Family & Community Medicine
UNIVERSITY OF TORONTO

# Tips for teaching in an AI-enabled context

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## Background

**Artificial Intelligence (AI)**: refers to computer systems or programs designed to simulate human intelligence

**Generative AI**: refers to AI systems designed to create new content, such as text, images, music, or code. These systems use patterns learned from large datasets (i.e. the Internet, at a fixed point in time) to generate original outputs

**Large Language Models (LLMs)**: are a subset of generative AI focused on processing and generating human-like text. These models predict the next word in a sequence based on the inputed text and probabilities, enabling them to create coherent, contextually appropriate responses

## Limitations to LLMs

- **Critical thinking and contextual understanding:** LLMs are trained to write text that is human-like, but struggle to 'think critically' through a problem
- **Hallucinations:** Models use probabilities (not understanding of language) to generate text, therefore a LLM may insert text that is false or inappropriate (called a 'hallucination')
- **Inherent bias**: LLMs are trained on content from the Internet at a particular point in time. Content on the Internet has bias and, as a result, so does the LLM
- **Data Security/Model Training:** Most LLM use data inputed by users to improve their outputs. Assume a LLM is using your data for this purpose unless it is explicitly stated otherwise
- **Lack of transparency**: Many of these tools do not provide references and therefore make it difficult to verify the information generated. When asked to provide references, some tools can hallucinate and generate fake references

## AI and Clinical Decision-Making

LLM-powered AI Chatbots, such as ChatGPT, can be powerful resources to aid physicians and educators. LLMs trained more specifically on medical content (e.g., Open Evidence) may be more useful for the clinical environment. The following are a variety of ways AI-powered tools can support clinicians in their everyday practice:

- Access medical information on conditions, treatments and drug information
- Diagnostic assistance by inputting clinical details and questions that can generate potential diagnoses and treatment options
- Access to relevant clinical guidelines and frameworks in one place
- Ability to summarize academic papers, medical literature, and large data sets

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## AI Scribe for Staff Physicians

- Review policies on using AI tools from relevant organizations (CPSO, CMPA, OMA, etc.)
- AI scribes are automated tools which listen to a clincial encounter between a patient and a physician
- Saves time by generating clinical documentation and improves patient care by enabling physicians to pay increased attention to the patient instead of looking at a screen and documenting simultaneously
- Verbal or written consent should be obtained from a patient before using an AI scribe with them
- As a physician, it is important to go over all aspects of the note as the AI model can produce false information through hallucinations or confabulations
- Best practice is for companies to delete all this from their servers and not use patient data to train their AI algorithm

## AI Scribe for Trainees

- When can a learner use AI scribe? Need to balance the benefit of learning that comes from composing clinical documentation vs note-writing efficiency
- Learners will also benefit from learning how to use tools like AI scribes prior to graduating
- Consider if the trainee has proven they can write a competent note for any encounter
- To maximize learning, we currently recommend that medical students, PGY1s, and early PGY2s NOT use AI scribes
- If an AI Scribe wrote the note, verify the trainee's understanding during case reviews

### Tips

- Avoid inputting patient health information and identifiers
- Be mindful of the limitations of these tools and that ultimately the clinician is medicolegally responsible for patient care
- Can use tools that are trained specifically for medical professionals with the ability to provide accurate references

## Resources

- CPSO
- CMPA
- OntarioMD
- CEP
- Advice from UofT Vice Provost Office

### UofT AI Policy

- Students ARE allowed to use AI tools to study
- Students ARE NOT allowed to use AI for assignment completion

**recommended that educators explicitly remind students of this policy at the time of assignment dissemination*