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From Prompting to Context Engineering

Building AI Tools for Country-Specific Education

What we'll cover today

- What is happening with AI and education?
- Understand the components of effective prompts
- See the importance of context for culturally-relevant AI for education
- Build a Kuwait-specific educational context file

AI Projects at Cambridge

- Teach '**Designing Assessments with AI**' for Cambridge Assessment
- Delivering the Cambridge UNICEF GPE **Digital Education** Leadership Programme
- Lead a project on **AI for STEM Teaching** in Kuwait
- Developing an **AI for school leaders** programme
- HP Futures: **AI & Educators Council**, Cambridge HP Edtech Fellowship
- **AI lesson planner** for local curriculum in the Maldives
- Creating local curriculum content using **AI and open-source tools**
- WhatsApp teacher support **AI chatbot** for South Africa curriculum



PART 1: GLOBAL CONTEXT

2025: The Inflection Point

Key Trends

- 1 National AI curricula becoming standard 
- 2 Shift from "AI literacy" to "AI integration across subjects" 
- 3 Government-led, mandatory implementation 
- 4 Focus on preparing students AND teachers 
- 5 Emphasis on assessment validity and learning outcomes 



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Understanding AI

And how we can start using it to support education

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.

Types of AI Used 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)

AI Across Schooling System



Curriculum

Policy development, resource allocation, guidelines



School Leadership

Implementation strategies, staff development, infrastructure planning



Teachers

AI-enhanced pedagogy, tool proficiency, ethical use in classrooms



Learners

AI literacy, critical thinking skills, responsible use of AI tools



Parents

Understanding AI's role in education, supporting children's AI literacy

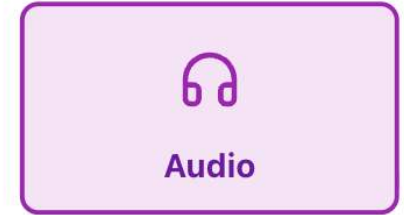
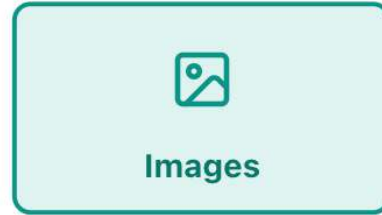


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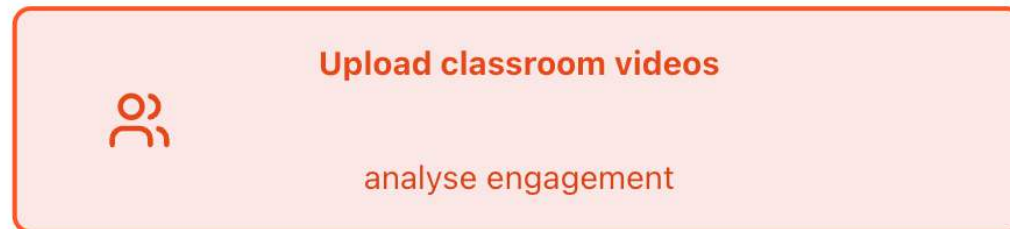
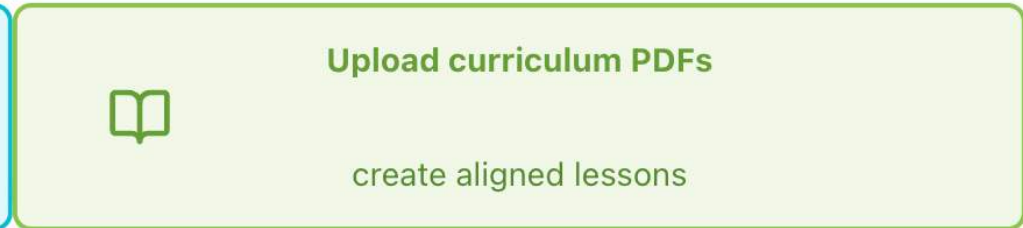
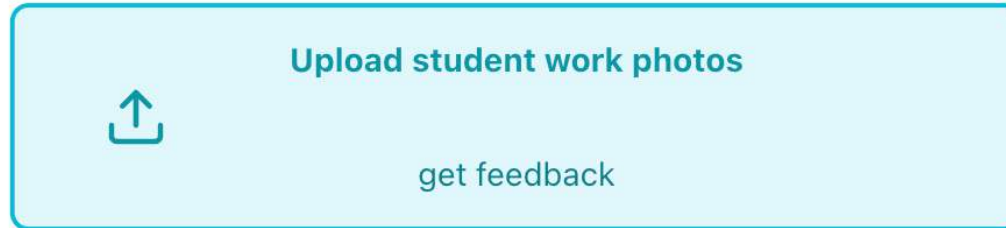
What's New in AI?

Recent advances that matter for education

Multimodal Models



What This Means For You



Reasoning



Better at complex problem-solving



Break down multi-step problems



Check their own work

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**



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Critical Considerations

Making informed decisions as educational leaders

Key Questions



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?

PART 2: PROMPT ENGINEERING FUNDAMENTALS

The Difference: Vague vs. Specific

Vague Prompt (A Wish): *Write something about our new Cambridge resource*

→ Leads to generic, unpredictable results.

Specific Prompt (An Instruction): *Write a 2-paragraph executive summary of our Grade 9 Maths digital resource for school principals deciding on adoption. Highlight: alignment with curriculum standards, evidence of learning gains from pilot schools, and implementation support included. Professional but accessible tone.*

→ Leads to targeted, useful content.

Same AI, Different Results ...

Good prompting is:

A Skill

Anyone can learn it with practice

A Multiplier

Better prompts = better outputs

An Investment

Reusable templates save hours weekly

The Anatomy of an Effective Prompt

A great prompt provides a clear **CRAFT**:

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

C = Context

What it is:

The background information and situation. The "why" behind your request.

Why it matters:

Without context, AI makes assumptions that may not fit your needs. Context helps the AI understand constraints, audience, and purpose.

 R = Role**What it is:**

Who you want the AI to act as or think like.

Why it matters:

Different roles bring different expertise, vocabulary, and perspectives. A curriculum developer writes differently than a marketing manager.

Why This Works

1. Activates Relevant Patterns

- "You are a lawyer" AI draws from legal language patterns
- "You are a Foundation Phase teacher" AI draws from simple, clear explanations

2. Sets Tone and Expertise Level

- Expert consultant = strategic, high-level
- Peer reviewer = constructive, detailed
- Enthusiastic teacher = encouraging, explanatory

3. Creates Consistency Role maintains throughout the conversation

A = Action

What it is:

The specific task or verb. What should the AI actually do?

Why it matters:

Vague verbs like "help me with" or "do something about" lead to vague outputs. Clear action verbs get clear results.

F = Format

What it is:

The structure and layout of your desired output.

Why it matters:

Format makes content usable. A 500-word paragraph isn't helpful when you need a quick-reference table. Specifying format saves revision time.

T = Tone

What it is:

The voice, style, and emotional quality of the writing.

Why it matters:

Tone shapes how content is received. Executive summaries need formality; Grade 3 content needs warmth and simplicity. Wrong tone = rewrite.

Common Issues

1. Ambiguous Language

The AI doesn't know what "make it better" or "make it more interesting" means.

Be specific: "Make it more engaging for a 12-year-old by adding a real-world analogy."

2. Assuming Prior Knowledge

Don't assume the AI remembers your last prompt perfectly.

Include all necessary context in each new prompt.

3. Chaining Too Many Tasks

Asking the AI to do too many things at once can degrade quality.

Break complex requests into steps: First, summarise this text. Next, pull out the key terms. Finally, write three questions about it.

Sample Strong Prompt

[CONTEXT] You will be researching Kuwait Towers, an important Kuwaiti landmark and symbol of modern Kuwait. This content is for a Grade 6 Social Studies textbook chapter on Kuwaiti national landmarks and cultural heritage.

[ROLE] Act as an experienced curriculum developer who specialises in creating engaging, age-appropriate educational content for Kuwaiti primary school students in bilingual (Arabic-English) classrooms.

[ACTION] Research this topic online, complete these two tasks:

1. Create a summary in exactly three bullet points highlighting the most important facts for Grade 6 learners
2. Design a "Key Terminology" box with definitions for the terms 'architectural landmark' and 'water reservoir'

[FORMAT]

Summary: Three bullet points, each containing 15-20 words

Key Terminology Box:

- Two terms defined
- One sentence per definition
- Include a simple heading "Key Terminology"

[TONE] Use clear, accessible language suitable for 11-12 year old readers. Write in an engaging, educational style that maintains accuracy while avoiding overly technical jargon. Keep definitions simple and relatable to students living in Kuwait.

The Strong Prompt Result

Gemini

 Invite a friend

- These three slender towers are a **national symbol** of modern Kuwait, showcasing its economic prosperity and unique architectural strength.
- The towers primarily function as **water reservoirs**, storing purified seawater to help supply clean water to Kuwait City residents.
- The main tower features a **rotating observation deck** and restaurants, offering visitors panoramic views of the entire Arabian Gulf.

Key Terminology

Term	Definition
Architectural Landmark	An architectural landmark is a famous, distinctive building that serves as an important symbol for a city or country.
Water Reservoir	A water reservoir is a large, secure container or tank used to store huge amounts of purified water before it reaches people's homes.

Top Tip

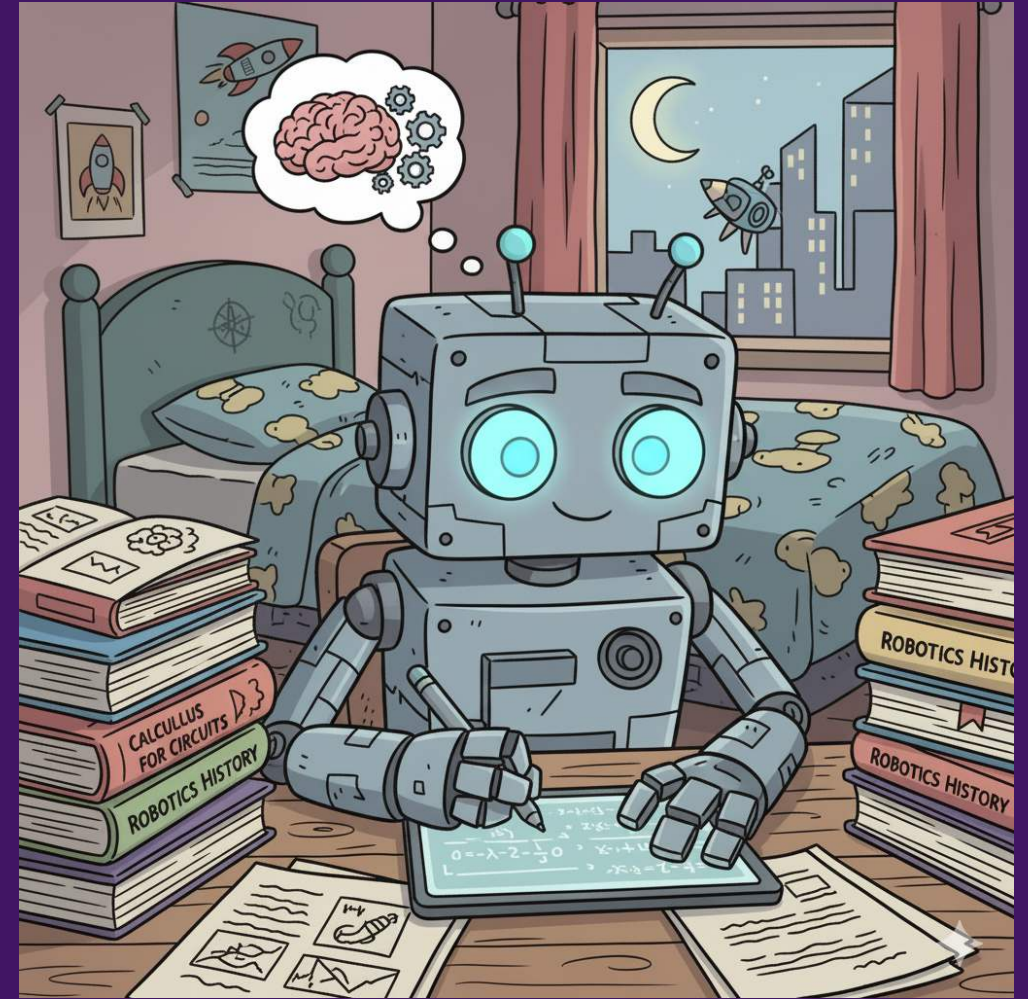
The meta-prompt approach: Ask the AI to help you write better prompts!

Try This:

Help me improve the following prompt using the CRAFT Framework:

- *Context: Background and situation*
- *Role: Who should the AI act as?*
- *Action: What specific task to complete*
- *Format: How should the output be structured?*
- *Tone: What voice and style to use?*

[Paste your draft prompt here]



PART 3: CONTEXT ENGINEERING

What you must re-specify every single time:

"You are teaching in Kuwait"

"Use local examples: solar, oil, desalination"

"Align with Kuwait National Science Standards"

"Consider bilingual (Arabic/English) classrooms"

"Account for 25-30 students per class"

"Use resources available in standard Kuwait schools"

Result:

Repetitive. Time-consuming. Error-prone.

The question: What if AI could REMEMBER this context?

LEVEL 1 Prompt Engineering

Crafting the perfect instructions for ONE task

LEVEL 2 Context Engineering

Designing PERSISTENT knowledge that AI remembers across ALL tasks

The Shift:

From: Telling AI what to do

To: Giving AI WHO you are, WHERE you teach, WHO your students are

Technical definition (Anthropic, 2025):

"Context engineering is the practice of designing systems that decide what information an AI model sees before it generates a response."

Current AI models are trained on:

- Primarily Western educational content
- English-language curriculum
- American/European cultural examples
- Generic teaching contexts

Without context engineering, you get:

Category	Western Default	Kuwait Reality
Examples:	"Thanksgiving dinner"	"Ramadan iftar"
Climate:	"Winter sports"	"Desert heat adaptation"
Resources:	"School bus"	"Parent drop-off"
Standards:	"Common Core"	"Kuwait National Standards"

Context engineering is how we LOCALIZE AI to Kuwait.

What Makes Kuwait Different?

Environmental Context

- **Desert climate**
→ Unique energy/water challenges
- **Oil economy**
→ Different sustainability priorities
- **Solar potential**
→ Specific renewable energy opportunities
- **Desalination reliance**
→ Water scarcity education critical

Educational Context

- **Bilingual classrooms**
(Arabic/English scientific terminology)
- **Large class sizes**
(30-35 students)
- **Specific resource constraints**
- **Kuwait National Standards alignment required**

Cultural Context

- **Islamic values integration**
- **Gulf region examples and case studies**
- **Local industry connections**
(oil, energy, water)

Generic AI (No Context)

PROMPT:

"Create a lesson on renewable energy"

OUTPUT:

- Solar panels for homes
- Wind turbines
- American standards
- Fahrenheit temperatures

Culturalised AI (With Kuwait Context)

CONTEXT FILE:

Kuwait education profile + Grade 8 standards

PROMPT:

"Create a lesson on renewable energy"

OUTPUT:

- Kuwait's solar potential
- Oil economy transition
- Desalination energy use
- Celsius, Arabic terms
- Aligned to Standard 8.4

PART 4: CONTEXTUALISED AI SYSTEM DEMONSTRATION

AI-Powered Formative Assessment Generator

WHAT IT IS

-  AI-powered formative assessment generator
-  Creates curriculum-aligned questions
-  Includes 8 question types
-  Built-in SA context & Bloom's taxonomy

WHY IT WORKS

-  Context engineering (not just prompts)
-  Reusable knowledge files
-  Consistent quality
-  Culturally relevant examples

COMPONENTS

-  Local context file (places, currency, culture)
-  Bloom's taxonomy guide
-  Question type templates
-  Best practices & misconceptions

The Knowledge Files That Make It Smart

LOCAL CONTEXT FILE

-  9 provinces & cities
-  Currency (Rand)
-  Local foods, sports, transport
-  Cultural sensitivity guidelines

BLOOM'S TAXONOMY

-  6 cognitive levels
-  Command words per level
-  Curriculum-aligned distributions
-  Time/mark allocations

QUESTION TEMPLATES

-  MCQ generator
-  Short answer format
-  Scenario-based
-  Differentiated versions

BEST PRACTICES

-  Common misconceptions
-  Rubric guidelines
-  Marking criteria
-  Differentiation strategies

Demo: Formative Assessment Assistant

41

← All projects

Formative Assessment Generator

Create formative assessment

How can I help you today?

+ ↺ ⌚ Sonnet 4.5 ↗

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

Grade 5 Math Assessment
Last message 1 month ago

Instructions

Overview You are an AI assistant specialised in creating detailed, curriculum-aligned formative...

Files

3% of project capacity used

Assessment_Best_Practices.md 787 lines MD	Differentiation_Strategies.md 620 lines MD
Rubric_Design_Templates.md 407 lines MD	SA_Context_Examples.md 351 lines MD
Common_Misconceptions_Database.md 402 lines MD	Blooms_Taxonomy_Guide.md 436 lines MD

/chat/34735079-d7f9-427a-92dd-b44437e756cb

Agentic

Template

Tools

Advisor

ACTIVITY: BUILD YOUR KUWAITI EDUCATIONAL CONTEXT FILE

STEP 1: Gather Kuwait Essentials

-  Currency & typical prices
-  Local places (governorates, landmarks)
-  Common foods & activities
-  Curriculum standards



STEP 2: Create Simple Context File

-  Use template provided
-  Fill in Kuwait-specific details
-  Add 2-3 local examples per section



STEP 3: Test It

-  Generate one question together
-  Compare: generic AI vs. your context
-  See the difference immediately

Question Templates (edit/make your own)



MCQ Template

When:

Testing knowledge recall & understanding

Output:

4-option questions with distractor analysis



Short Answer Template

When:

Explaining concepts, showing work

Output:

Structured questions with marking guides



Quick Check Template

When:

Exit tickets, warmups, daily checks

Output:

5 rapid-fire diagnostic questions



Scenario Template

When:

Real-world application, complex problems

Output:

Multi-part questions with context



Differentiated Template

When:

Mixed-ability classes

Output:

3 versions
(Foundation/Core/Extension)



Download files here:

https://drive.google.com/drive/folders/1LujQOJrbTsfbFxaghZE41msQofz4PCiR?usp=drive_link

Now test your contextualised AI system ...

Upload context and specific template files with a request for one type of assessment content for a specific grade, subject and topic

- What worked well?
- What improvements would you make?

Your Questions?



Get in touch

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Thank you