



AI Essentials for Educators:

A Practical Guide for Next Generation Learning

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Introduction

Diversity Research & Consulting

Funded by the Province of Ontario in April '23 to research the intersection of Artificial Intelligence (AI) and Education

Final Report available publicly in Spring '24

Research Objectives:

- How is AI being used by instructors and students today?
- What are the risks and benefits using AI in education?
- What are the best ways to use AI for teaching and learning?
- What kind of resources and training do educators need to leverage these new AI tools?



Agenda



1. What are LLMs?

What you need to know about how Large Language Models work

2. ChatGPT Demo and Prompting

Prompt Engineering and how to get the most from these tools

3. Risks of using LLMs

What to watch for when using generative AI tools

4. Integrating LLMs into Learning

How to use AI constructively in the classroom

5. AI in Education Survey Results

What are educators in Ontario saying about LLMs in their classrooms?

6. Closing and Discussion



Audience Participation:

Raise your hand

**If you've tried using a
Large Language Model
before**



Audience Participation:

Raise your hand:

**If you've used a Large
Language model for
your work as an
educator?**



What are Large Language Models?

A decorative graphic consisting of several overlapping diamond and triangular shapes in teal, yellow, and green, arranged in a diagonal pattern across the top and right sides of the page.

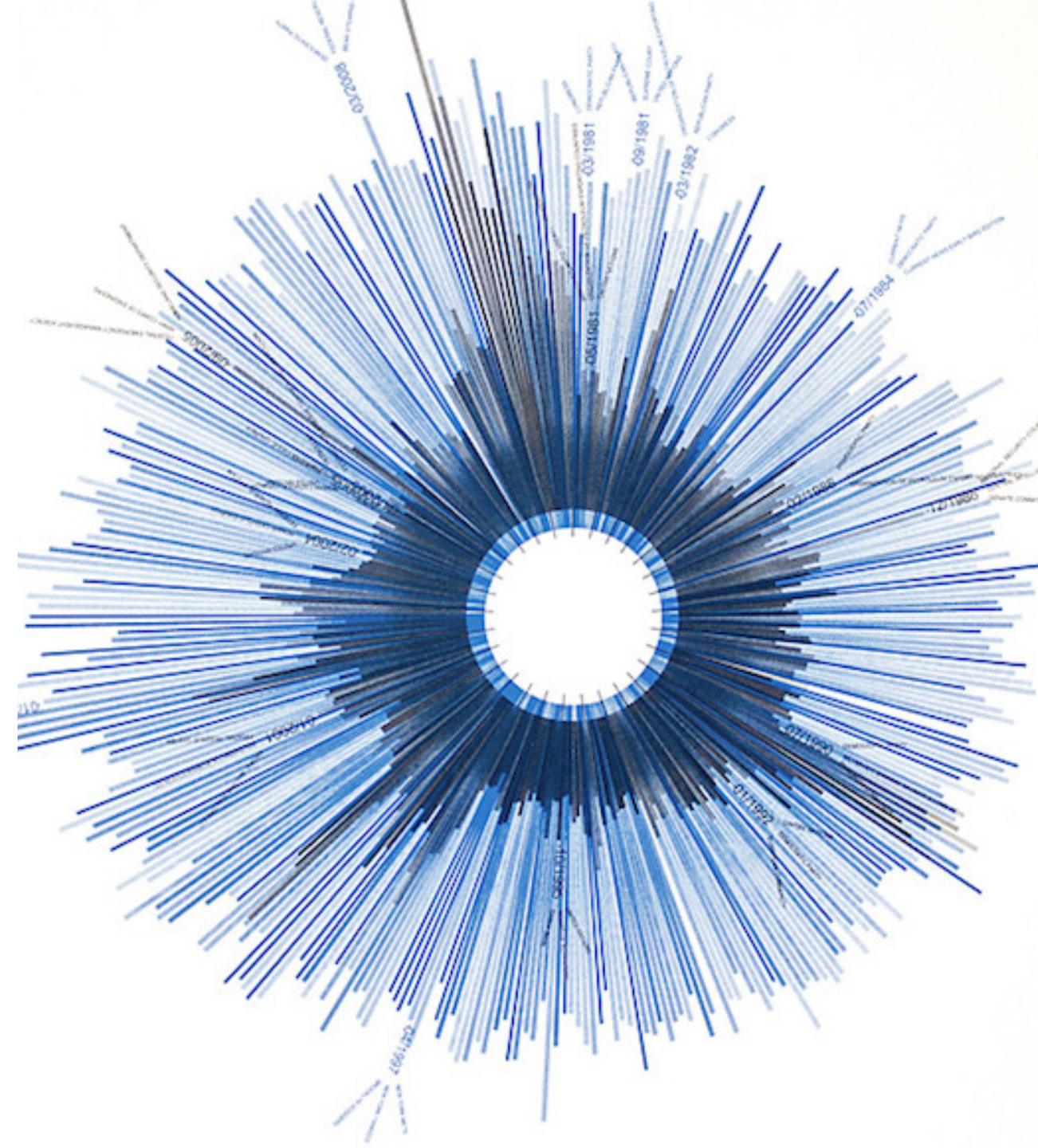
“

Software that uses deep learning techniques and massive **data sets** to understand, summarize, and **predict new content.**

Training Data

- Poor transparency from AI Companies about the training data used for competitive and legal reasons
- Data Sources for ChatGPT are rumored to include:
 - Wikipedia, Reddit, Twitter
 - Millions of web pages
 - Online books
 - Q and A platforms (e.g. Quora, Stack Overflow for coding knowledge)
- Several Ethical Issues with the training process:
 - Content owners are generally uncompensated
 - Low wage workers used for data labelling

But who produces most of the content in these data sets?



Bias on the Internet

Who writes the content on the internet?

- Wikipedia Example:
- 80-90% written and edited males
- Average Age 15– 49
- 20% are American
- Northern Hemisphere
- White collar worker or student, unlikely to be blue collar

https://en.wikipedia.org/wiki/Wikipedia:Systemic_bias

“A doctor giving instructions to a nurse, busy hospital hallway”
(Midjourney June 2023)



“Polar bear wearing a tie teaching a classroom of students in school uniforms”
(Midjourney Jan 2023)



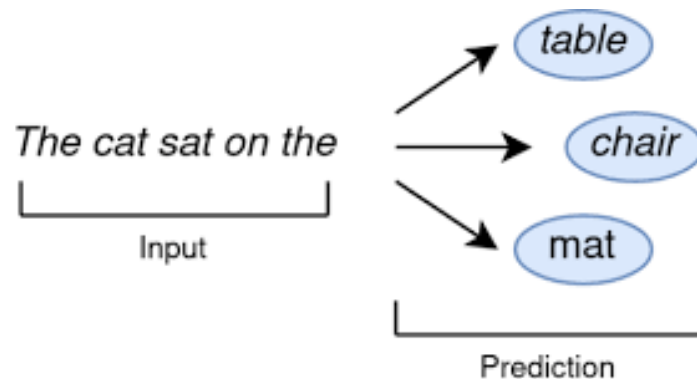
Healy, Myke, Approaches to Generative Artificial Intelligence, A Social Justice Perspective (August 12, 2023).

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4544617

LLMs as Text Predictors

Super Advanced Auto Complete

- LLM's are simply predicting the next word in a sequence based on examples in the training data
- “Reinforcement Learning” – people rate and review AI responses to help improve model accuracy



Predicting Text, not Postulating Truth

- LLMs frequently hallucinate and generate “plausible-sounding but incorrect or nonsensical answers” – OpenAI
- Bias and Hallucinations
- Lacks true understanding of the underlying material, only knows the patterns of text





ChatGPT Demo

The image features several overlapping geometric shapes: a teal triangle at the top left, a yellow triangle at the top right, a green triangle at the bottom left, and a yellow triangle at the bottom left. The text is centered and reads:

“

Keep it

conversational

and iterative

Key Concepts

Provide Context or a Role

- Give the AI context before asking a question
- What are you trying to achieve?

Request a Specific Task

- How do you want AI to help you?
- What do you want the AI to do?

Detailed Instructions

- What kind of output do you want?
- AI writing is often stiff and generic – request a specific tone, format, or voice

Give Context or Assign a Role

- Giving the AI a role is a shortcut method to providing more context in your request
- “Help me solve this problem...”

You are a...

- Industry or Subject Expert
- Editor or assistant
- Helpful mentor / coach
- Experienced Professor
- University Researcher



Specific Tasks

- Be specific about what you want the AI to do
- State the objective you want to achieve and how you want the AI to help you
- Ask the AI to
 - Assist / Help
 - Write / Rewrite / Refine
 - Summarize / Expand
 - Connect these ideas
 - Generate alternatives
- Cheat Code: “Let’s think step by step”
 - <https://arxiv.org/abs/2205.11916>
- Structured Prompting - “Go one at a time, waiting for my feedback before proceeding”



Detailed Instructions

Consider the below elements to help shape the AI response:

- **Length** – word or character limit, number of examples or ideas to provide
- **Format** - Email, Memo, Assignment Description, lecture outline, informal brainstorming, etc.
- **Structure** - Bullet points, Prose, Executive Summary, Outline, Table format,
 - Provide X main headings with each heading having up to Y sub headings
 - Provide output in a table with Columns headings “X...” and rows labelled “Y...”
 - Provide ideas one at a time, waiting for my feedback on each one
- **Style** - Business writing, Academic writing, Formal / Informal
 - “Short as possible”
 - “... in Bullet Points”
 - “In as few words as possible”



Data Privacy Settings for ChatGPT

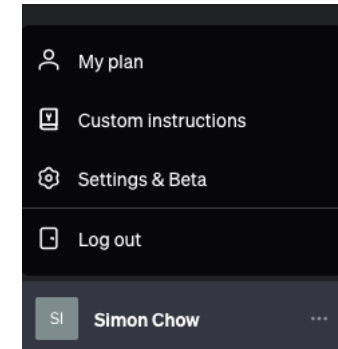
To keep your Chat History but request Open AI not use your data for training:

<https://privacy.openai.com/policies>

Make a Privacy Request (Upper Right Corner)

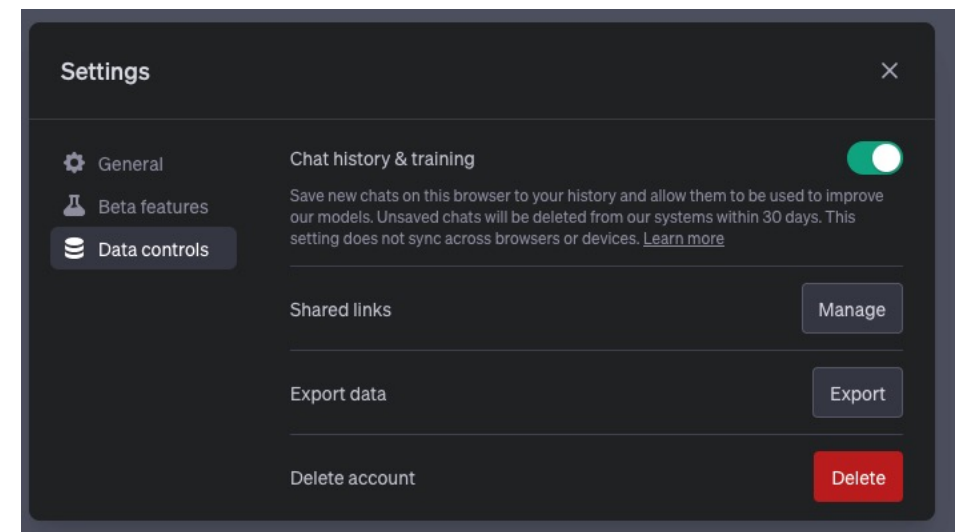
To disable Chat History AND Training:

Click the ... in the lower left of the screen near your username



Then click on Settings and Beta

In the Data Controls menu toggle the “Chat history & Training” switch





ChatGPT Custom Instructions



Risks of using LLMs

Trust Nothing, Question Everything

Hallucinations

- LLMs have imagination by design
- Open AI: “... Plausible sounding but incorrect or nonsensical answers...”
- AI has “... No source of truth...”
- Vulnerable to leading questions and prompts

Lack of References or Fake References

- You can ask LLMs to provide links or reference when it cites specific information
- Will reference very real seeming information (historical events, news articles, etc.) even if they never occurred
- Sometimes the information is real but ChatGPT cannot find the actual link

Training Data Issues

- Bias
- Copyright
- Herd mentality

Current LLMs are Good / Bad for...

GOOD for (Low Risk)

- Brainstorming
- Idea generation
- A starting point to help fight blank page syndrome
- Summarizing and expanding
- Editing, refining, rewording
- Generating alternatives, then curating
- Tone Check - “Am I being a jerk in this email right now?”

BAD for (High Risk)

- Expecting perfect results right away
- Retrieval of specific facts or information
- Deep understanding and reasoning
- Differentiating between information and misinformation
- Current and very recent events
 - Some LLMs like Copilot and ChatGPT Pro can search the web now
- Many math calculations
 - Some specialized AIs available for that

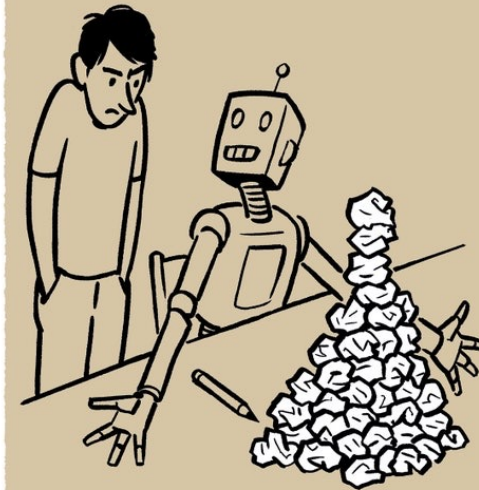
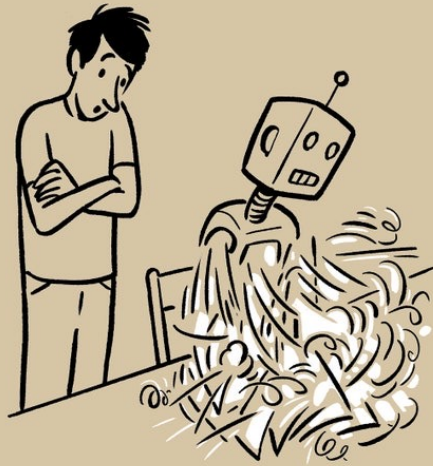
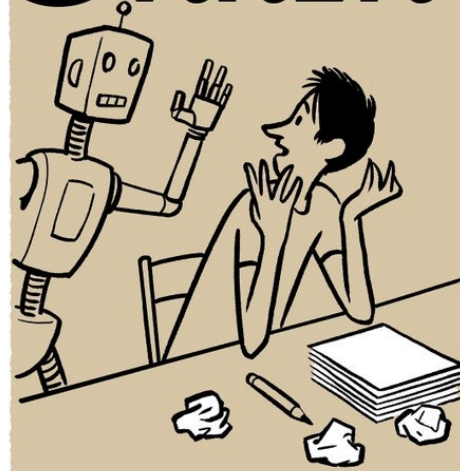


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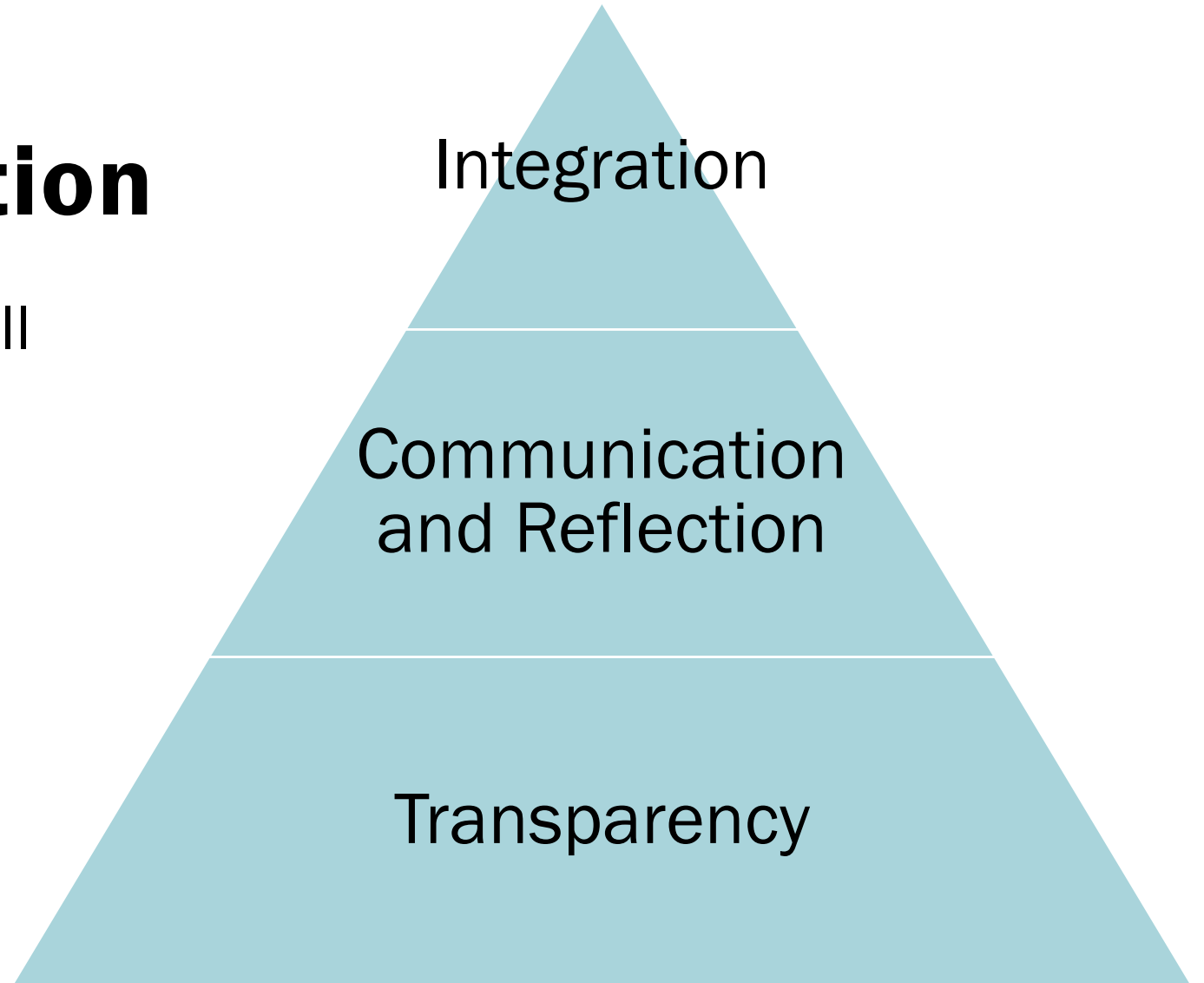
EN23



Integrating AI into learning

Transparency unlocks Integration

- Recognizing that we are all **learning together** this technology
- Creating a **safe space** for discussion



Be specific about permitted uses

1. Scaffold

- Scaffold your assessment into a series of pre-writing activities
- Define the activities AI can be used for
- Example:
 - Topic selection and focus
 - Outline preparation
 - Research
 - Drafting
 - Review and editing

2. Demonstrate

- Explain the purpose of the assessment and skills that students will develop
- Justify why AI is permitted only for some activities
- Show examples of AI conversations for each pre-writing activity
- Create a safe space for questions and discussion on how to best collaborate with AI
- Emphasize that this is a learning journey for all of us



Citation and Policy

-
- Be clear about the expectations for citing AI content
 - Explain the relevant Academic Integrity policies

A decorative graphic consisting of several overlapping diamond and triangular shapes in teal, green, and yellow colors, arranged in a pattern that suggests movement or a path.

“

How can I stop students from using Generative AI in writing assignments?

Stanford Researchers: no increase in cheating after ChatGPT

- Researchers have been tracking cheating and other behaviors by students for over 15 years
- “For years, long before ChatGPT hit the scene, some 60 to 70 percent of students have reported engaging in at least one “cheating” behavior during the previous month.
- That percentage has stayed about the same or even decreased slightly in our 2023 surveys, when we added questions specific to new AI technologies, like ChatGPT, and how students are using it for school assignments.”

<https://ed.stanford.edu/news/what-do-ai-chatbots-really-mean-students-and-cheating>



Use Different Assessment Methods

Presentations

- Individuals or groups present to whole class
- Small groups presenting to each other

In class activities

- Write in class
- Group discussions
- Quizzes
- Case Studies

Multimedia assignments

- Record a video
- Produce an infographic

The “Go Big” Approach

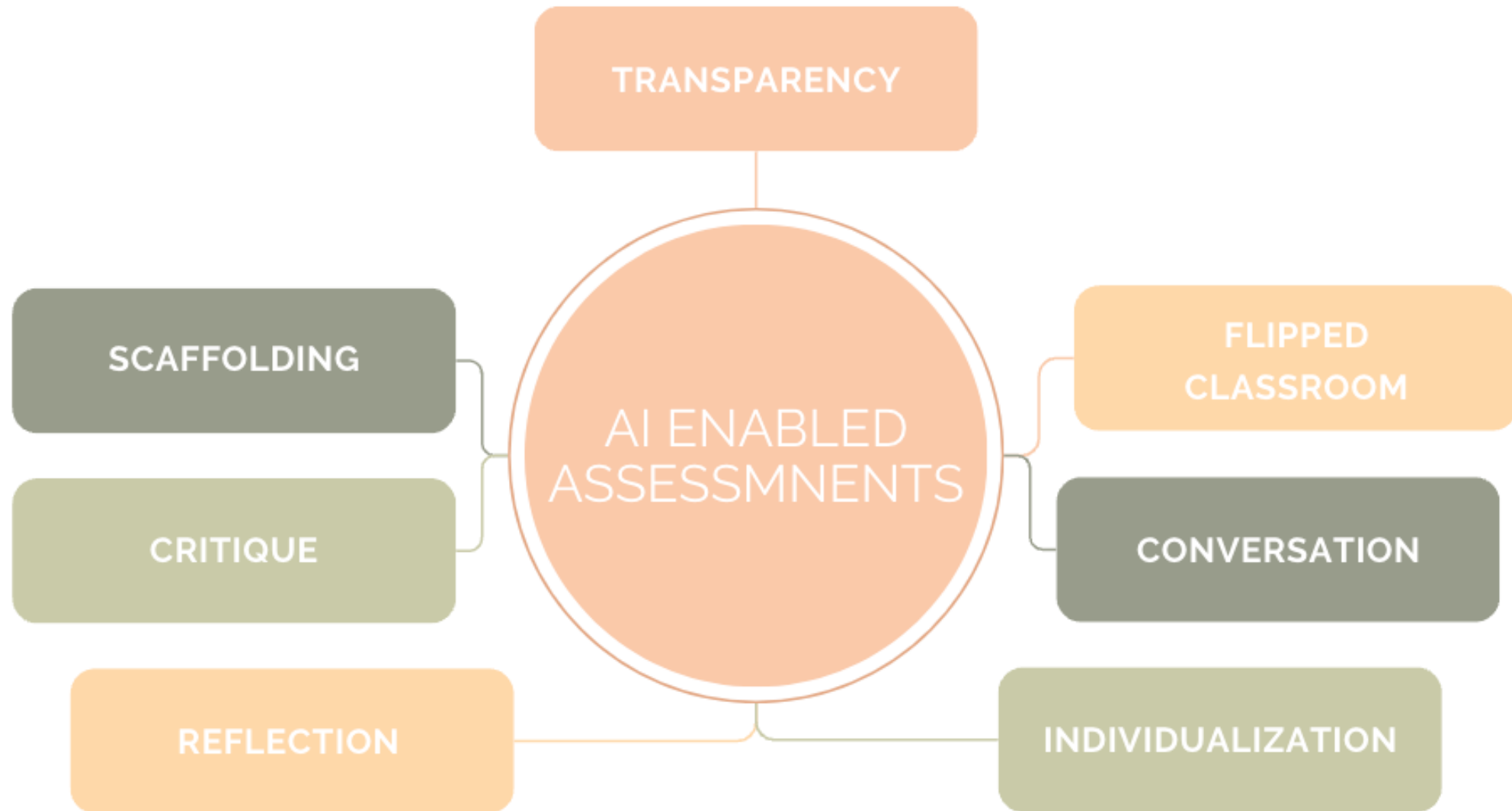
- Highly challenging submissions, often requiring multiple new skill sets that lean heavily on AI assistance
- Example: Instead of a written business plan for software company, you must develop a company website and pitch deck
- Example: Instead of an essay create a video essay or podcast discussing the topic
- Example: Produce X blog posts or articles per week commenting on some relevant research or topic

Ethan Molick:

<https://www.oneusefulthing.org/>



Assessment Redesign Concepts



Scaffolding

- A series of low stakes or ungraded activities, using AI in specific ways to help students develop the strategies they need to write.
- Demonstrate the types of permissible AI use at each step of the writing stage.
- Example: Request students use AI for some of the pre-writing activities - refining their topic through AI conversation, generating an outline, finding sources and leads for further research, etc.



Flipped Classroom

- Utilising class time for reflection or discussion on work completed with AI prompts at home.
- Example: Students use AI at home to create a detailed outline for a written work. In the class time they handwrite or type a draft for the introduction, conclusion or other sections of that paper.



Critique

- Critique and skepticism to validate AI output is a critical skill for working successfully with the technology
- Example: Students converse with AI to generate a written work for them. The assignment (or pre- writing exercise) is to critique the AI's generated version of the paper. Students submit their whole AI conversation plus their own critique of the AI's work
- Example: Use AI at home to generate an outline for a writing assignment. Bring outline to class and discuss with your classmates critiquing each one, suggesting improvements, and discussing the process of working with the AI.



Individualization

- Encouraging reflection by asking students to relate a reading directly to lecture content or their own lived experience – their hometown, family, campus, etc.
- Examples: What concepts/ideas/choices did the writer make that could you relate to in some way and why? Do your experiences conflict with this piece? Put your Ideas in conversation with the other class readings we have done.
- Draw 3 connections between the reading and content from lectures.



Reflection

- Encouraging students to reflect on their usage of AI to self-assess its benefits and risks
- Example: AI is permitted in an assignment or pre-writing exercise, and along with their completed work students also submit a reflection on their use of AI.
 - How much did you use AI?
 - What sections or uses was it most and least helpful for?
 - Did anything that the AI wrote surprise you?
 - What facts or information did it get wrong?
 - What would you do differently next time when using AI?



Conversation and Roleplay

- Provide a specific conversational prompt to prime the AI. Students engage in the role play conversation, submitting the complete dialogue as part of their assignment / pre-writing exercise
- Example Prompt: You are a university literature professor and an expert in Shakespeare. We will have a conversation about Hamlet. Your goal is to assess my understanding of the text using the procedure below.
- We will begin this conversation with you asking me the 4 questions below one at a time and stopping to wait for my answers. You will engage me in thorough discussion of each question before proceeding. If my answers are not supported by direct reference to the text and persuasively written then you will push me for more detail.
- Etc...



Survey Results

A black and white photograph showing two people sitting at a desk in an office environment. The person on the left is wearing glasses and looking towards the right. The person on the right is gesturing with their hand towards a laptop screen. There are two laptops on the desk, and a large monitor is visible in the background. The text 'Survey Results' is overlaid on the left side of the image.



Thank you!

Please complete our post-workshop survey so we can continue to improve this content:

<https://diversityresearch.ca/presentation-feedback/>

simon@diversityresearch.ca



Discussion

Resources

General Links and Information

<https://aieducator.tools/>

<https://www.oneusefulthing.org/>

Privacy Link

<https://privacy.openai.com/policies>

Prompt Ideas

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4475995

<https://github.com/microsoft/prompts-for-edu/tree/main>

<https://usergeneratededucation.files.wordpress.com/2023/01/a-teachers-prompt-guide-to-chatgpt-aligned-with-what-works-best.pdf>

Useful Tools

Bing Chat (available through MS Edge browser)

<https://www.microsoft.com/en-us/edge/features/bing-chat?form=MT00D8>

<https://goblin.tools/>

<https://www.humata.ai/>

<https://ecampusontario.pressbooks.pub/mcmasterteachgenerativeai/chapter/generative-ai-limitations-and-potential-risks-for-student-learning/>

Other resources

<https://www.aiedu.org/>

<https://openai.com/blog/teaching-with-ai?ref=futuretools.io>

<https://help.openai.com/en/collections/5929286-educator-faq>