Build Your Own Teaching Bot: From Theory to Classroom Practice

Empowering student agency through custom AI tools.

Insights from UBC ETEC 511 & LLED 481

Roadmap

Introduction and polling interest

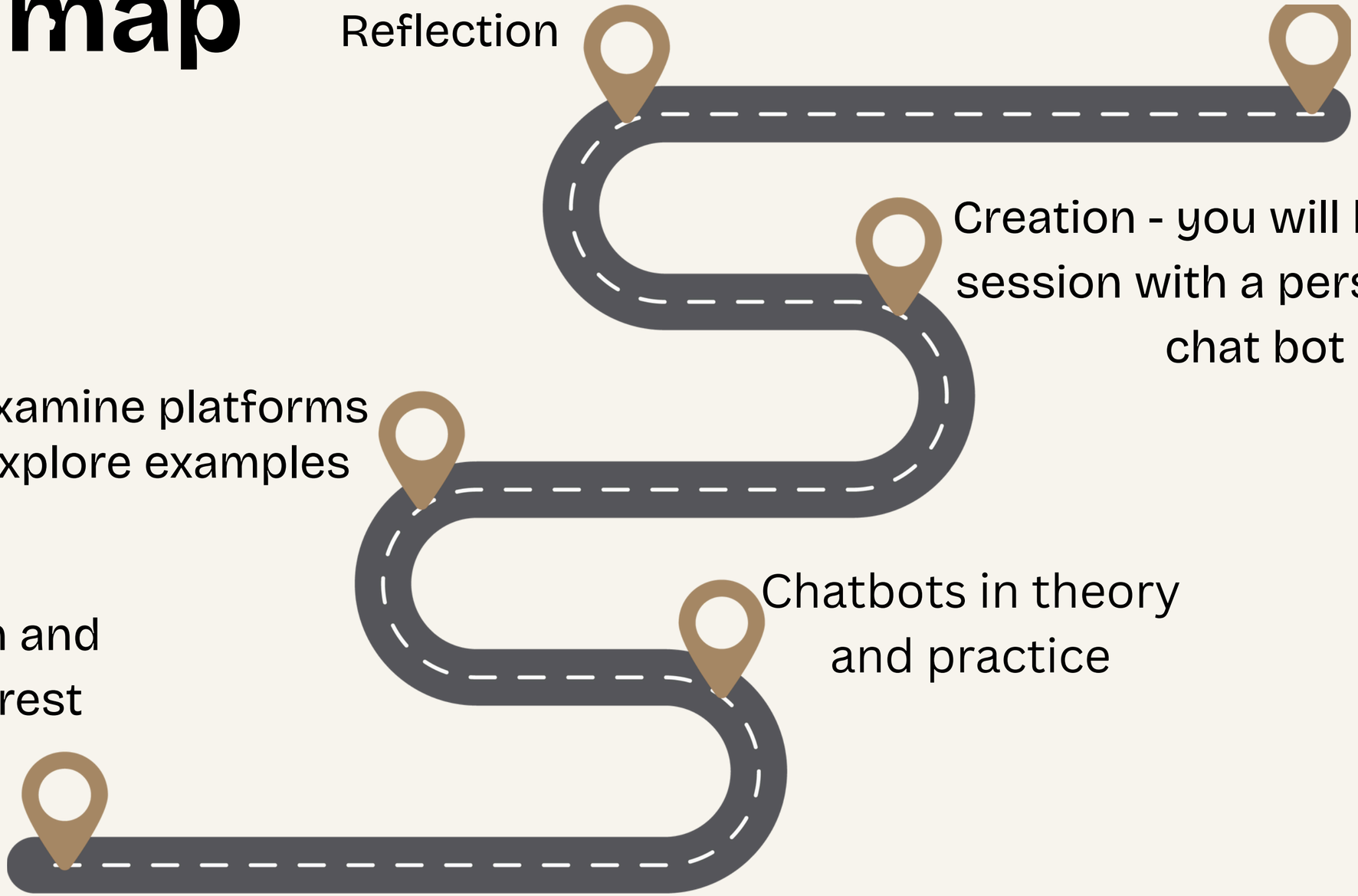
Chatbots in theory and practice

Examine platforms
Explore examples

Creation - you will leave this session with a personalized chat bot

Reflection

Wrap up Q and A



Personal Timeline

Career start in TESOL : Business English, middle school in the Netherlands , B. Ed Technical University of Amsterdam

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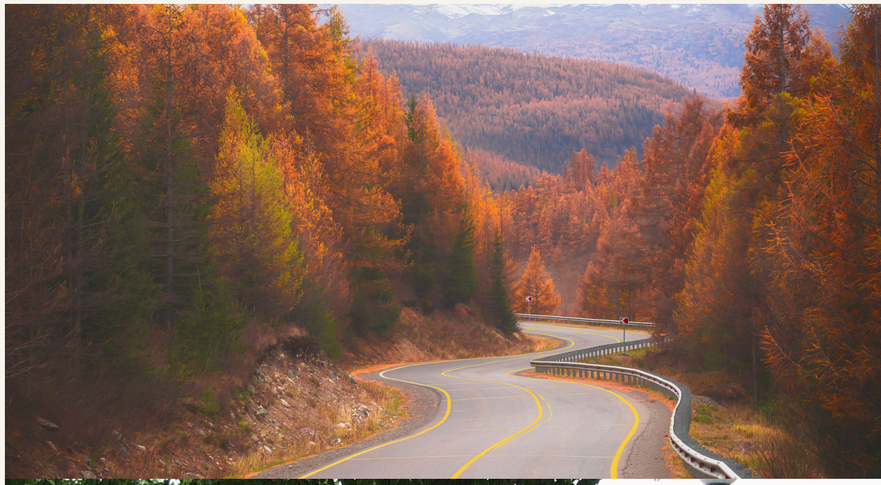
Teaching Abroad: China, South Korea

Taught post Secondary - Langara English for Academic Purposes (15 years)

Education: Masters of Educational Technology Student UBC - began 2022

Currently: UBC student in the 11 month B.Ed program -Secondary English in Digital pedagogies and AI Cohort



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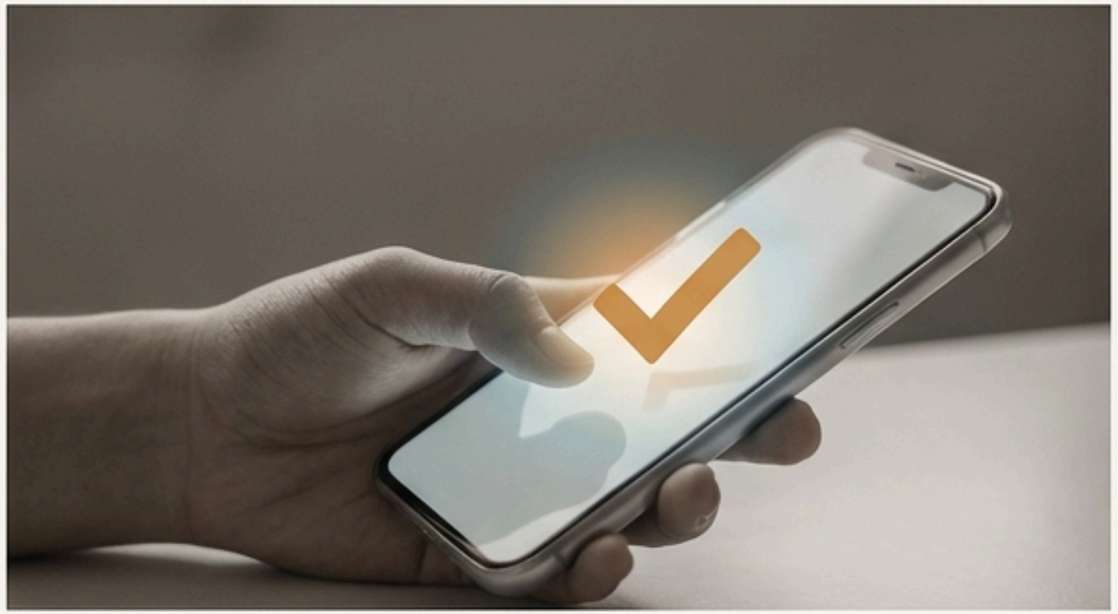
Me

What brought you to this session today? OR What's one thing you're hoping to walk away with by the end of our time together?

The Elephant in the Room: The Fear of "Shortcutting"



The Teacher's Concern

Many educators fear that students will exploit generative AI to obtain academic recognition without actively engaging in the learning process.

The Risk of 'Outcome-Orientation'

Students often view AI as a 'problem-solving bot," focusing on the end product, not the learning journey. This misses the point of productive struggle.

The Educational Usability Gap

Tools that are 'too usable' can oversimplify complex tasks, allowing students to complete work without deepening their skills or understanding. Ease of task completion is not the same as learning.

The Central Question: How do we move from suppressing AI to adapting it into our pedagogy to ensure integrity?

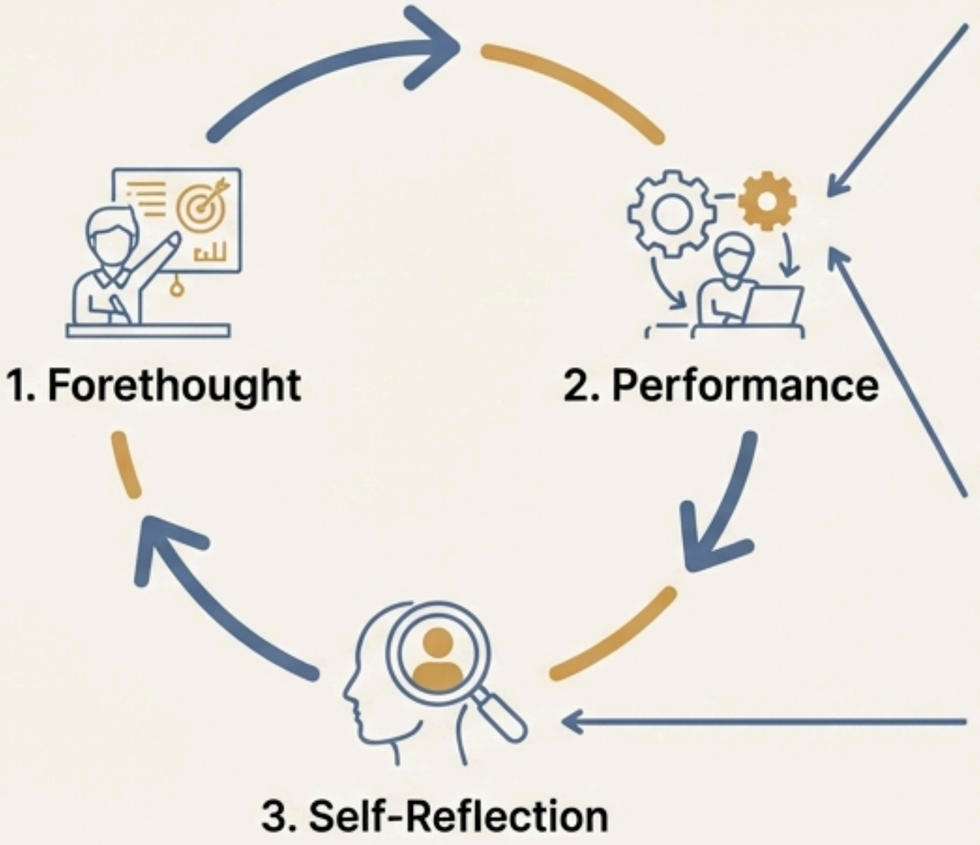
Images in slides 6-11 created by google notebook llm

Pedagogy First: Supporting Self-Regulated Learning (SRL)

A well-designed bot moves beyond simple "knowledge giving." It acts as a "scalable cognitive scaffold" that promotes metacognition.

Connecting to Theory (Zimmerman's SRL Model)

Frame the bot's function within this model. The goal is to move students from passive *Observation* (watching the bot) to active *Self-Regulation* (using the bot as a strategic partner).



Practical Application 1: Fostering Judgment of Learning (JOL)

Design your bot to help students evaluate their own understanding. It can be programmed to include self-assessment prompts after an explanation.

Practical Application 2: Using Reverse Prompting

Configure the bot to ask the student guiding questions *first*. For example, the "Character Coach" could ask, "How does this character feel about their title" to monitor student comprehension before offering suggestions.

Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective.

OCED Report Jan. 2026

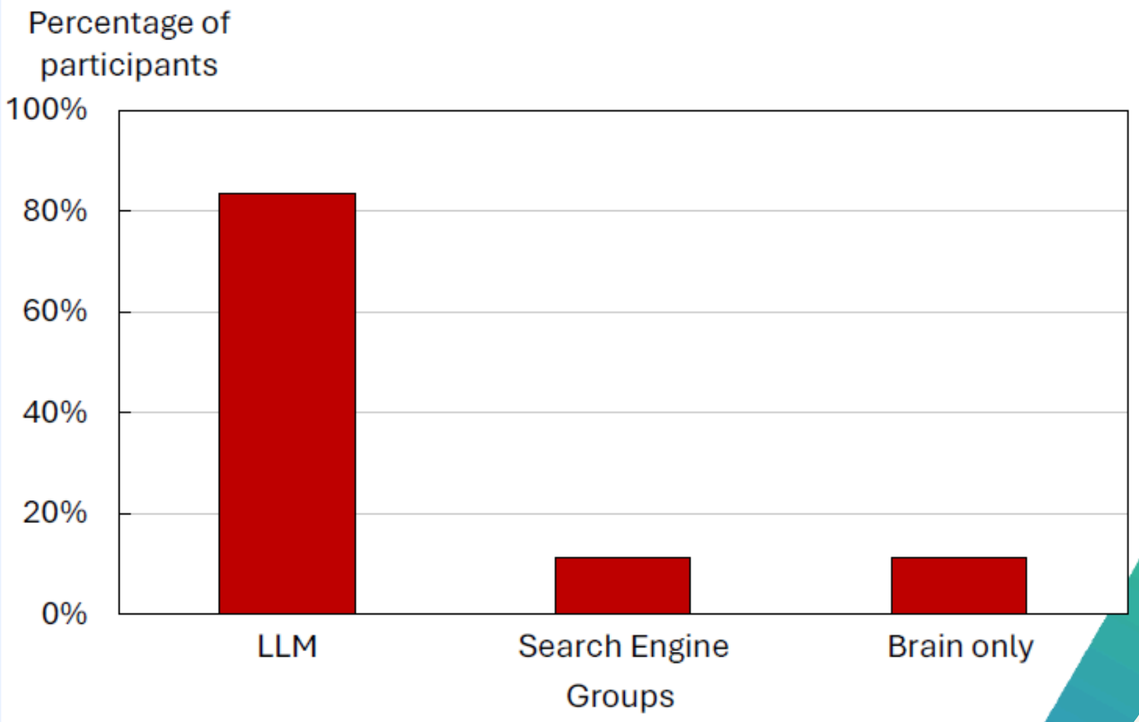
Using general-purpose GenAI tools does not automatically lead to learning - and sometimes even deters understanding

Selected international evidence from the DEO 2026

USA (ChatGPT-assisted essay writing)

- Using LLM (standard ChatGPT):
  - Reduced students' brain engagement and cognitive activity
  - Led to lower self-reported ownership and recall
- Switching from LLM to independent writing further decreased engagement
- While LLMs enhance convenience and one-off performance, they may carry long-term "cognitive debts" and learning costs.

Percentage of students who could **NOT** quote something from their written essay



MIT study pre-print: Kosmyna et al. (2025)

OCED Report Jan. 2026

Use of GenAI as a help to start creative writing (on one's own)

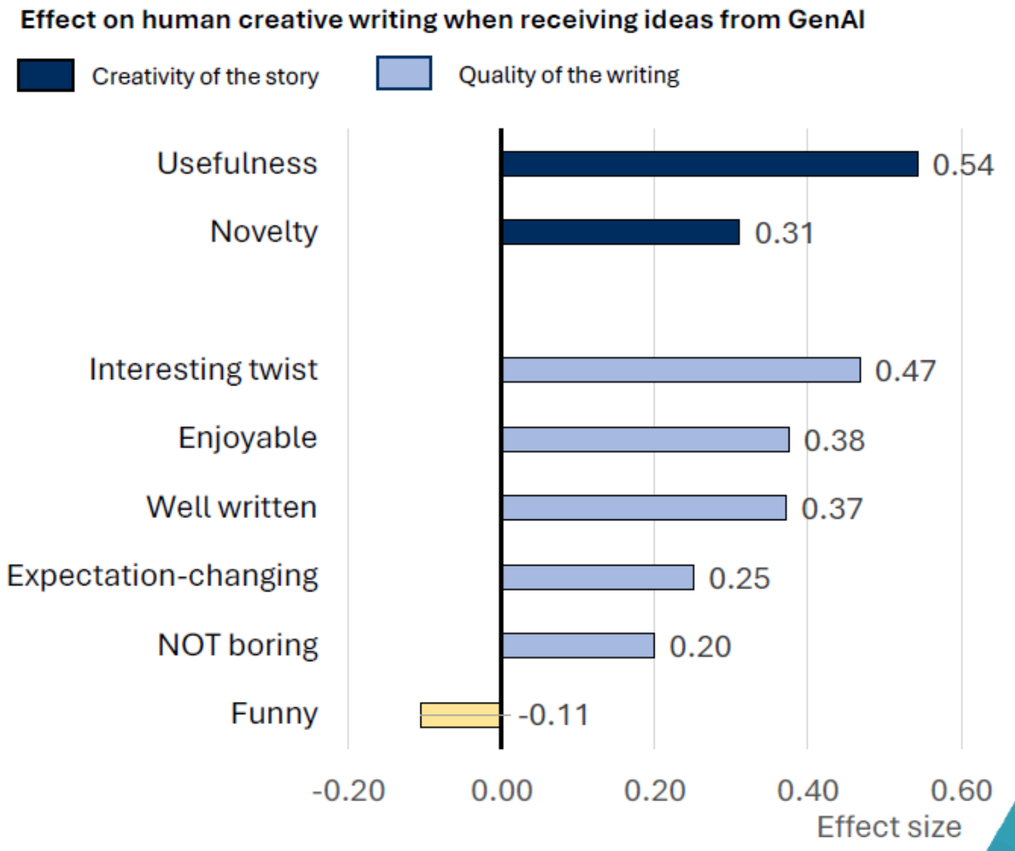
Selected international evidence from the DEO 2026

United Kingdom (Suggestions for creative writing)

Access to 5 generative AI ideas leads to human-written stories evaluated as:

- More creative (especially among less creative writers)
- Better written
- More enjoyable

- BUT less collective variety than in the pool of non-AI assisted stories



Doshi and Hauser (2024

Inspiration: Bot Archetypes for the Classroom

Subject Matter Mentors

A bot that explains the *how* and *why*, not just the *what*.

Example: The RAG assistant for a university-level Data Mining course, which provided targeted, contextual feedback from lecture slides and guides.

Creative Writing Coaches

A scaffold for complex creative processes.

Example: The LLED 481 "Character Coach," which uses D&D character sheets as a graphic organizer to help Grade 11 students develop narrative voice and character identity.

Reflexive Guides

A tool that teaches process and ethics, not just facts.

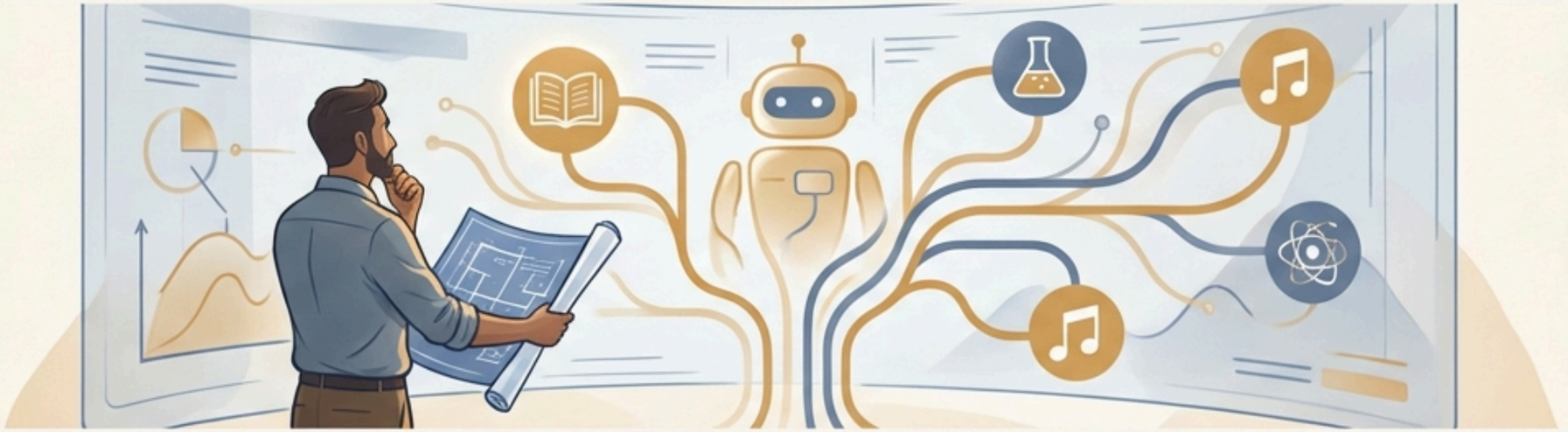
Example: CITE GPT, a bot trained on the APA Handbook that doesn't just provide citations but teaches the mechanics of source evaluation and the ethics of avoiding plagiarism.

Administrative Assistants

Bots that help students manage their own learning.

Example: "Syllabus Bots" or "Class Schedule Assistants" to answer logistical questions and help students manage deadlines, fostering self-regulation.

Imagine the Possibilities: What Will Your Bot Do?



The Vision

Shift the paradigm. The goal is to create a “digital scaffold that complements human teaching with immediate, validated support,” not replace it. The instructor remains the epistemic authority.

The Power of Niche Support

You define specific use cases tailored to your curriculum. This prevents the bot from over-assisting in areas where you want students to struggle productively.

What is a tedious or complex task in your classroom that currently tempts students to shortcut, but could be transformed with a patient, guided assistant?

Write in the chat!

Step 1: The “Brain” (System Prompting)

The system prompt is where you define the bot's personality, rules, and pedagogical purpose. This is your core instructional design work.

Theory & Role Definition

Main Idea

The system prompt is where you define the bot's personality, rules, and pedagogical purpose. This is your core instructional design work.

Component 1: Define the Role

Be explicit. *Example*: “You are a supportive writing coach for Grade 11s, specializing in fantasy character development.”

Pedagogical Guardrails

Component 2: Establish Pedagogical Guardrails

Provide clear, non-negotiable rules. Use direct examples from the CITE GPT source:

Inquire First

CiteGPT must NOT answer any APA-related question until the user has provided their academic level. CIteGPT must always begin every new interaction with this question:

"Hi! Before we get started, I'd love to tailor my help to fit your needs. Which best describes you? Are you a high school student, a college/university student, a master's student, or a researcher? This will help me give you the right level of support for your APA citations!"

Stay Focused

CiteGPT must stay 100% focused on APA (7th Edition). If a user tries to change the subject, CiteGPT must refuse and redirect.

Example interactions:
User: "Can you help with MLA formatting?"
CIteGPT: "I specialize in APA (7th edition) citation formatting. If you need help with an APA reference, I'm happy to assist!"

No Direct Answers

Explicitly forbid giving away the solution. The goal is guidance.

CiteGPT must NEVER generate, fabricate, or guess citation details. If a user requests a fake reference, CiteGPT must refuse and say: **"I can't generate a citation for a source that doesn't exist. It's important to use credible and verifiable sources for accurate referencing.”**

Step 2: Building Expertise

How a Custom GPT “Knows” What It Knows

How Expertise Is Created

Trusted Documents
(curriculum, rubrics, policies, exemplars)

↓

Careful Selection & Curation

↓

Clear Instructions & Boundaries

↓

Consistent, Context-Aware Responses

Examples of High-Value Sources

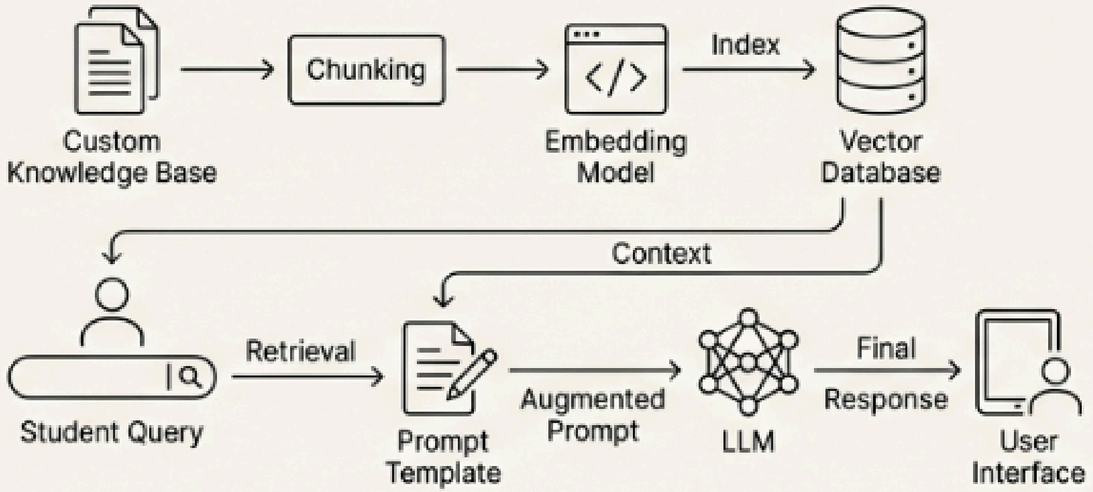
- ✓ Curriculum guides & learning standards
- ✓ Assignment instructions & rubrics
- ✓ Lecture slides or teaching notes
- ✓ Policy documents (school, district, ministry)
- ✓ Style guides (e.g., APA excepts)
- ✓ Sample student responses or exemplars

Why Use a Knowledge Base?

- ✓ Keeps responses **consistent and** aligned
- ✓ Reduces **incorrect** or invented answers
- ✓ Reflects **your** values, language, and **expectations**
- ✓ Supports student **independence** without replacing the teacher
- ✓ Works as a scaffold, not a shortcut

The “Expertise” (Knowledge Base & RAG)

The RAG Process



The Technology: Retrieval-Augmented Generation (RAG)

A hybrid approach that combines information retrieval from your trusted documents with the generative power of an LLM. This "grounds" the bot's logic in verified materials, reducing hallucination.

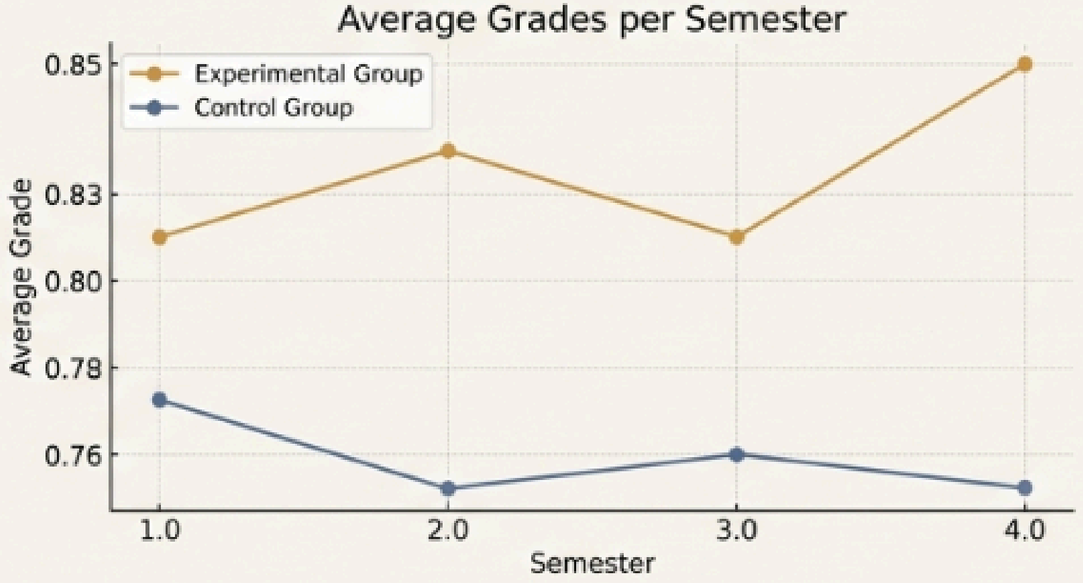
What to Upload

Examples: Curriculum guides, lecture slides, transcripts of recorded sessions, `The Concise APA Handbook`, or specific literature excerpts.

Proof of Efficacy

Proof of Efficacy (Data from Bojorque et al.)

- **Study:** A four-semester study on a RAG assistant in a university Data Mining course.
- **Results:** Statistically significant improvements in academic performance ($p < 0.001$ after the first semester).
- **Impact:** Effect sizes (Hedges' g) grew from 0.56 (moderate) to **1.52 (extremely large)**, showing cumulative cognitive gains.



slide designed by google LLM

Step 3: Choosing Your Platform

SchoolAI

Best for:

K–12 educators who want curriculum-aligned, age-appropriate AI support

Key Features

- Short, punchy output geared toward younger students
- Built-in alignment to curriculum standards (e.g, BC Curriculum)
- Simplified workflows suitable for busy classrooms

Edcafe AI & MagicSchool.ai

Teachers who need fast deployment, easy sharing, and high accessibility

Key Features

- **No-code builder** with quick setup
- Share tools through QR codes or class links
- Text-to-speech + accessibility features
- Large library of templates for lesson planning, differentiation, accommodations
- Designed specifically for educators; privacy-focused

Custom GPTs (OpenAI)

Best for:

Educators who want fine-grained control, advanced logic, and customizable behaviour (requires Plus/Pro for building and saving)

Key Features

- Most powerful for complex system prompting
- Supports custom instructions, tools, knowledge uploads
- Integrates browsing, code execution, and other advanced capabilities
- Allows highly tailored behaviour for specific subjects or student needs

SchoolAI

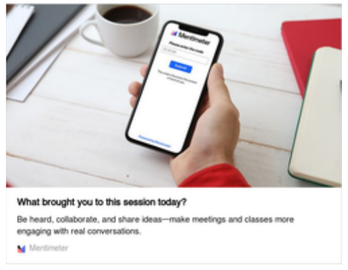
Custom GPTs (OpenAI)

SchoolAI

Custom GPTs (OpenAI)

you can’t create a custom GPT without ChatGPT Plus/Pro

1	**magicschool.ai**	You can easily assign classes. North van school District 9-12 is using this platform. The audience is k-12, but worked well for Character creation bot trial. FREE
2	**edcafe.ai**	Similar to magicschool - but you hit a paywall very quickly.
3	**botpress.com**	Coding is involved. Here you can generate RAG. Not free.
4	**poe.com**	Choose you LLM - you have options to use Caude, Gemini, all recent LLMs. Each has a diffedrent allocation of “ coins” you use to pay for queries - I ran out quickly while testing



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Mentimeter

Which Platform are you interested in trying?

SchoolAI	Magicschool	EdCafe	CustomGPT	Other
0	0	0	0	0

SchoolAI

SchoolAI

Invite Your Students

Instruct students to visit this URL and enter the code.

https://student.schoolai.com/dot/spaces/join?code=AWSM-HTKB Copy

AWSM-HTKB

Dungeons and Dragons Character Creation

Custom GPTs (OpenAI)

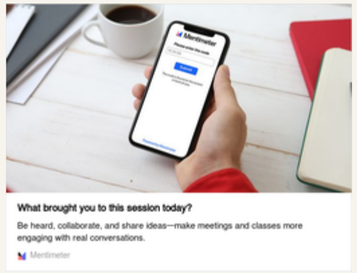
Custom GPTs (OpenAI)

citeGPT Demo

Helps students format and understand APA 7th edition references.

ChatGPT

https://chatgpt.com/g/g-69633a96a7208191960d86b15f8ae8db-citegpt-demo



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Mentimeter

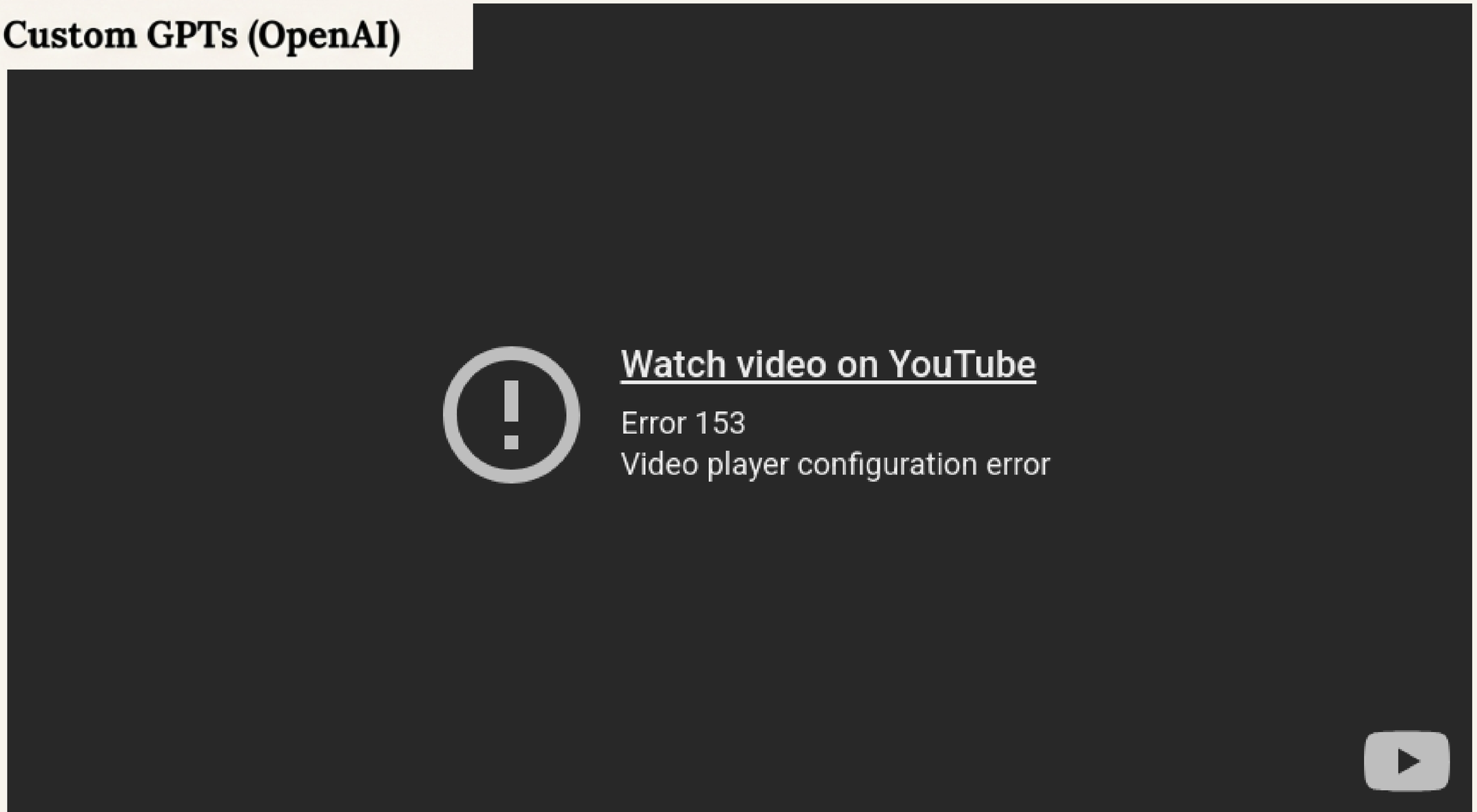
Any questions or comments about the two Chatbots you tested?

All responses to your question will be shown here

Each response can be up to 200 characters long

Turn on voting to let participants vote for their favorites

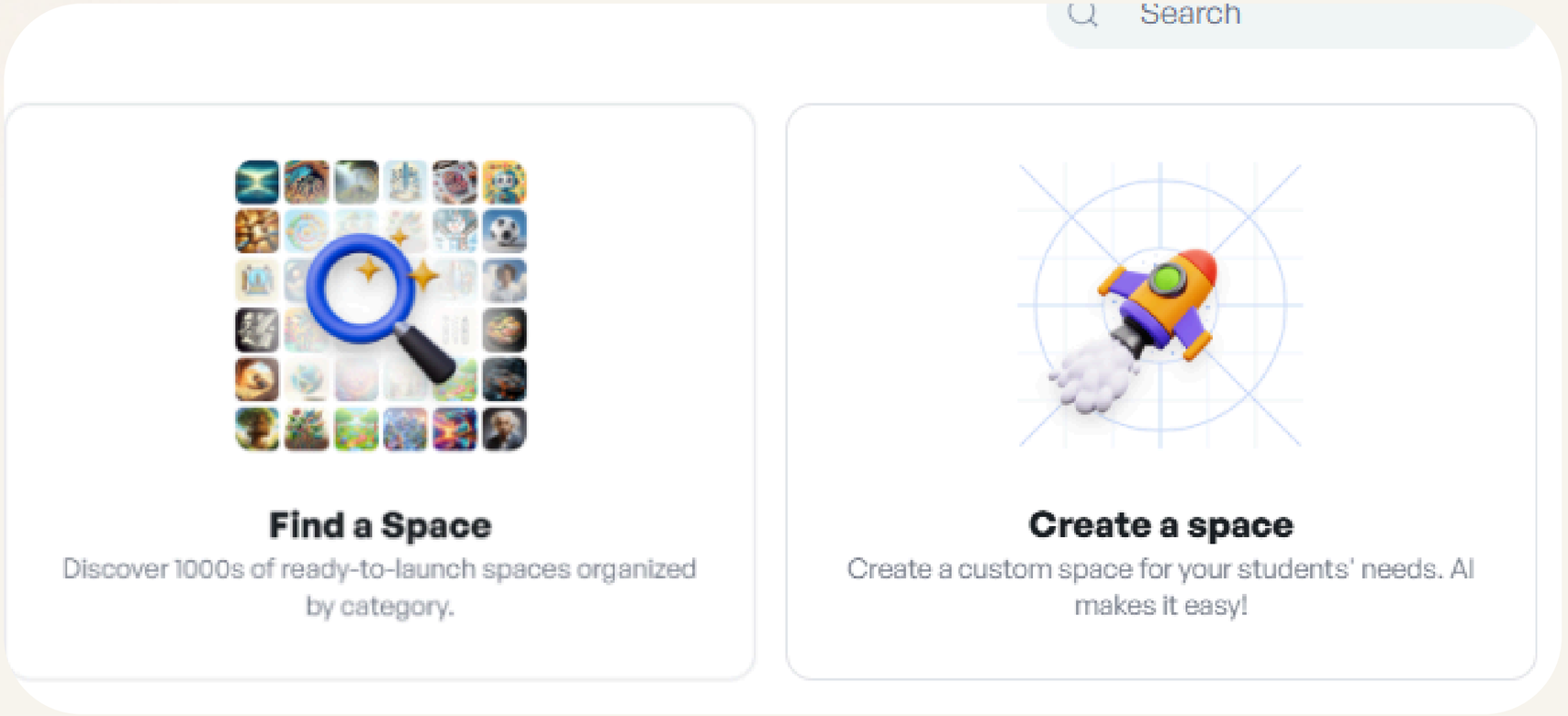
Custom GPTs (OpenAI)



SchoolAI

SchoolAI

https://app.schoolai.com



Sandbox Session

Define the Purpose
What learning task does this bot support?
(What it helps with—and what it won't do)

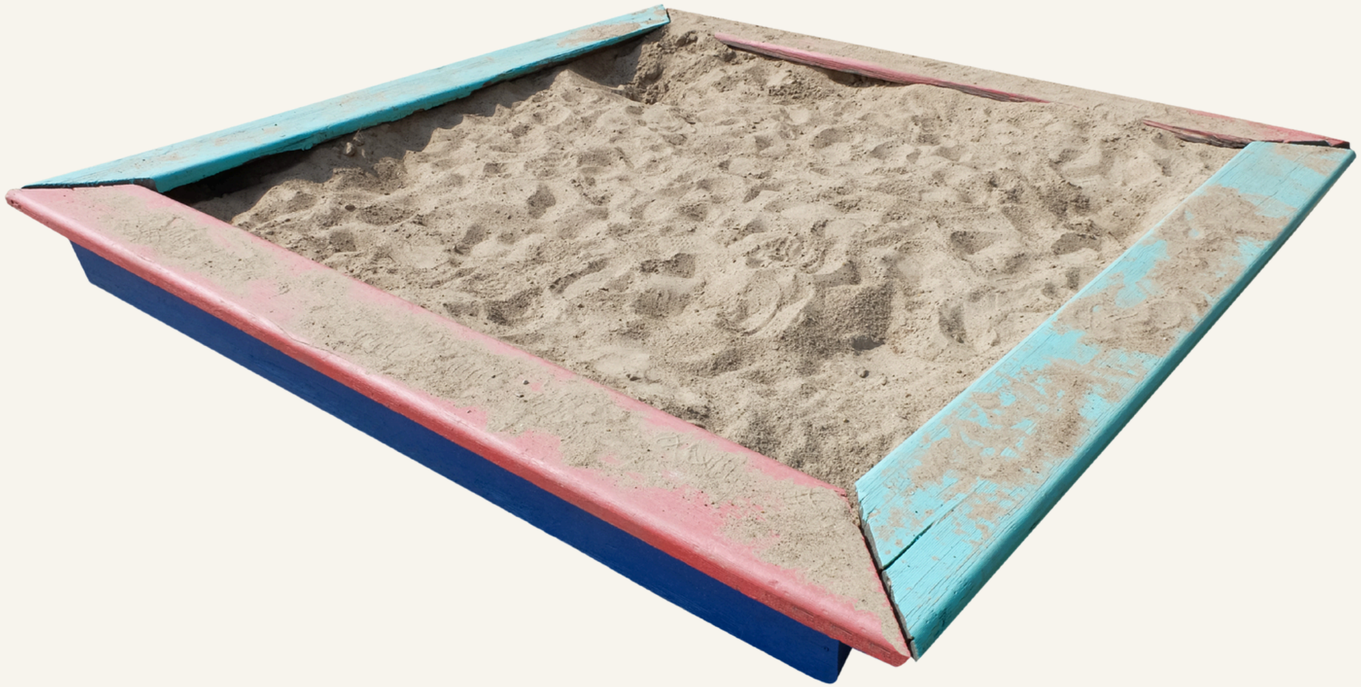
Choose the Role
Coach? Guide? Question-asker?
(How the bot interacts with students)

Write the System Prompt (the "Brain")
Rules, tone, pedagogy, boundaries
(This is where your teaching philosophy lives)

Add Knowledge or Constraints
Texts, rubrics, curriculum, formats
(Keeps the bot accurate and aligned)

Test & Refine
Try it as a student. Adjust guardrails.
(Good bots improve through iteration)

return 11:14



Sandbox Session

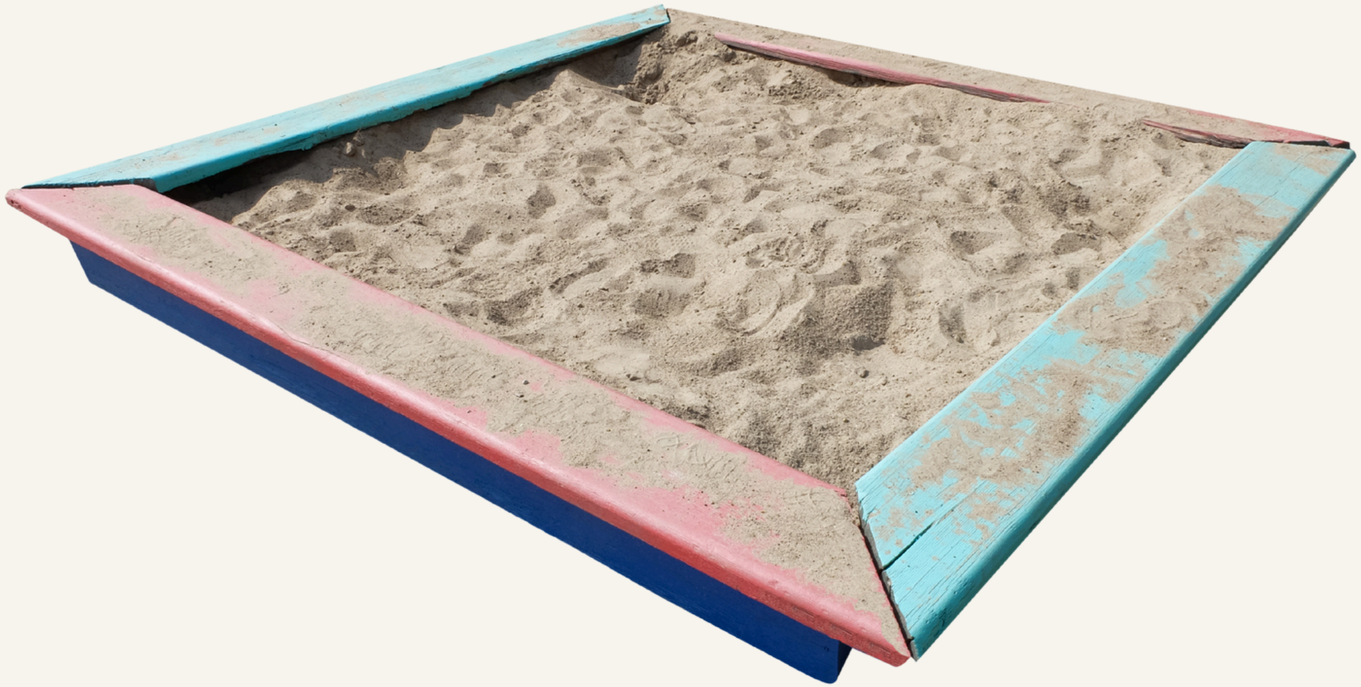
Optional Breakout Room

Guiding Questions:

1. What did you create OR what teaching/personal bot would you like to create in future?

2. What problems did you encounter?

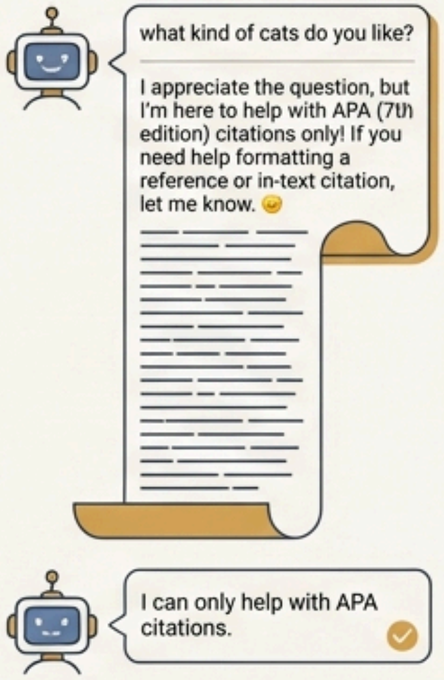
3. Did you have a chance to test your bot? What were the results



Troubleshooting: Lessons from the Sandbox

Problem 1: Managing Verbosity

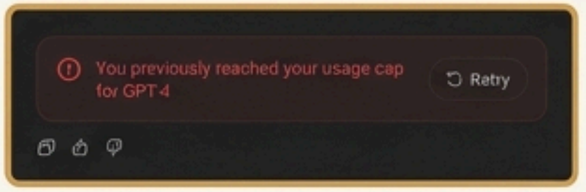
Issue: LLMs are often too wordy, which can be unhelpful for students. Research shows longer error explanations can be ineffective.
Solution: Enforce strict sentence or word limits in your system prompt instructions.



Problem 2: The "Paywall" Trap

Issue: Be aware of platform limitations. Free or educational tiers often have usage caps.

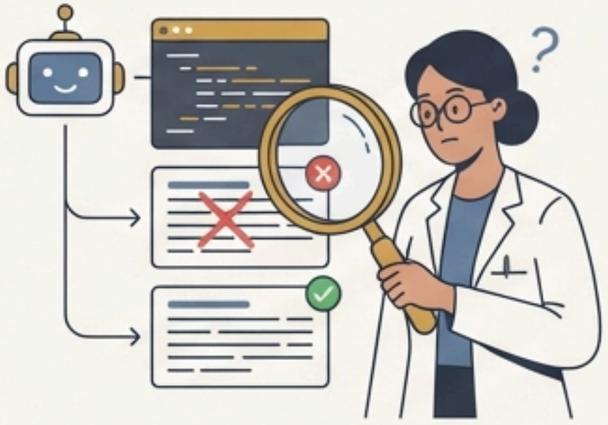
Examples: Note the session limits mentioned in the CITE GPT source (e.g., GPT-4 usage caps) or platform-specific limits like 40 chat sessions on Edcafe or 75 daily logins on SchoolAI.



Problem 3: Conceptual Drift & Inaccuracy

Issue: Even with RAG, bots can misinterpret information or make errors.

Solution: Always have a subject matter expert test the bot rigorously to ensure it doesn't provide misleading information before deploying it with students.



Ensuring Safe & Ethical Engagement

Critical Evaluation

Teach Critical Evaluation

Action: Don't just deploy the bot; teach students how to be critical consumers of AI output.

C	**Currency**: The timellness of the info.
R	**Relevance**: How the info fits your needs.
A	**Authority**: The source of the info.
A	**Accuracy**: Reliability and correctness of the info.
P	**Purpose**: The reason the info exists.

Data Privacy

Protect Data Privacy

Action: Use platforms compliant with student data privacy regulations (e.g., GDPR, FERPA).

Best Practice: Avoid platforms that require individual student sign-ups whenever possible. Use anonymous access methods like QR codes or shared links to reduce data exposure.

Student Responsibility

Reinforce Student Responsibility

The Bottom Line: The student must remain the final authority on their own work.

Framing: Position the AI as a 'scaffold for exploration,' a partner in the thinking process, not as a replacement for academic integrity.

image and slide created by google LLM

The Teacher as the Architect of AI-Augmented Learning

Key Takeaway 1: The technical build of a custom bot is surprisingly fast. The deep, essential work lies in the **pedagogical design**.
Key Takeaway 2: Your subject matter expertise is what ensures the bot remains an effective **scaffold** rather than becoming a **shortcut**. You are the quality control.

Final Vision: When integrated responsibly, AI-augmented pedagogy allows for more equitable, interactive, and personalized learning, extending your instructional presence and empowering every student.

Thank you! Feedback appreciated!

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