-usable Lesson Planner

Presentation and all files will be provided on Sharepoint

High Level Introduction - Lots more to explore

One Thing

You can customise these AI tools to the needs of your education system using plain language and text files!

Niall McNulty, Education Futures

- Teach 'Designing Assessments with AI' for Cambridge Assessment
- Run a project on AI for STEM teaching in Kuwait
- Create local curriculum content using AI and open-source tools
- Building a WhatsApp teacher support AI chatbot for South Africa
- Build AI chatbots on research knowledge-bases
- Developing an AI for school leaders programme
- HP Futures: AI & Educators Council, Cambridge HP Edtech Fellowship
- Running an AI lesson planner project for local curriculum in the Maldives



PART 1: Understanding AI in Education

Benefits, risks, impact and policy consideration

Time: 15:15 - 16:00

So what is Artificial Intelligence?

Computer systems that simulate human intelligence by recognising patterns, learning from data, generating content, and solving problems.

You're already using AI daily



Email

Spam filters, smart categorization, and auto-complete suggestions

Common Examples:

- Gmail spam detection
- Outlook smart sorting
- Auto-reply suggestions



Navigation

Route optimization, traffic prediction, and voice directions

Common Examples:

- Google Maps traffic predictions
- Waze route suggestions
- Voice navigation



Social Media

Content recommendations, face recognition, and automated translations

Common Examples:

- Instagram feed algorithm
- Facebook photo tagging
- TikTok "For You" page



Smartphone

Face/fingerprint unlock, voice assistants, and photo enhancement

Common Examples:

- Face ID
- Google Assistant
- Portrait mode photo processing



Traditional Software

Deterministic & Rule-based

Follows exact rules

If this, then that

Same input = Same output

Programmed knowledge

Cannot handle ambiguity



AI/Machine Learning

Probabilistic & Adaptive

Learns patterns from data

Recognises patterns

Same input \approx Similar output

Learned knowledge

Thrives on ambiguity

Think: **Calculator** vs **Weather Forecaster**

A calculator follows precise rules to give exact answers, while a weather forecaster uses patterns to predict likely outcomes.

4 Types of AI for Education



MACHINE LEARNING

Recognizes patterns in data



NATURAL LANGUAGE PROCESSING

Understands and generates language



COMPUTER VISION

Analyses images and video



GENERATIVE AI

Creates new content (text, images, video, code)

Basic Flow of How LLMs Work to Answer Your Queries



1. TRAINING PHASE

Learns patterns from billions of texts



2. YOUR INPUT

Processes your prompt into tokens



3. GENERATION

Predicts next words, creates response

Stage 1: Training Phase

(Already complete before you use it)

Fed billions of pages of text

Learned patterns:

- Grammar rules
- Factual associations
- Reasoning styles

Like a student reading entire libraries



Stage 2: Your Input

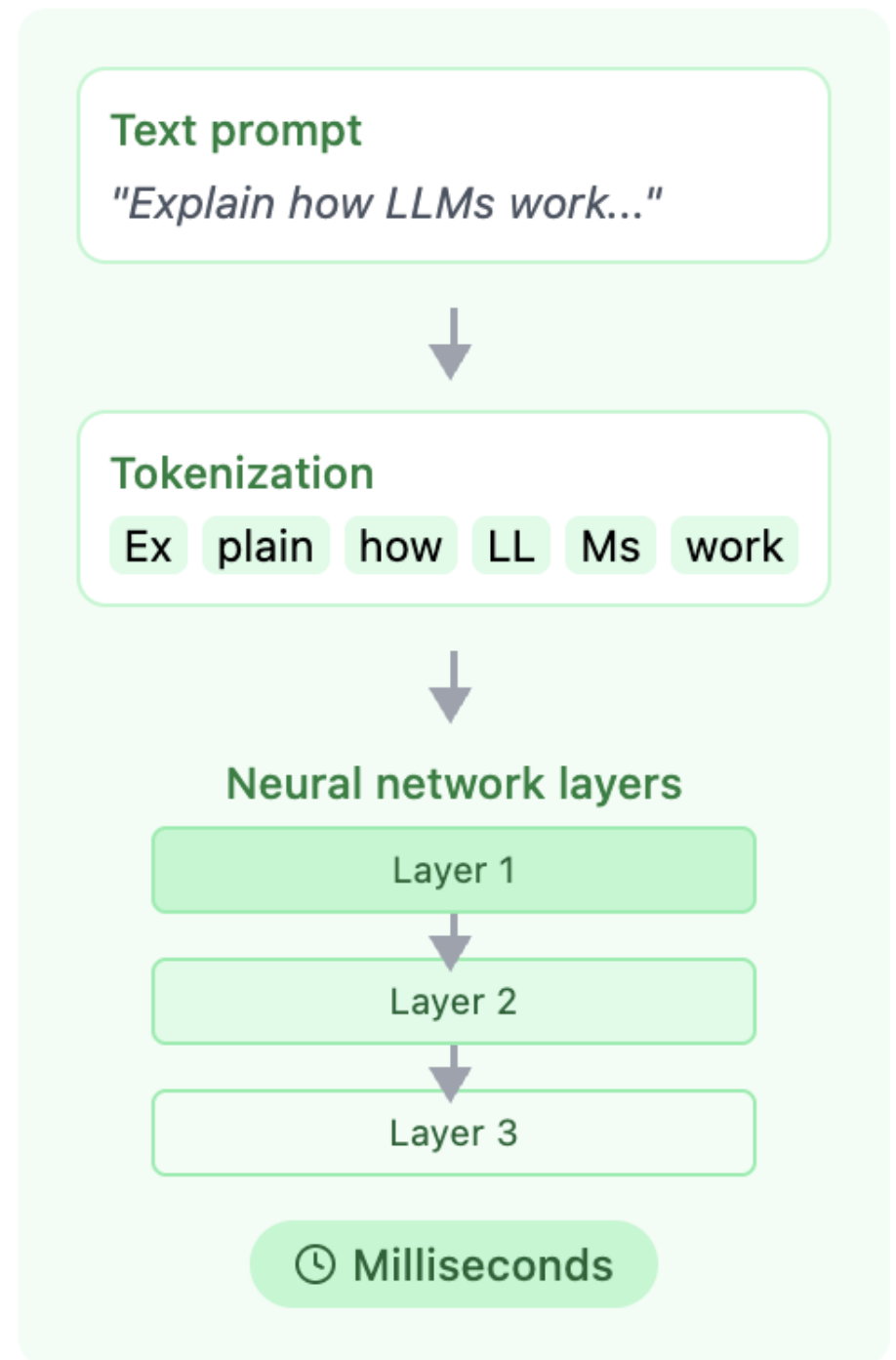
(When you hit "Send")

Your text → Broken into TOKENS →
Processed through layers

Each layer adds understanding:

- Syntax (Is this a question?)
- Semantics (What is this about?)
- Context (What's the appropriate response?)

⚡ Happens in milliseconds



Stage 3: Generation

(The response you see)

Predicts most likely next word

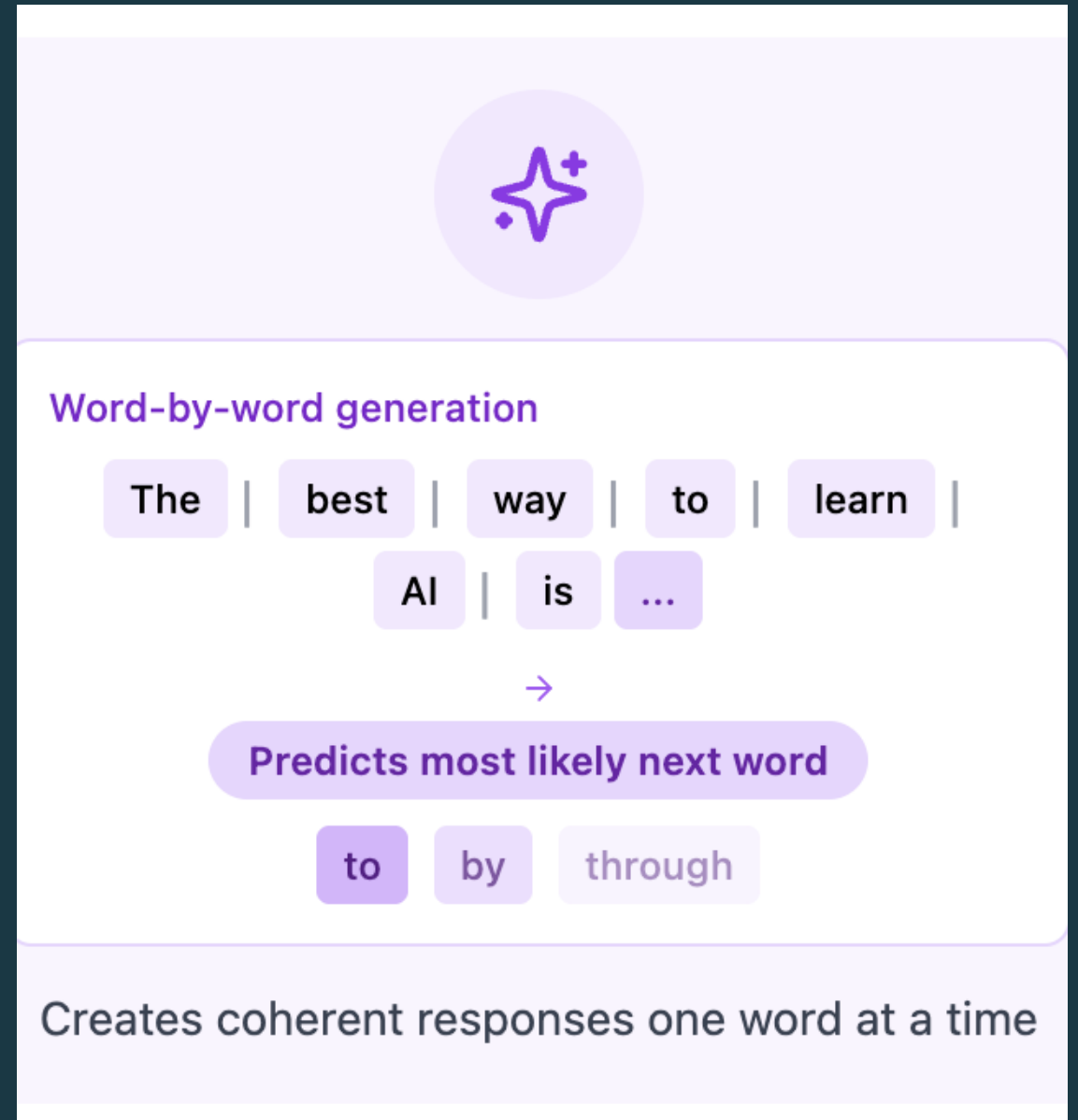


Repeats thousands of times



Complete response

- **NOT** retrieving stored answers
- **CREATING** fresh text every time



Why Hallucinations Happen

Predicts "Likely" Text, Not "True" Text

User asks: "The capital of France is..."

 Paris 95% likely

User asks: "The lost city of Atlantis was discovered in..."

 the Mediterranean Sea in 1985 75% likely

LLMs generate text based on **statistical patterns** in their training data, not based on what's factually correct. They predict what words are likely to come next in a sequence.

No Real-Time Fact-Checking Mechanism



How to Get What You Want from an AI

With simple text files, written in natural language, you can create powerful tools for your education system

- Writing Clear Instructions

Prompt Engineering

The Prompt Difference: Vague vs. Specific

Vague Prompt (A Wish):
Write about the Great Karoo.

→ Leads to generic,
unpredictable results.

Specific Prompt (An Instruction):
Act as a geographer writing for a Grade 8 textbook. Describe the key geological features of the Great Karoo in a 150-word paragraph. Focus on its sediment layers and fossil record.

→ Leads to targeted, useful
content.

The Anatomy of an Effective Prompt (CRAFT)

Context: The background information, the "why." (e.g., *This is for a chapter on South African biomes.*)

Role: Who the AI should be. (Act as...)

Action: What the AI should do; the verb. (Write, summarise, create, explain, list...)

Format: The desired structure of the output. (in a table, as bullet points, as a 300-word paragraph...)

Tone: The style of the output and the rules to follow. (Use a formal tone, write for a Grade 6 reading level, avoid jargon, do not mention...)

Context Engineering

Making AI Relevant for your Education System

Key Principles

LOCAL CONTEXT AND DATASETS



Incorporate local curriculum documents, teaching plans, and assessment guidelines to make AI systems contextually relevant to specific educational environments.



TEMPLATES FOR AI GUIDANCE



Create example templates that show AI what "good" looks like in your specific context, providing clear models of desired outputs and quality standards.



WORKFLOWS AND TOOL USE



Develop step-by-step processes that integrate AI tools into existing educational workflows, creating clear pathways for implementation and use.

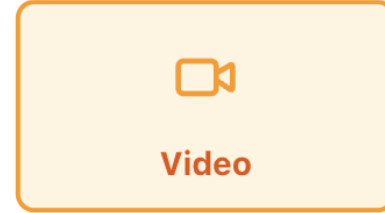
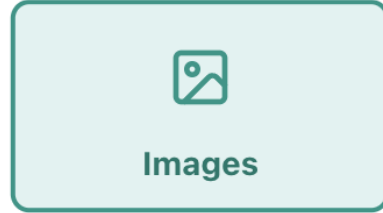


These strategies help bridge the gap between generic AI capabilities and specific educational contexts.


What's New in AI?

Recent advances that matter for education


Multimodal Models




What This Means For You



Upload student work photos
get feedback

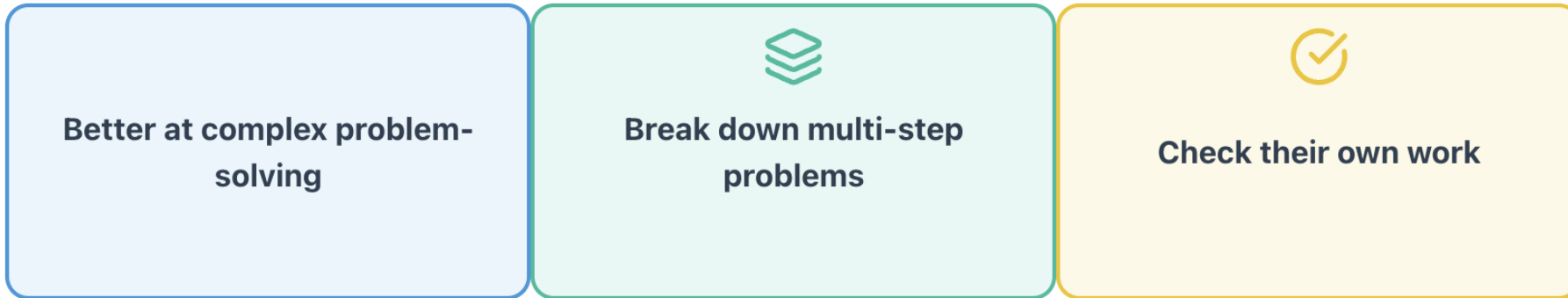


Upload curriculum PDFs
create aligned lessons



Upload classroom videos
analyse engagement

Reasoning



Benefits of Reasoning Models

More reliable results and transparent reasoning process

Agentic AI



Can work autonomously toward goals



Search the web for current info



Use multiple tools



Complete complex tasks independently

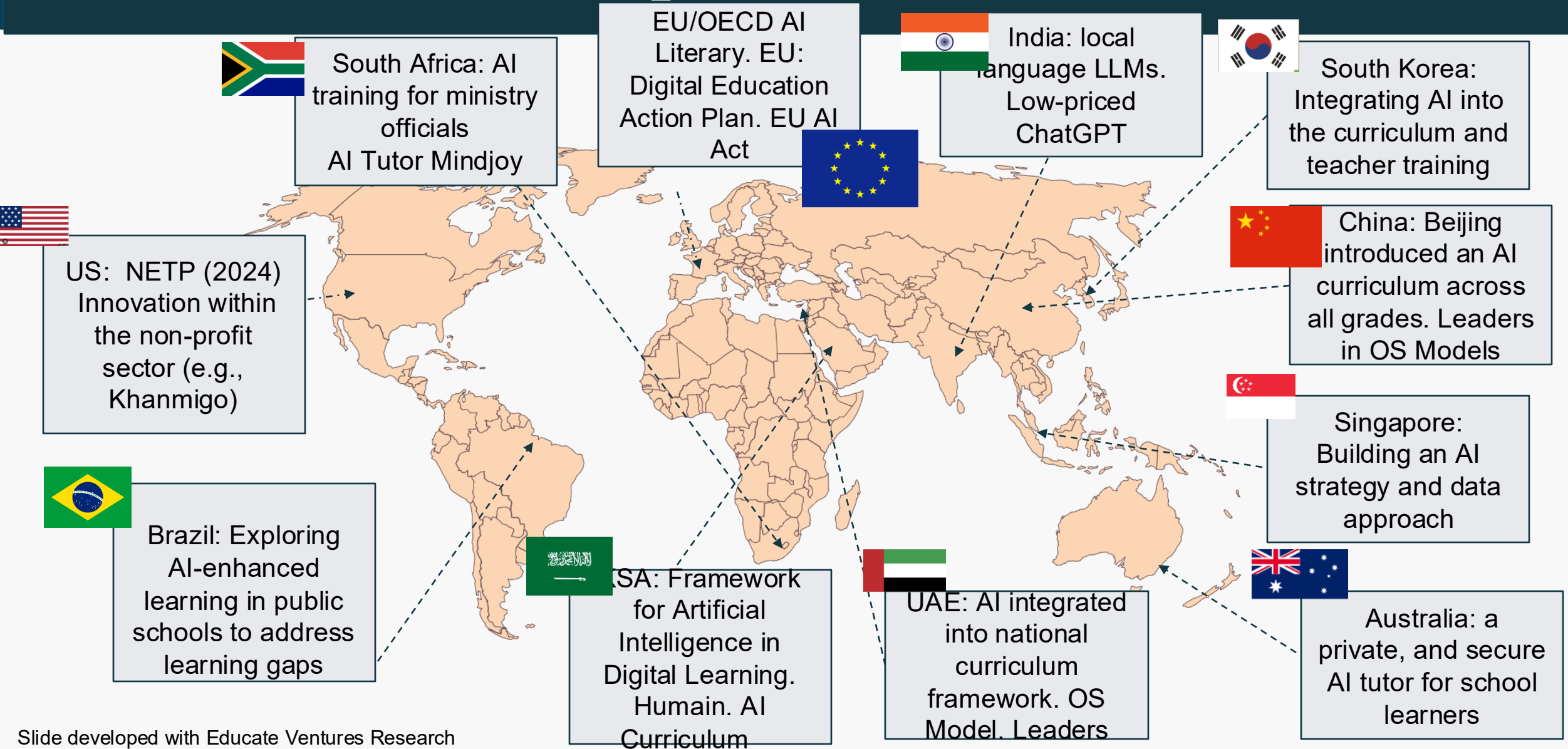
What This Means for YOU

AI in Education Globally



Whistle stop tour on what's happening around the world

Global Education Snapshot



Common Themes Across All Education Systems

1

TEACHER PD

FIRST: Professional development before student tools

2

DATA PRIVACY:

Student data protection is non-negotiable

3

LOCAL RELEVANCE:

Culturally adapted solutions - one size does NOT fit all

4

INFRASTRUCTURE MATTERS:

Solutions must match connectivity reality

Available AI Tools

Free and accessible options

Tools for Educators: General Purpose LLMs

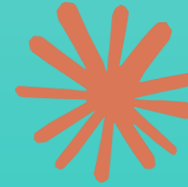
01



ChatGPT (OpenAI):
Free tier available,
good for general
tasks

Study

02



Claude (Anthropic):
Free tier, strong at
reasoning and
document analysis

Learning

03

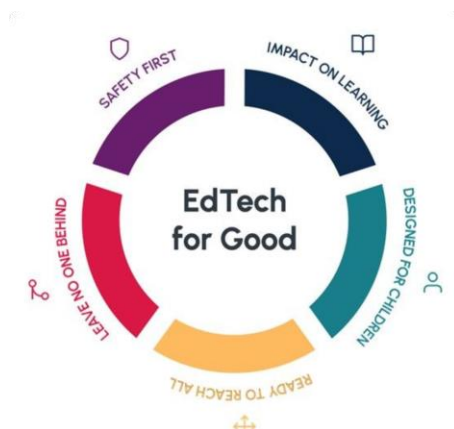


Gemini (Google):
Free tier, Google
Workspace, can
create shareable
GEMS

LearnLM

Which AI to Use?

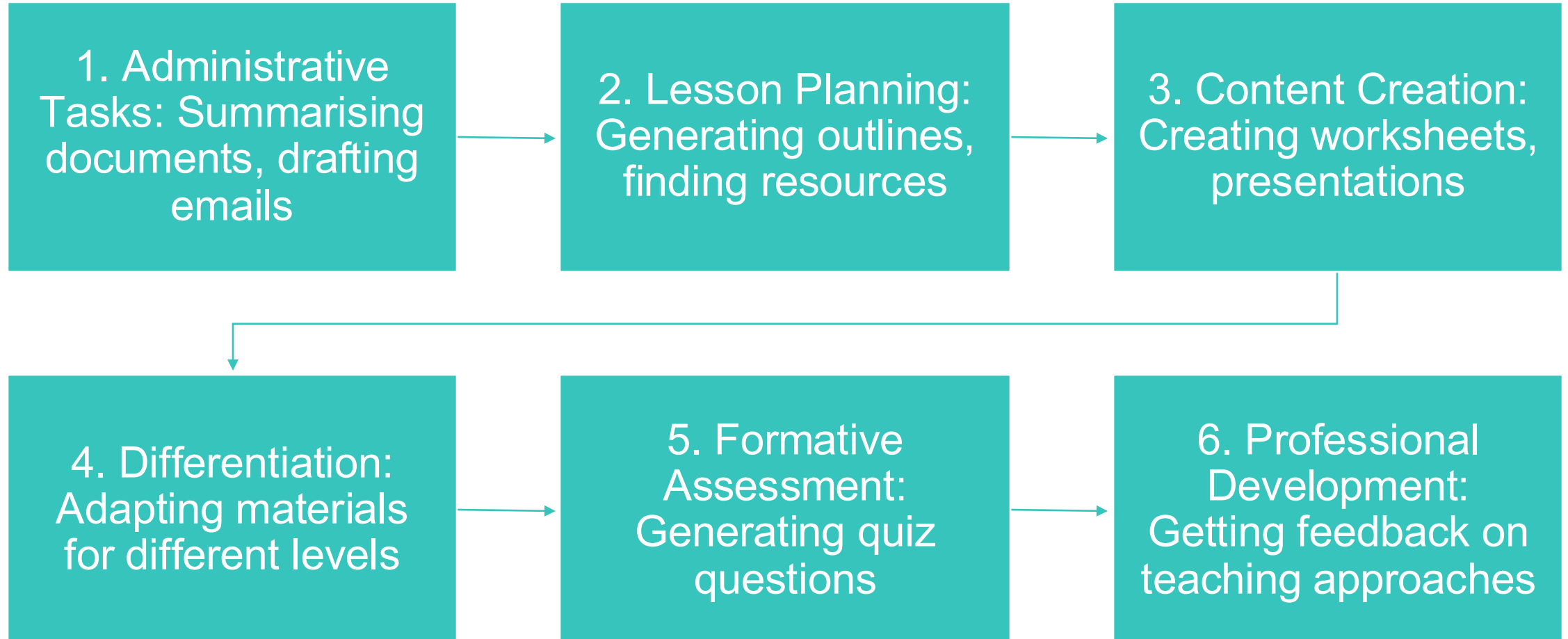
- If you have good **prompts**, good **context**, an understanding of **workflows** required and **templates** you can get good results from any commercial or open-source AI system
- Tool choice should be based off your own **requirements**, available **support** and **constraints**



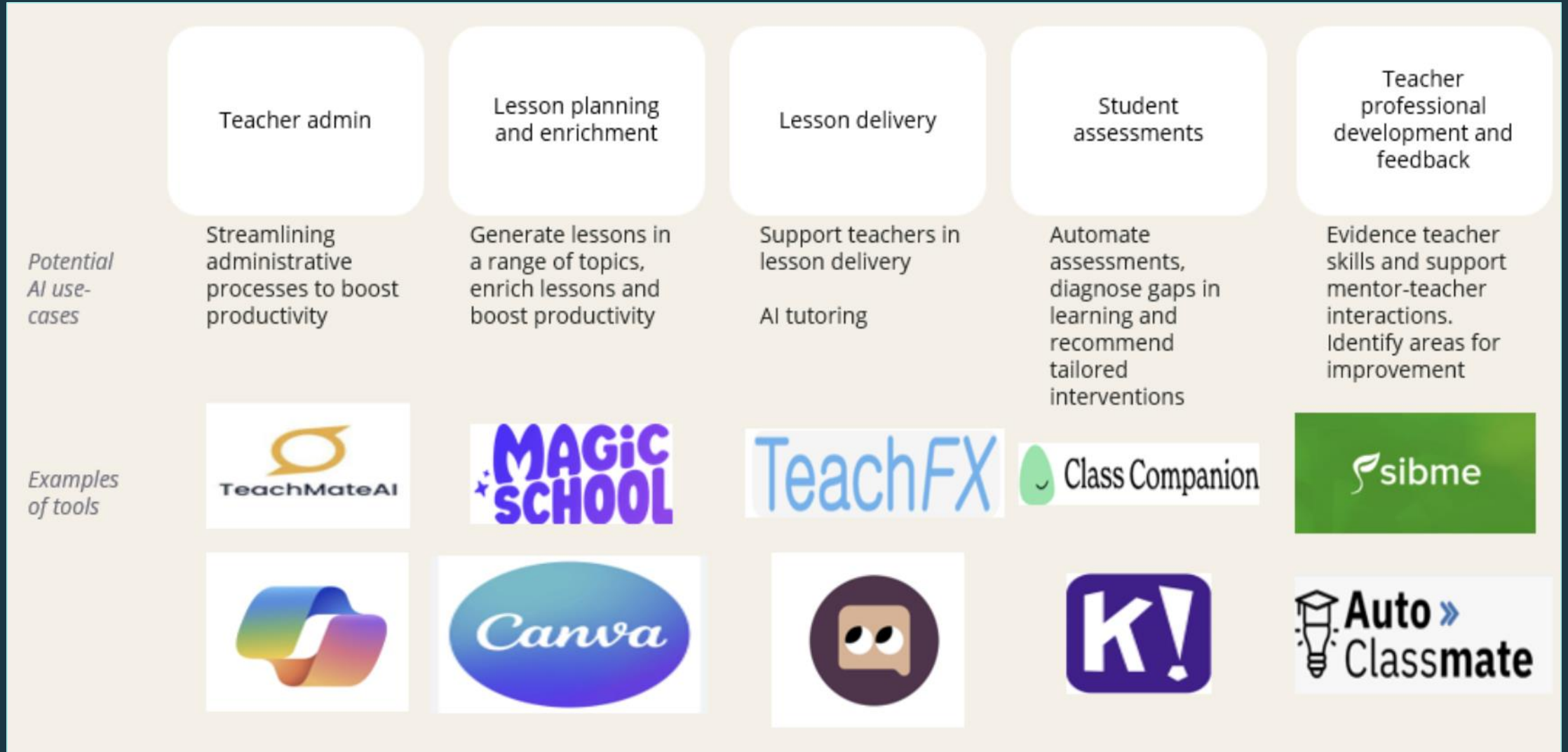
AI

Is becoming a commodity

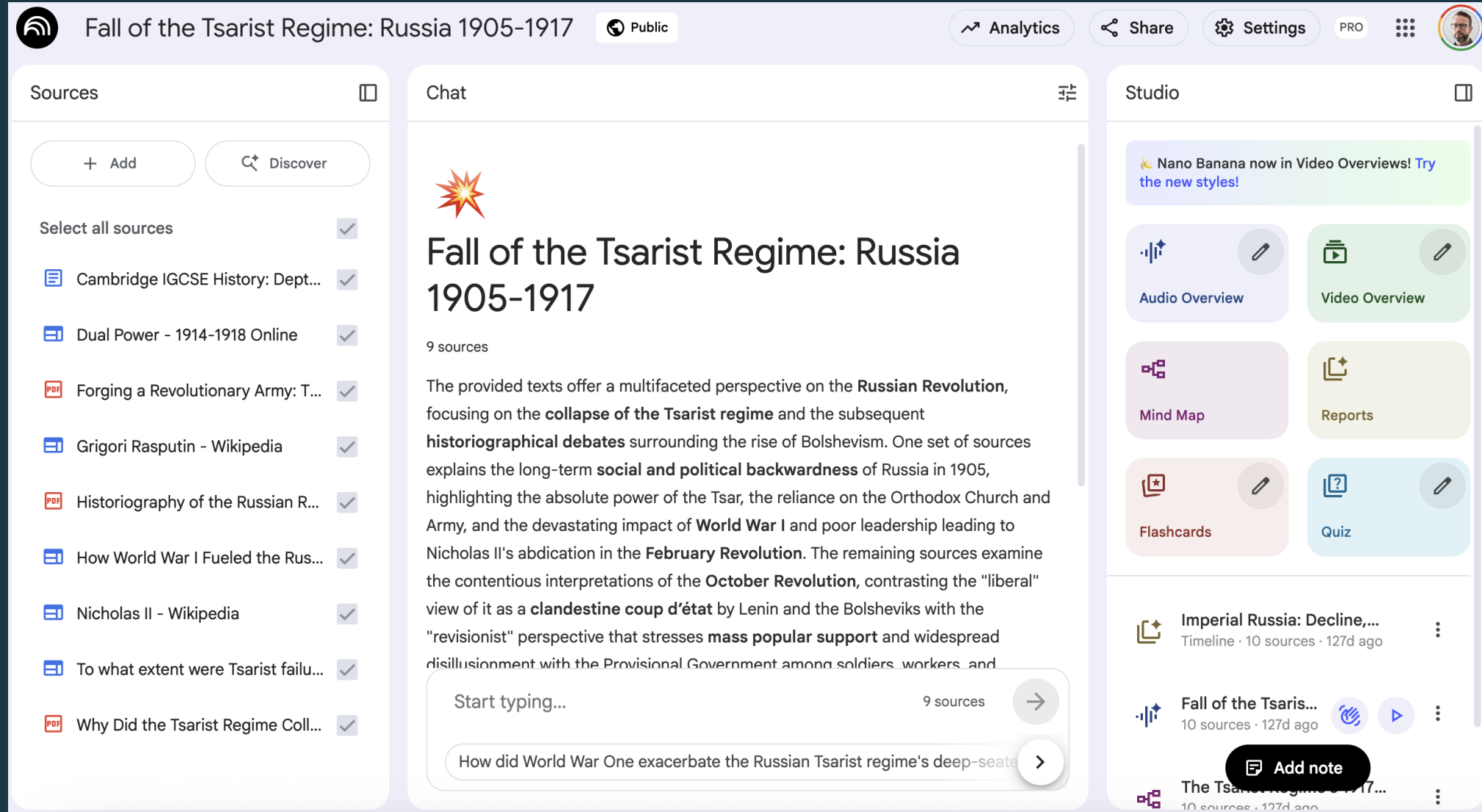
Simple Use Cases for Education



Examples of AIED Apps responding to these use cases



Google's NotebookLM – One AIED tool to test



The screenshot displays the Google NotebookLM interface for a notebook titled "Fall of the Tsarist Regime: Russia 1905-1917". The interface is divided into three main sections: Sources, Chat, and Studio.

Sources: A list of 9 sources is shown, all of which are selected (indicated by checkmarks). The sources include:

- Cambridge IGCSE History: Dept...
- Dual Power - 1914-1918 Online
- Forging a Revolutionary Army: T...
- Grigori Rasputin - Wikipedia
- Historiography of the Russian R...
- How World War I Fueled the Rus...
- Nicholas II - Wikipedia
- To what extent were Tsarist failu...
- Why Did the Tsarist Regime Coll...

Chat: The main chat area displays the title "Fall of the Tsarist Regime: Russia 1905-1917" and a summary of the sources. The summary text reads: "The provided texts offer a multifaceted perspective on the **Russian Revolution**, focusing on the **collapse of the Tsarist regime** and the subsequent **historiographical debates** surrounding the rise of Bolshevism. One set of sources explains the long-term **social and political backwardness** of Russia in 1905, highlighting the absolute power of the Tsar, the reliance on the Orthodox Church and Army, and the devastating impact of **World War I** and poor leadership leading to Nicholas II's abdication in the **February Revolution**. The remaining sources examine the contentious interpretations of the **October Revolution**, contrasting the "liberal" view of it as a **clandestine coup d'état** by Lenin and the Bolsheviks with the "revisionist" perspective that stresses **mass popular support** and widespread disillusionment with the Provisional Government among soldiers, workers, and..."

Below the summary, there is a text input field with the placeholder "Start typing..." and a "9 sources" label. A search query is entered: "How did World War One exacerbate the Russian Tsarist regime's deep-seate".

Studio: The Studio section offers various interactive tools for the notebook, including:

- Audio Overview
- Video Overview
- Mind Map
- Reports
- Flashcards
- Quiz

At the bottom of the Studio section, there is a list of recent notebooks or sections, including "Imperial Russia: Decline,..." and "Fall of the Tsaris...". An "Add note" button is visible at the bottom right.

Custom Solutions for Your Education System



RAG-Based Chatbots

Retrieval-Augmented Generation with
curriculum documents



WhatsApp Integration

For low-infrastructure contexts



Open-Source Models

For data sovereignty



Locally Hosted Options

For privacy and control

Critical Considerations

Making informed decisions

Questions for Policy Makers



Student use: When and how can students use AI tools?



Teacher PD: What training is needed?



Data privacy: Where is data stored? Who has access?



Tool vetting: How do we evaluate AI tools?



Equity: How do we ensure equal access?



Assessment design: How do we assess in an AI-enabled world?

Regional Challenges to Address

LANGUAGE MARGINALIZATION

AI works best in English, with limited support for smaller languages, creating barriers for non-English speakers.

CULTURAL/CONTEXTUAL BARRIERS

AI systems often reflect Western cultural biases and may misunderstand or misrepresent local cultural contexts.

CURRICULUM CHALLENGES

AI educational tools may not align with local curriculum standards or educational priorities of different regions.

DATA SOVEREIGNTY CONCERNS

Questions about who owns, controls, and has access to educational data processed by AI systems across borders.

INFRASTRUCTURE GAPS

Unequal access to reliable internet, devices, and technical support needed to implement AI educational tools.

Infrastructure Reality

Connectivity



High Connectivity

- Cloud-based tools
- Real-time collaboration
- API integrations
- Full model capabilities
- Continuous updates



Low Connectivity

- Downloadable models
- Offline-first design
- SMS/WhatsApp integration
- Sync when available
- Reduced model size



No Connectivity

- Offline AI models
- On-device processing
- Pre-generated libraries
- Limited capabilities
- No external data access

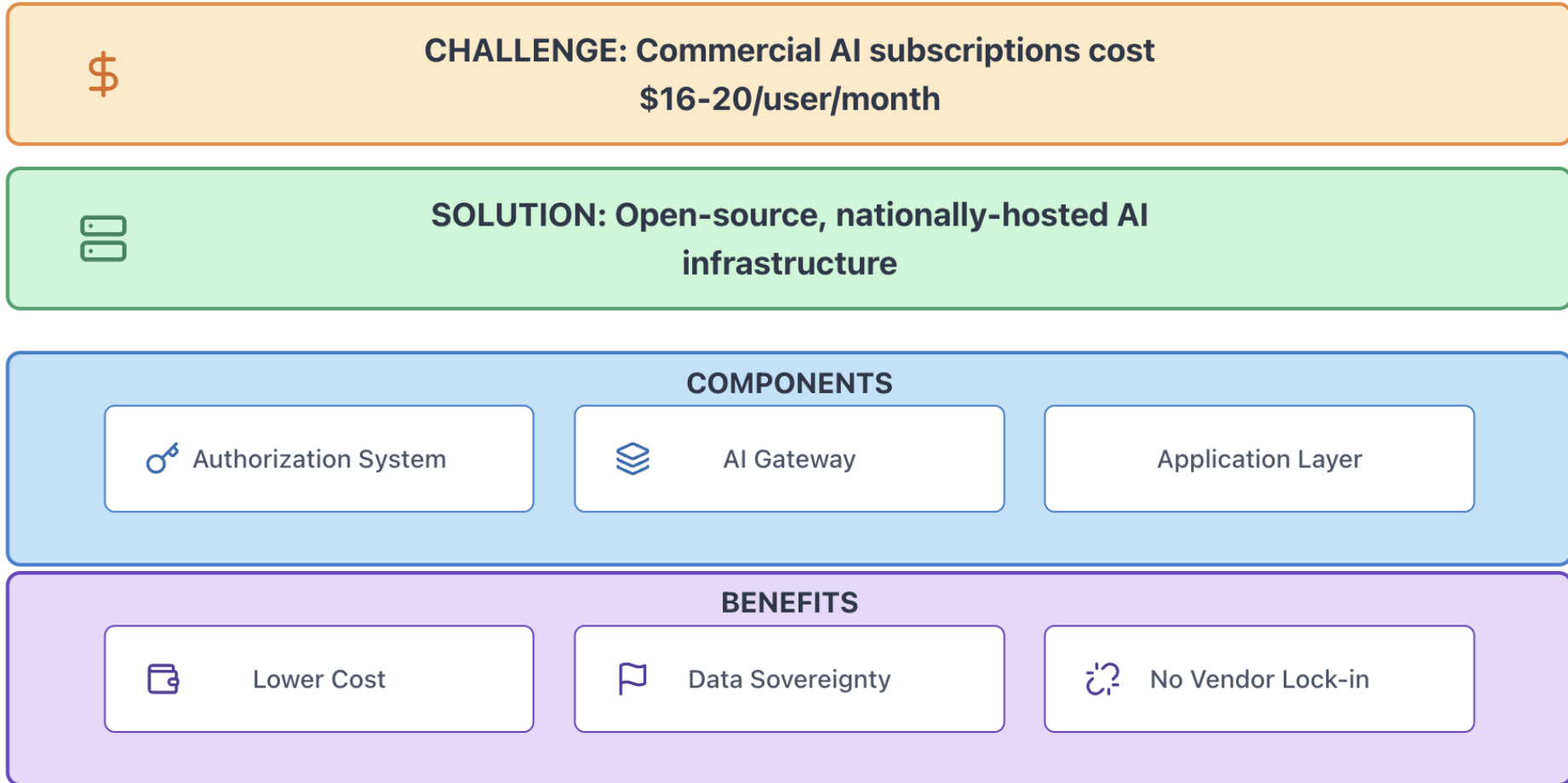


Pricing Considerations

- Free tier options with usage limits
- Premium features require subscription
- On-device models may have one-time cost vs. subscription

Open-Source Models (and on device)

Open-Source Infrastructure for National Education Systems



Ethics of AI/ED

Key Ethical Concerns



BIAS AND FAIRNESS

AI trained on Western data may not reflect local contexts and can reinforce existing biases.



PRIVACY

Student data protection is paramount. Educational AI must safeguard sensitive information.



TRANSPARENCY

Understanding how AI makes decisions is essential for trust and responsible use in education.



CULTURAL RELEVANCE

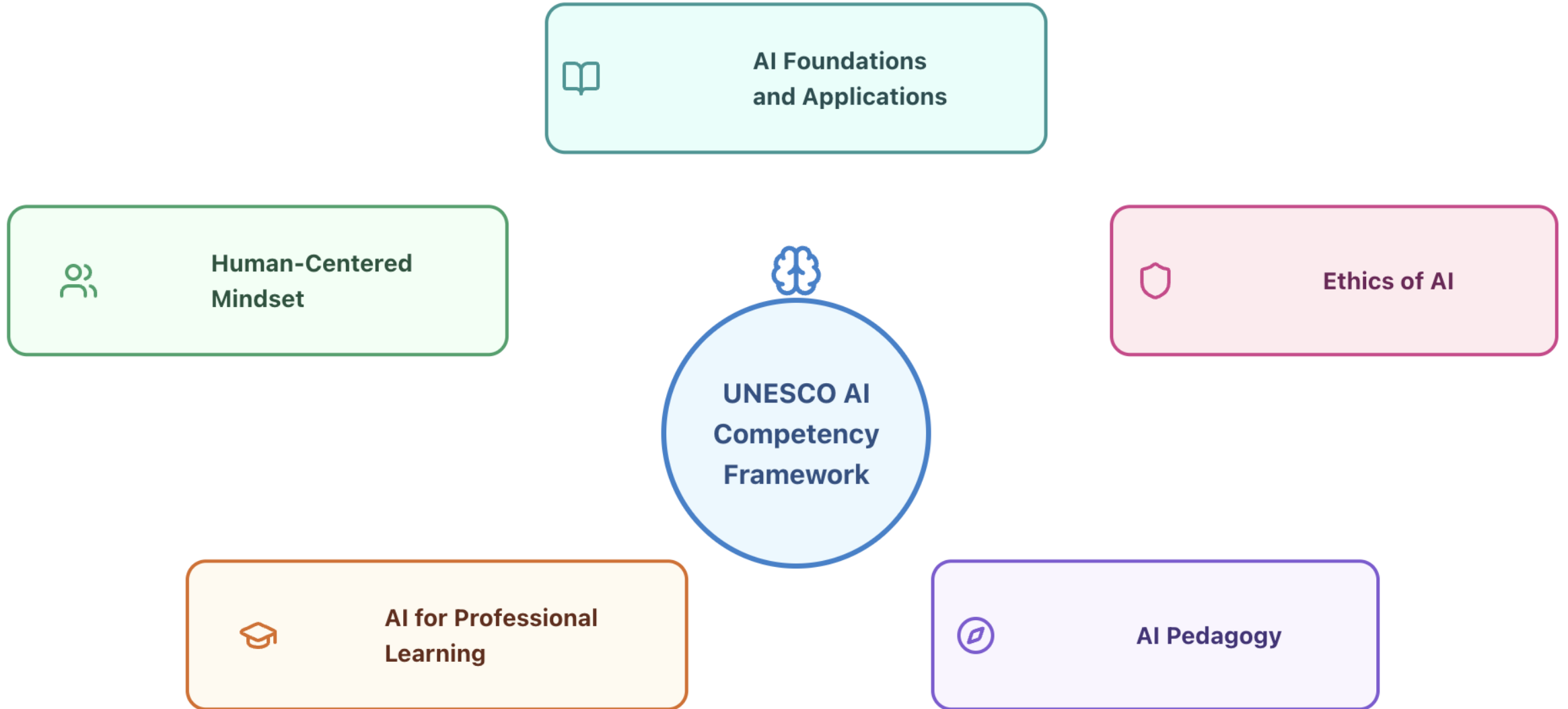
AI must respect local values and knowledge systems to be effective across diverse cultural contexts.

Capacity Building

UNESCO AI Competency Framework

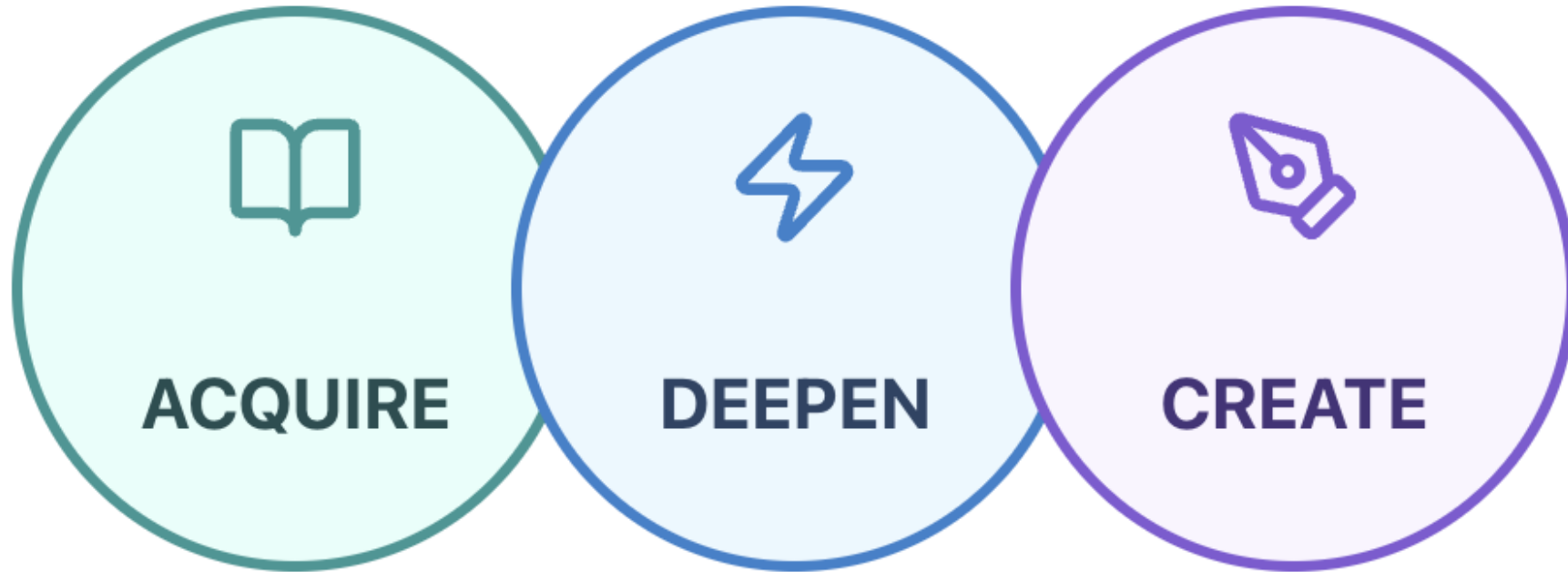
Structured approach for building capacity

UNESCO AI Competency Framework: 5 Core Dimensions



Progression Levels

See also EU
OECD AI Lit
Framework



*A framework for progressive
skill development and mastery*

Protecting Your Education System from Pedagogic ‘Flattening’

Sovereign Pedagogy



**EDUCATION THAT REFLECTS AND EMPOWERS LOCAL
CULTURE, LANGUAGE, AND KNOWLEDGE SYSTEMS**



WHY IT MATTERS

Generic AI may marginalize local languages, impose foreign frameworks, and undermine indigenous knowledge systems, leading to cultural erosion.



HOW TO ACHIEVE IT

AI for Multilingual Education

Research on African Language support

What We Learned:

ChatGPT 4o: 4.1 out of 5

Claude Sonnet: 3.9 out of 5

Lelapa Inkubane : 3.75/5

Gemini Flash: 2.5/5

DeepSeek: 1.5/5



Sawubona! 

PART 2: Demonstrations

What is possible using simple text files to ‘program’ these systems
(All done using currently available applications, with no technical resource)

Time: 15:45 - 16:05

Demo 1: Text-file AI Tutor

Gemini

2.5 Flash ▾

 Invite a friend

PRO



Low
Resource

Student

Context

Hello, Niall

Ask Gemini



 Tools



 Create Image

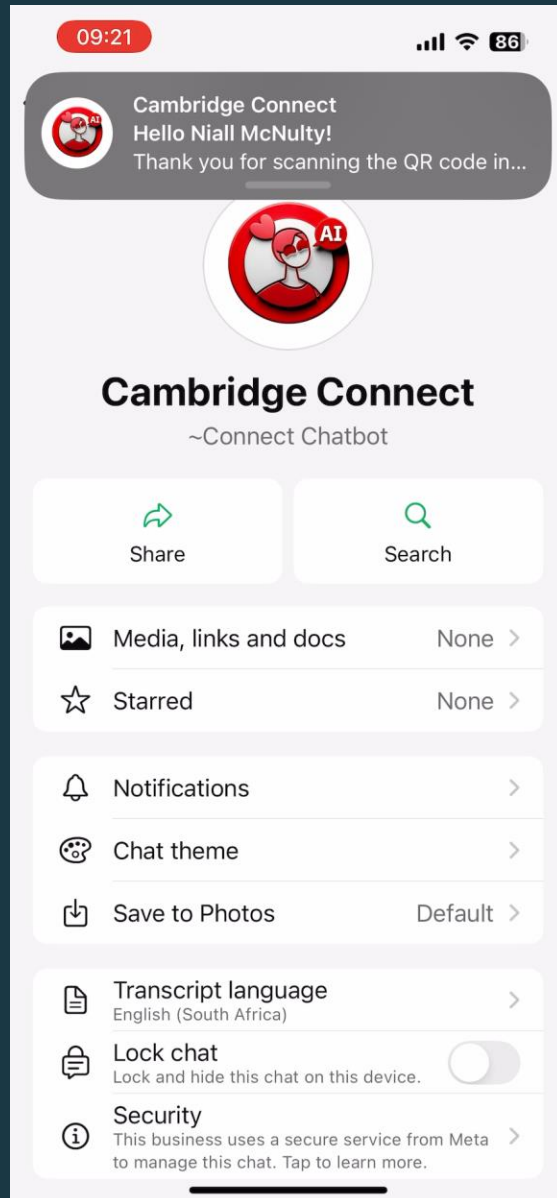
Write

Build

Deep Research

Create video

Learn



Demo 2: WhatsApp Chatbot for Teachers

- Knowledge source is CAPS curriculum docs, annual teaching plan and Cambridge textbooks
- Template for lesson plan provided
- AI is activated behind the scenes using open-source n8n workflow

Context


Low
Resource

Teacher

Demo 3: Building an Educator Context File



Template

Teacher

Gemini 2.5 Flash Invite a friend PRO 

Hello, Niall

Use the `educator_interview_script.md` file to ask the questions one by one, waiting for responses between each question. After all questions are answered, use the responses to fill in the `educator_context_template.md` file and generate a completed Educator Context File.

+  Tools 

Demo 4: Creating a Lesson Planner for Local Curriculum

← All projects

Lesson Planner

Automated lesson planner

How can I help you today?

Sonnet 4.5

- Fifth grade curriculum planning
Last message 23 seconds ago
- Sixth grade academic schedule
Last message 4 hours ago
- Grade 4 English language learning
Last message 13 hours ago

Instructions

CAPS English FAL Intermediate Phase - Automated Lesson Planner ## Project Overvie...

Files

5% of project capacity used • Retrieving

- CAPS IP FAL ENGLISH GR 4-6 WEB.pdf
10,614 lines
PDF
- evaluation
121 lines
TEXT
- template
275 lines
TEXT
- PDF

Agentic

Template

Context

Teacher

Demo 5: Formative Assessment Programme Generator

The screenshot displays the 'Formative Assessment Generator' interface. At the top left, there is a navigation link '← All projects'. The main title 'Formative Assessment Generator' is followed by a star icon and a three-dot menu. Below the title is the instruction 'Create formative assessment'. A large text input field contains the placeholder text 'How can I help you today?'. Below the input field are three icons: a plus sign, a refresh icon, and a clock icon. To the right of these icons is a dropdown menu showing 'Sonnet 4.5' and an upward arrow icon. Below the input field is a list of four project cards: 'Fifth grade English learning' (Last message 3 hours ago), 'Grade 5 Math MCQ Assessment' (Last message 1 month ago), 'Grade 4 Math MCQ Assessment' (Last message 1 month ago), and 'Grade 5 Math Assessment' (Last message 1 month ago). To the right of the chat area is a 'Files' section with a progress bar indicating '3% of project capacity used'. Below the progress bar is a grid of eight file cards, each with a title, line count, and an 'MD' icon: 'Assessment_Best_Practices.md' (787 lines), 'Differentiation_Strategies.md' (620 lines), 'Rubric_Design_Templates.md' (407 lines), 'SA_Context_Examples.md' (351 lines), 'Common_Misconceptions_Database.md' (402 lines), and 'Blooms_Taxonomy_Guide.md' (436 lines). At the bottom left of the interface, there is a chat ID: '/chat/34735079-d7f9-427a-92dd-b44437e756cb'.

Agentic

Template

Tools

Advisor

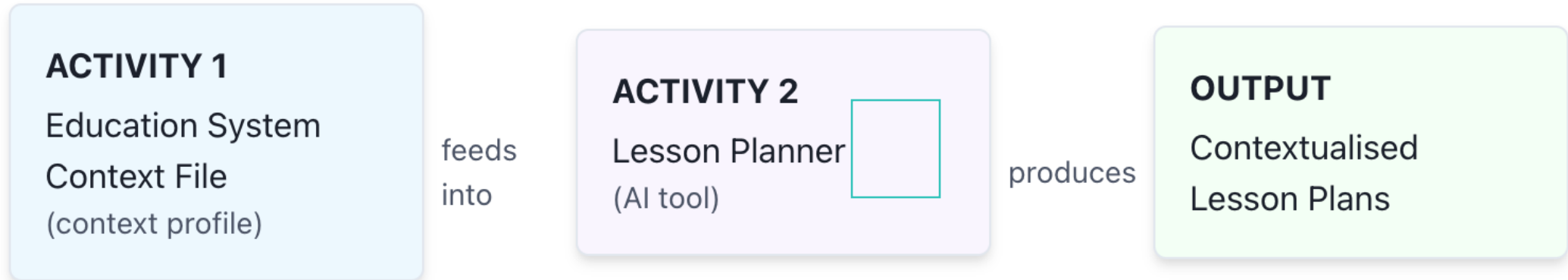
Now It's Your Turn

PART 3: Hands-On Practice

Building your AI toolkit

Time: 10:00 - 10:45

Why these two activities?



Activity 1: Create Your Education System Context File

15 minutes

YOUR TASK:

Open the Education System Context File template (make a copy or download).

Fill in YOUR teaching and education system context.

Save your edited context as a text file.



Individual

Education System Context File - Examples Provided in Folder

My Teaching Context

Role & School

I am a Grade 7 Science teacher at Moi Secondary School in Kisumu, Kenya. I teach 3 classes with 50-60 students each in a semi-urban setting

Students

My students are ages 12-14. Most speak Dholuo or Swahili at home and are learning in English (their 3rd language).

About 30% have smartphones at home, but classroom access to devices is limited to a shared computer lab with 15 computers (booked weeks in advance).

Curriculum

I teach the Kenyan CBC (Competency-Based Curriculum) for Grade 7 Science, focusing on...

Activity 1: Now Use It, With Any Chatbot

15 minutes

[Paste your Education System Context File]

1. Given this context, suggest three strategies for improving mathematics learning outcomes that are practical and scalable.
2. Create a professional development plan for teachers to integrate technology that works within our infrastructure constraints.
3. Design a pilot program for using AI to support teachers that respects our data privacy requirements and works offline.
4. What low-cost, high-impact interventions would you recommend for improving literacy in our context?

Activity 1 - Share Out

From Context to Tool

Activity 2: Build a Lesson Plan Assistant for any Chatbot

What You Need

3 Files to Download/Save:

1. **Master Instructions** - Tells the AI how to help you
2. **Lesson Plan Template** - The format for all lesson plans
3. **Your Context File** - from Activity 1

All three files provided to you - save them in one folder



You will need
access to chatbot

Pair

Activity 2: Build a Lesson Plan Assistant for any Chatbot

STEP 1: Start Fresh

- Open ChatGPT, Claude, or any AI chatbot
- Start a NEW conversation

STEP 2: Upload Files

- Upload all 3 files:
 - Master Instructions
 - Lesson Plan Template
 - Your Context File

STEP 3: Say This

"I need a lesson plan. Please follow the Master Instructions."

STEP 4: Answer 4 Questions The AI will ask:

- Subject (e.g., Science)
- Grade (e.g., Grade 7)
- Topic (e.g., Photosynthesis)
- Duration (e.g., 60 minutes)

STEP 5: Get Your Lesson Plan

- Download the file
- Print or use digital
- Ready to teach

Activity 2 - Share Out

What else could we build?

- For **teachers**: You could build an **assessment designer** that creates quizzes aligned to your curriculum. Or a **differentiation assistant** that adapts materials for struggling learners. Or a **parent communication helper** that drafts report cards or updates in your school's style.
- For **school leaders**: You could build a **curriculum planning tool** that helps you map out the year. Or a **professional development resource generator**. Or a **data analysis helper** that interprets your school's performance data.
- For **district officials**: You could build tools for **teacher deployment**, resource planning, scaling professional development across your district, monitoring and evaluation.
- For **policymakers**: You could build a **policy analysis assistant** that reviews proposed policies against evidence. Or a **budget impact analyser**.

Framework for Success



PROMPTS

Instructions matter

Clear, specific prompts lead to better outcomes.
Be precise about what you want.



CONTEXT

Specificity creates relevance

Provide relevant background information to frame the response appropriately.



WORKFLOW/TOOLS

Build once, use forever

Create reusable templates and processes to streamline your work.

Key Takeaways

What we learned today

What We Learned

- AI tools are accessible now (free tiers available)
- Simple text files + AI = powerful teaching assistants
- Context engineering ensures cultural relevance
- AI can be affordable and scalable with right approach
- Test tools for your languages and context
- Think about workflows, templates, and where humans add value
- Infrastructure-appropriate solutions exist

Digital Education Leadership Programme

In **development** – in partnership with:

unicef  | for every child



6 domains:

- *Strategic Leadership*
- *Governance & Policy*
- *Technical Evaluation*
- *Data-Driven Decision Making*
- *Capacity Building*
- *Financial Sustainability*

A learning journey in 7 modules to support Learning Pioneers and Tech4Ed countries

- *sustained and structured learning opportunities* throughout the Learning Pioneers Journey to build relevant digital transformation content knowledge and apply it to their national digital education frameworks.
- *collaborative country-to-country networks and activities* to help you leverage tech for your education system with a partnership network.

Virtual (Zoom)

2 hours per module

Once every 3 weeks

Expert lecture

Flipped classroom activities

Plenary discussion

Self-paced online

Written learning content

Instructional videos

Interactive knowledge checks

Case study analysis

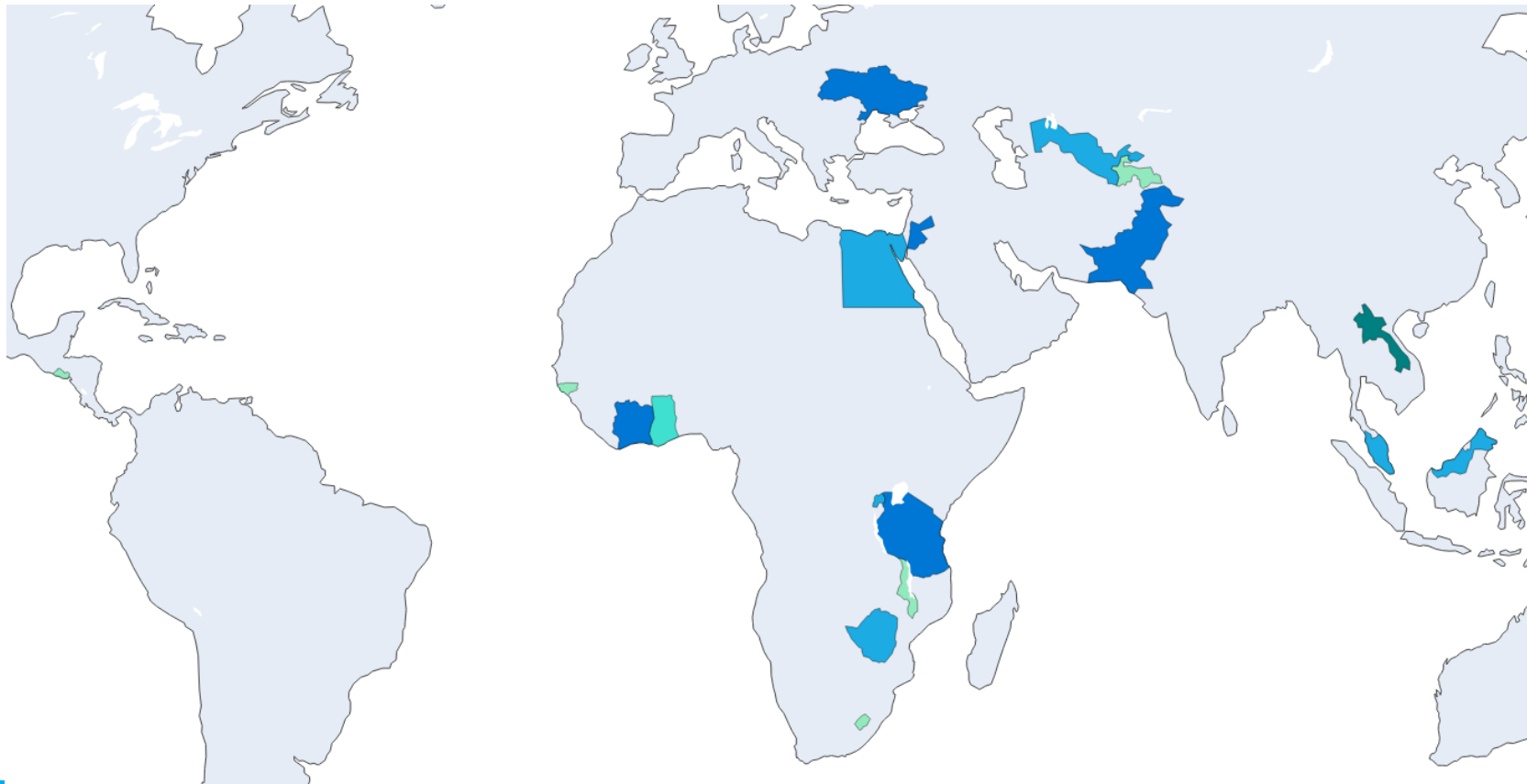
Digital Education Leadership Programme Structure

- Hybrid learning (online, virtual session, AIED)
- Lectures from specialists from Cambridge University and elsewhere
- Course covers:
 - Module 1: Technology in Education System Transformation
 - Module 2: Coordination and Leadership
 - Module 3: Content and Solutions
 - Module 4: Culture and Capacity
 - Module 5: Data, AI and Evidence
 - Module 6: Connectivity and Infrastructure
 - Module 7: Cost and Sustainability

More information
coming soon!

The leaders

2-3 leaders from 18 MoEs and UNICEF COs



Initiative

- Tech4Ed
- Tech4Ed and LPP1
- Tech4Ed and LPP2
- LPP1
- LPP2

El Salvador, Guinea-Bissau, Lesotho, Malawi, Maldives, Tajikistan, Ghana, Lao PDR, Egypt, Uzbekistan, Rwanda, Zimbabwe, Malaysia, Côte d'Ivoire, Jordan, Pakistan, Tanzania, and Ukraine.



Questions?