



AI Essentials for Educators:

A Practical Guide for Next Generation Learning

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Diversity Research & Consulting

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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:

Share in the chat:

**How often do you use
generative AI?**

**What's your favorite
use case so far?**

Worst uses...

“

Lawyer sanctioned by court
for citing fake cases
provided by ChatGPT

[https://www.cnn.com/2023/05/27/
business/chat-gpt-avianca-
mata-lawyers/index.html](https://www.cnn.com/2023/05/27/business/chat-gpt-avianca-mata-lawyers/index.html)

A black and white photograph of a small seedling with two leaves growing out of dark, textured soil. The seedling is positioned on the left side of the frame. The background is dark and out of focus.

What are Large Language Models?

The background features several large, overlapping geometric shapes, primarily diamonds and triangles, in teal, yellow, and green colors. These shapes are arranged in a way that creates a sense of depth and movement, with some shapes appearing to be layered on top of others. The overall aesthetic is modern and abstract.

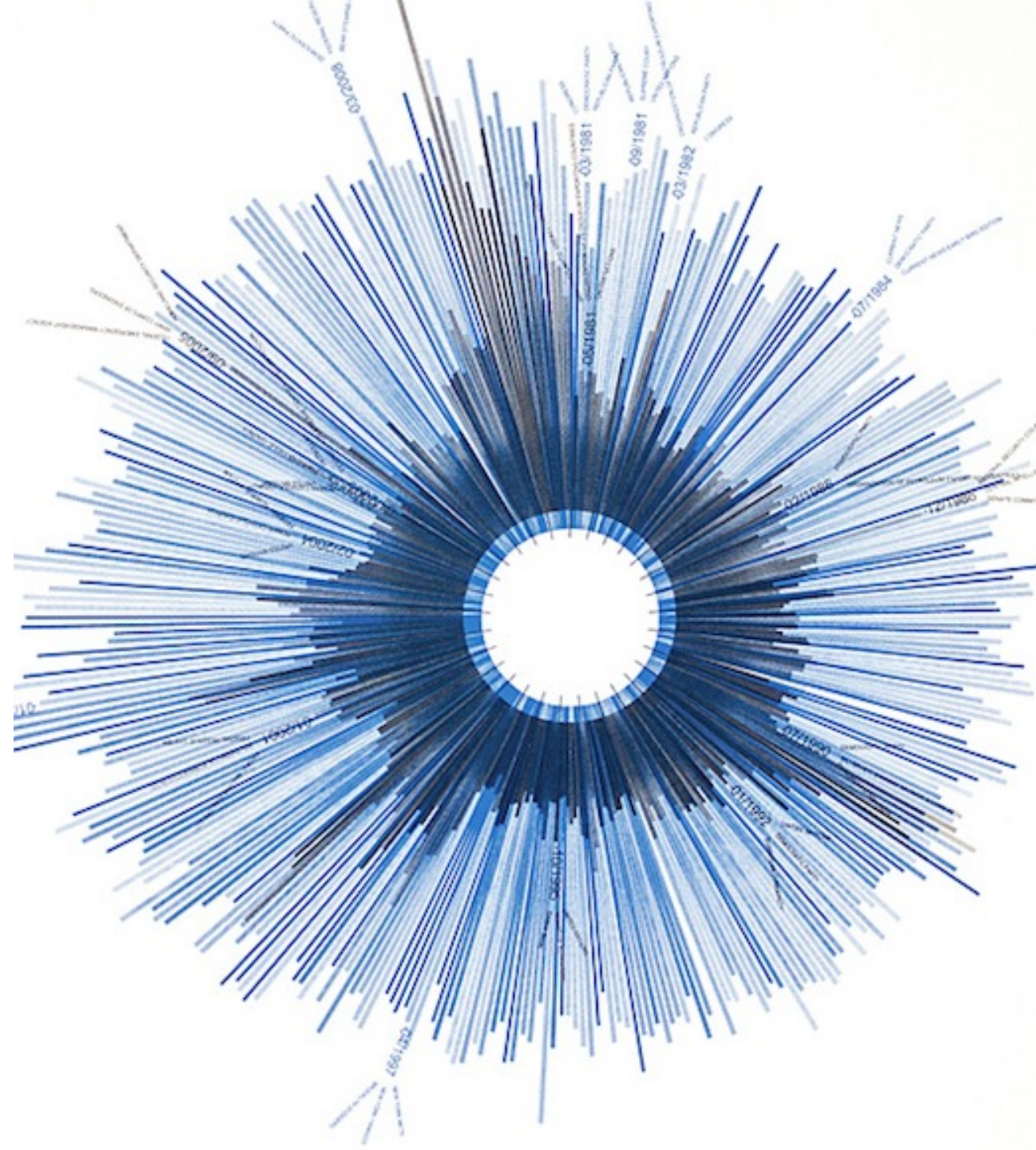
“

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

Training Data

- Poor transparency from AI Companies about the data used for model training due to upcoming Copyright and Intellectual Property battles
- “The Whole Internet”
- Data Sources for ChatGPT are rumored to include:
 - Wikipedia, Reddit, Twitter
 - Millions of web pages
 - Online books
 - Knowledge sharing platforms (e.g. Quora, Stack Overflow for coding knowledge)
- Ethical Issues with the training process

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



Bias on the Internet

- Who writes the content on the internet?
- Mostly English-speaking Males
- 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

Midjourney Image Generated in June 2023 with the Prompt: “A doctor giving instructions to a nurse, busy hospital hallway”



Note: While no racial, gender, or age-related criteria were included in the prompt, Midjourney generated an image based on the stereotype of older, white doctors and young, white nurses.

Midjourney Image Generated in January 2023 with the Prompt: “Polar bear wearing a tie teaching a classroom of students in school uniforms”



Midjourney again generated an image with students who are exclusively young, white, boys.

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

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

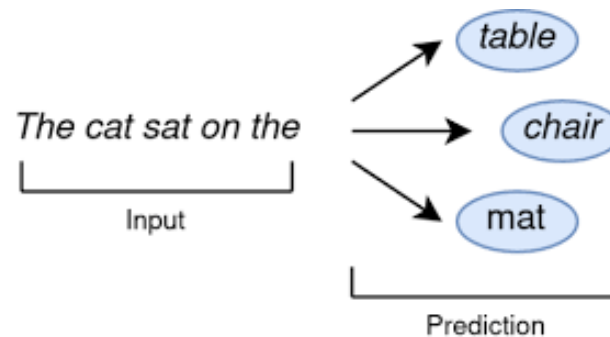
Language Models are Text Predictors

Super Advanced Autocorrect

- 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 generate “plausible-sounding but incorrect or nonsensical answers” – OpenAI
- Garbage in – Garbage out problem
- Bias
- Lacks true understanding of the underlying material, only knows the patterns of text





ChatGPT Demo

The background features several overlapping geometric shapes, primarily diamonds and triangles, in teal, yellow, and green. These shapes are arranged in a way that creates a sense of depth and movement, with some shapes appearing to be layered on top of others. The colors are vibrant and the shapes are sharp, contributing to a modern and dynamic aesthetic.

“

Keep it

conversational

and iterative

Key Concepts

Provide Context or a Role

- Give the AI context before asking a question

Request a Specific Task

- What are you trying to achieve?

Detailed Instructions

- AI writing is often stiff and generic, set 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
- Helpful mentor / coach
- Experienced Professor
- University Researcher



Specific Tasks

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



Detailed Instructions

Consider the below elements to guide 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”
 - “Bullet points where possible”
 - “As few words as possible”



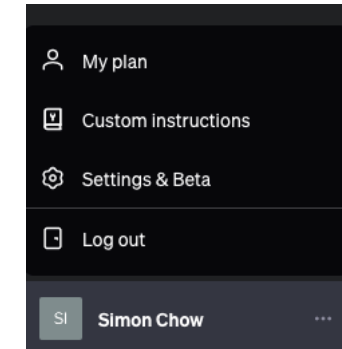
Data Privacy Settings for ChatGPT

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

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

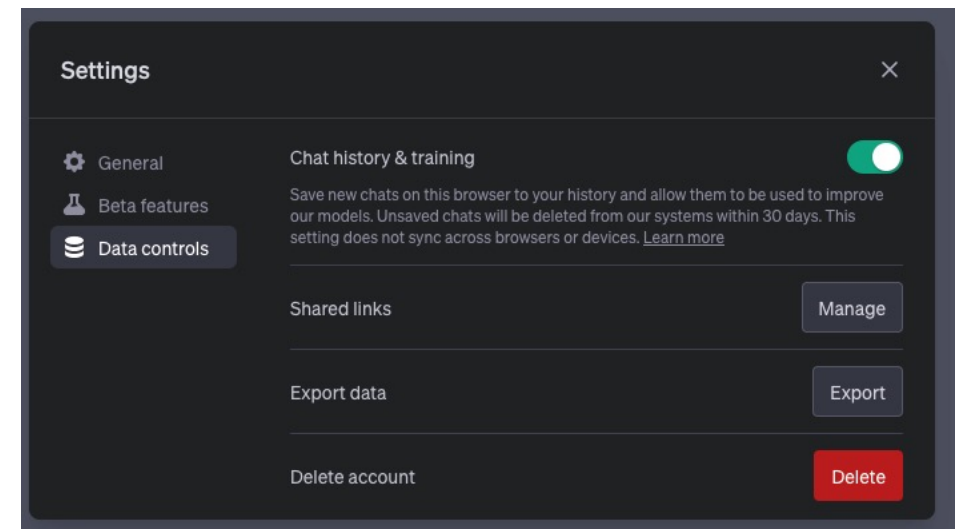
Make a Privacy Request (Upper Right Corner)

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



A photograph of a sailboat's deck and rigging on a choppy sea. The boat's wooden deck is in the foreground, with various ropes and pulleys visible. A large white sail is partially visible on the left. The ocean is dark blue with white foam from the waves. The sky is a pale blue with some light clouds. The text "Risks of using LLMs" is overlaid in a large, white, sans-serif font in the lower right quadrant.

Risks of using LLMs

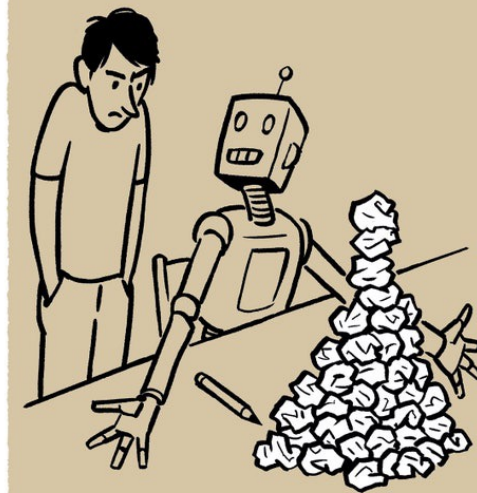
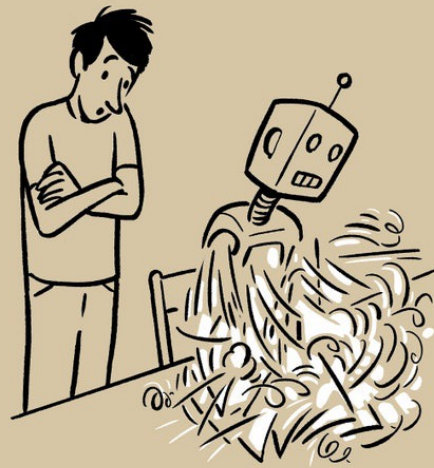
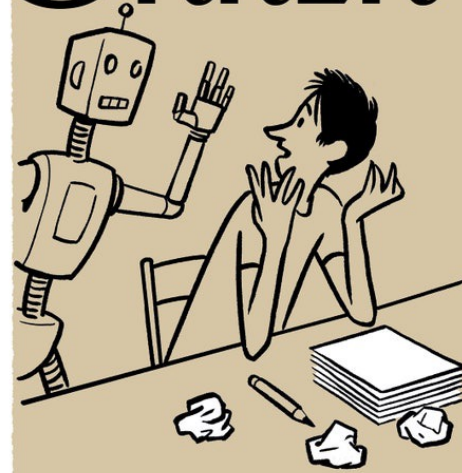


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CN23

When the Bass Drops...



Current LLMs are Good / Bad for...

GOOD FOR

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

BAD FOR

- Retrieval of specific facts or information
- Deep understanding and reasoning
- Current and very recent events
 - Some LLMs like Bing Chat and ChatGPT Pro can search the web now
- Most math calculations
 - Some specialized AIs available for that
- Differentiating between information and misinformation
- Certain specific requests: word counts, rhymes, riddles

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

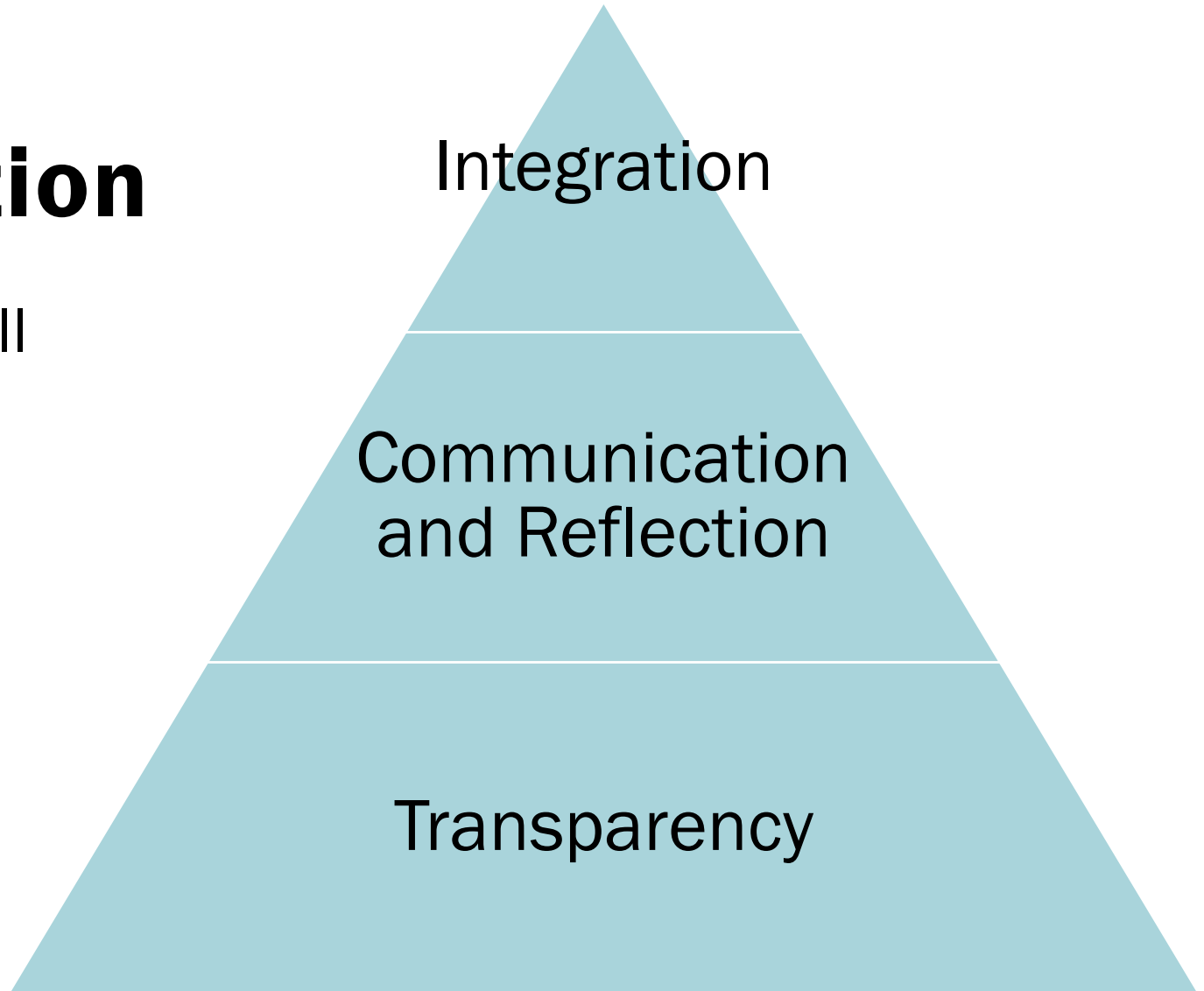


A group of business professionals in an office setting. A man in a dark suit and striped tie is on the left, gesturing with his hands. A woman in a grey blazer is in the center, holding a smartphone and looking at it. Another person is partially visible on the right, holding a white coffee cup. In the foreground, a tablet displays a document with text and a circular diagram. The overall atmosphere is professional and collaborative.

Communicating and Integrating

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

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

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

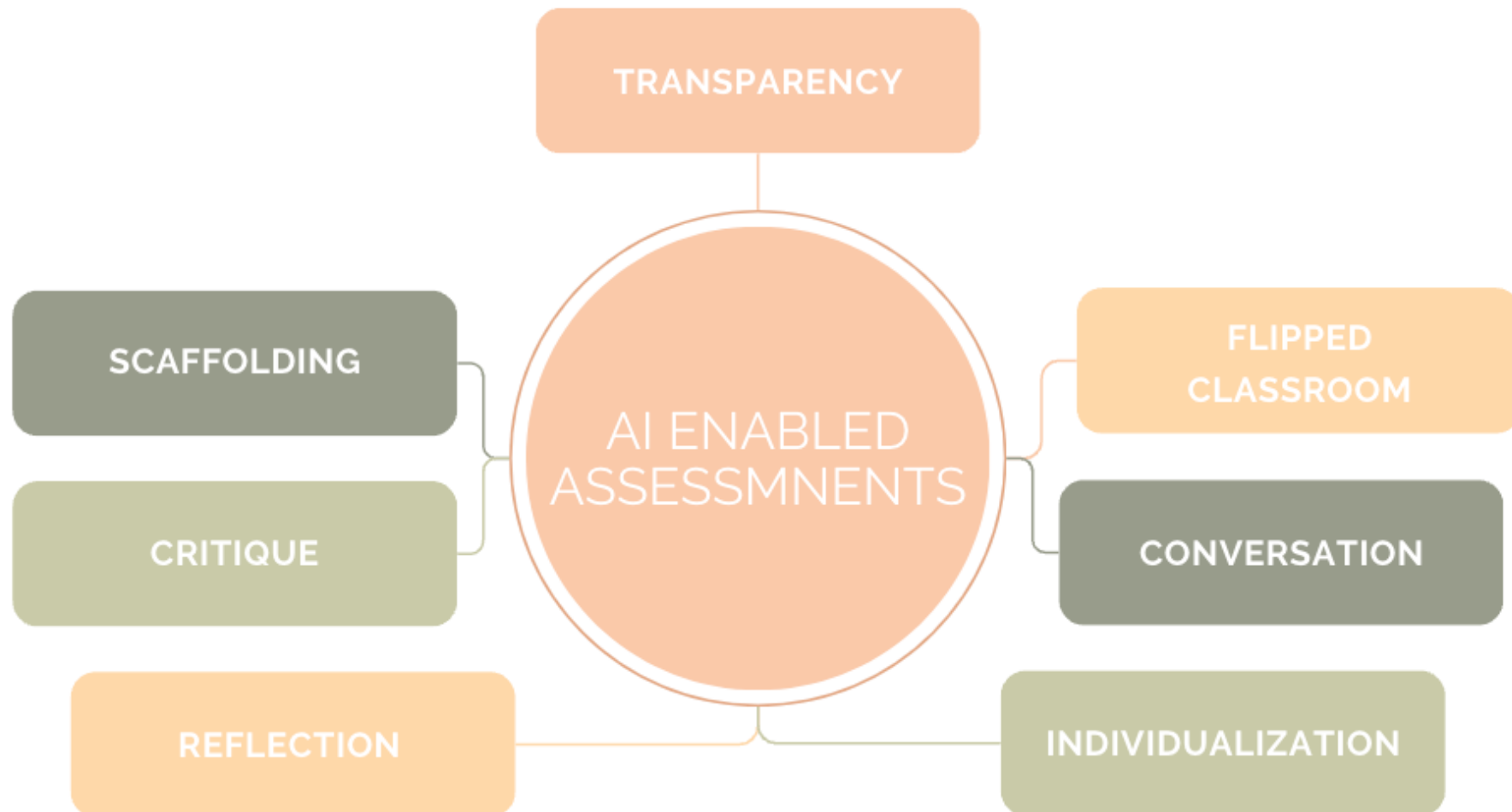
- Highly challenging submissions, often requiring multiple new skill sets that lean heavily on AI assistance
- Example: Instead of a written business plan for software company, you must develop a company website and pitch deck
- Example: Instead of an essay create a video essay or podcast discussing 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



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>