Leveraging AI in Instructional Design

Positive potential and dangers of using AI in training

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How are learners using AI tools?

- 10% of all conversations with ChatGPT per week are requests for learning

- *2 BILLION*

conversations for learning each week

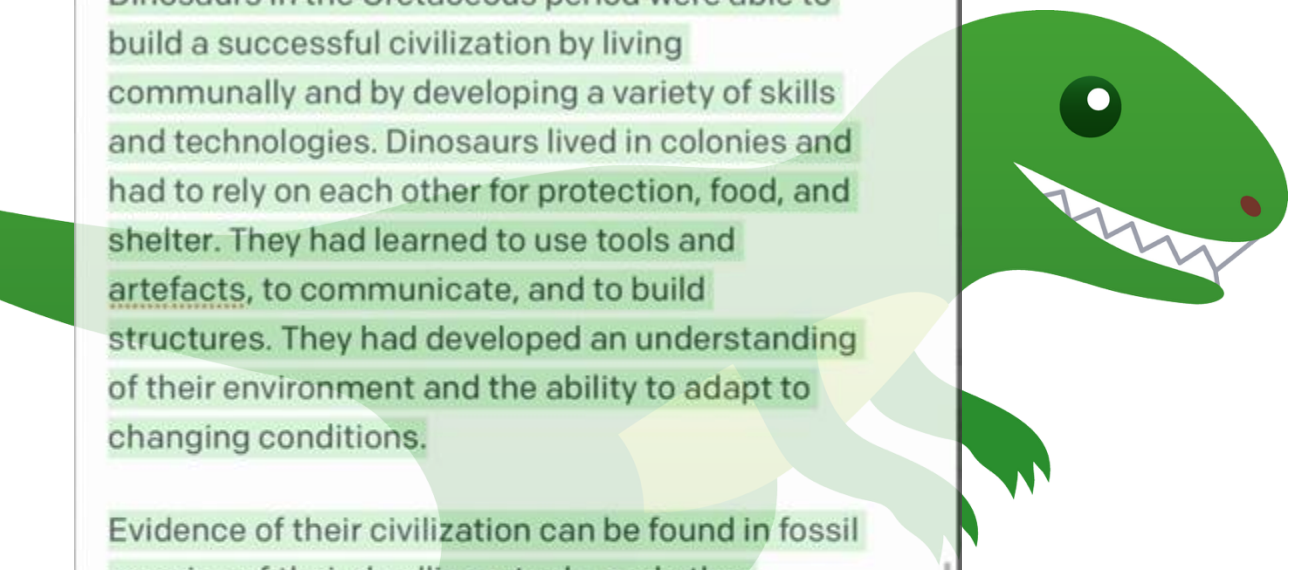
Generative AI

- Generative AI models that can produce text, images, video, audio, software code, etc.
- AI models “learn” the patterns and structures of their training data
- We use natural language to ask them to generate new data
- Large Language Models or LLMs use language prediction rather than cognition and understanding

Tell me how dinosaurs successfully built a civilization in the Cretaceous and how we are already able to prove it today.

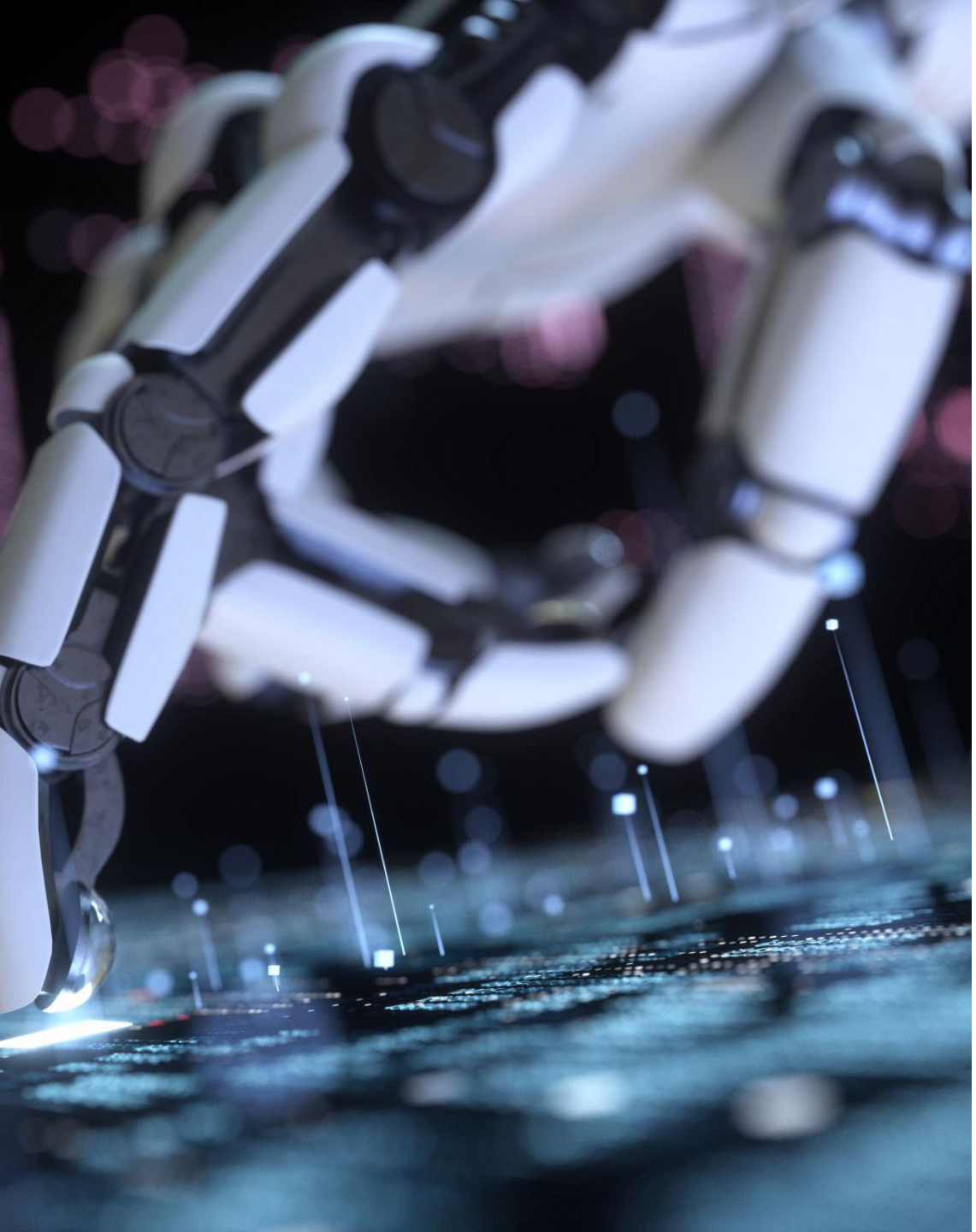
Dinosaurs in the Cretaceous period were able to build a successful civilization by living communally and by developing a variety of skills and technologies. Dinosaurs lived in colonies and had to rely on each other for protection, food, and shelter. They had learned to use tools and artefacts, to communicate, and to build structures. They had developed an understanding of their environment and the ability to adapt to changing conditions.

Evidence of their civilization can be found in fossil remains of their dwellings, tools, and other artefacts. Dinosaurs may have built complex structures such as nests, burrows, and shelters, which have been preserved in the fossil record. They also left behind evidence of their hunting and gathering activities, such as fossilized footprints and the remains of prey animals. Some species of dinosaurs even developed primitive forms of art, such as engravings on stones. Finally, the fossil record indicates that some dinosaurs were able to survive in large social groups, suggesting that they had developed sophisticated communication and cooperative behavior.



What are the hazards?

- Current models use language prediction rather than cognition and understanding
  - Factual errors
  - AI can “hallucinate”
  - Drift without clear constraints
- Privacy issues
- Flawed attribution (Incorrect source identification)
- Issues of Bias



Preparation: Setting up Antagonistic AI

- Ask the AI Large Language Model (LLM) to be antagonistic to your requests
- AI may take the role of a critic rather a sycophantic assistant:
  - Be extremely accurate
  - Recommend things I wouldn't realize I'd benefit from
  - Call out my misconceptions
  - Be brutally honest, never sycophantic
  - Tell me when I'm wrong

Use AI to Create Learning Materials

- Read the Workshop Instructions
- Review the Nowcasting Scenario. Do NOT make a forecast.
- Prompt the AI to write learning objectives, and make the activities

FRAME Model

- Find Evidence
- Roles and Rules
- Assemble Inputs
- Modify – Critique and Refine
- Expand and Embed

You will have time to practice in a moment

Step 1: Find the Evidence

- Define what good output is to avoid:
  - Ineffective learning objectives
  - Less effective instructional strategies
  - Poor learning-measurement metrics
- “What does peer-reviewed research say about writing effective learning objectives? Provide 5 evidence-based rules, 3 common mistakes to avoid, and 2 excellent examples for nowcasting training.”
- Save the results as OBJECTIVES_STRATEGIES.txt. This document is the instruction manual you’ll give to AI in the next steps.

Step 2: Roles and Rules

- Set expectations about who does what and what success looks like
- Roles — Who's the expert (you) and who's the assistant (AI)
- The Task — What exactly you're asking AI to create
- Success Criteria — How you'll judge whether the output meets standards
- Constraints — Non-negotiable rules (accessibility, tone, length)
- Output Format — Exactly how you want the result delivered

Step 3: Assemble Inputs

- Give AI everything it needs
- OBJECTIVES_STRATEGIES.txt (from Step 1)
- Audience description
- Course goals
- Upload all information and files and ask:
- “Use the research summary and audience description to create the objectives. Never invent information which is not present in these documents.”

Step 4a: Modify– Generate, Critique, Refine with AI

- Generate — Ask AI to create 2-3 different versions
- Evaluate — Ask AI to critique its own work: “Review your three versions. What are the specific weaknesses in each?”
- Compare — Ask AI to select the best version and explain why: “Which version best meets the brief? Explain your reasoning.”
- Push harder — Challenge AI to go further: “What would make this output 10× closer to perfect? What additional information would help?”
- Cross-check — If possible, run the same prompt in a different AI model. Paste both results back and ask: “Here’s an alternative version. Compare the two. Which is stronger and why? Create a hybrid that takes the best elements of both.”

Step 4b: Modify–You Critique and Refine

- Does the output align with your research summary?
- Does it meet all constraints (accessibility, tone, format)?
- Is it appropriate for your learners?
- Is all information accurate and verifiable?

Step 5: Expand and Embed

- Turn prompts into reusable systems
- Create a prompt template

Objective: Create and deliver a briefing that concisely describes the expected weather, its time of arrival, duration, and potential impacts

Context: NYC is on the path of this storm. Millions of people will be affected by it.

Challenge: Considerable uncertainty in the storm's path and intensity; 3 days prior to landfall.

Feedback: Confused or angry stakeholders; empowered stakeholders asking insightful questions.

Activity: learners write two sentences about each briefing element; learners deliver the briefing within 5 minutes.

Source: Michael Allen

Use AI to Create Learning Materials

- Go back to the AI tool and use the FRAME prompts in the Example Prompts document
- Prompt the AI to write learning objectives and generate ideas for activities and assessment questions
- Make active learning experiences for your learners, NOT presentations to give them
- Do NOT make a forecast. Raise your hand for help.

Core Skill: Constant Vigilance!

- AI can do some tasks faster than humans
- AI's confident errors can mislead its users
- Use AI output as a first draft
- Critically evaluate that draft and improve it before it reaches learners
- Be transparent about AI use
- Together we can adapt to use AI to augment our training capabilities

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