
Foundations of Skill-Building with Artificial Intelligence

John Lowry, Ph.D.
Associate Professor of Education
Director of Faculty Development
Central Michigan University College of Medicine



Disclosures

None

The College of Human Medicine Office of CME designates this event for a maximum of 1 *AMA PRA Category 1 Credit(s)*[™]. Physicians should claim only the credit commensurate with the extent of their participation in the activity.



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Objectives

1. Explain the fundamental concepts of AI, including machine learning, natural language processing, and data pipelines
2. Define key AI terminology relevant to medical education
3. Compare AI and Generative AI (Gen AI)
4. Identify ethical considerations and guidelines for AI use in academia
5. Self-assess AI competency in medical education

The Team

The Team



John Lowry
Central Michigan University



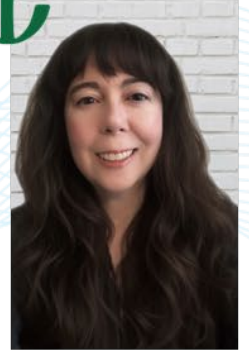
Stacey Pylman
Michigan State University



Anthony Gaynier
Wayne State University



Tonya Anderson (Thomas)
Wayne State University



Emily Rush
Rush University



Larry Hurtubise
Ohio State University



Elissa Hall
Mayo Clinic



Heather Billings
Mayo Clinic



Boyung Suh
Southern Illinois University



Priti Parikh
Wright State University

The Series



Survey

- Self-assessment on AI competencies
- Link in your registration

Upcoming Sessions

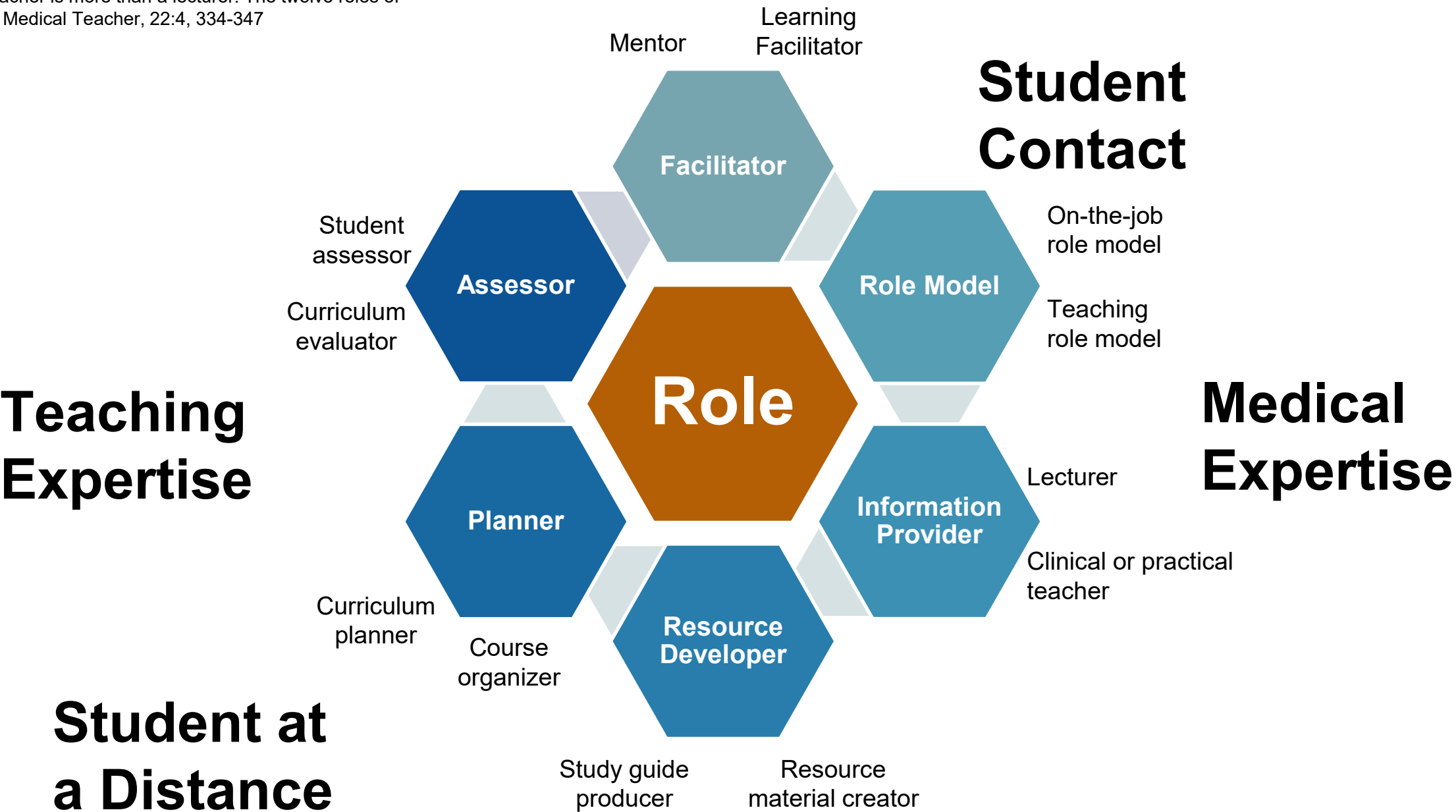
- Prompting for Educators: Effective Communication with AI
- Evaluating AI Outputs: Ensuring Accuracy and Relevance
- AI for Efficiency and Automation

AI Competencies

- Understanding AI
- Working with AI
- Critical Appraisal of AI
- Ethical Use of AI
- AI Possibilities in Medical Education
- AI Enhanced Clinical Encounters
- Using AI in Research and Scholarship
- Continuous Professional Development in AI



From R.M. Harden, Joy Crosby (2000) AMEE Guide No 20:
The good teacher is more than a lecturer: The twelve roles of
the teacher, Medical Teacher, 22:4, 334-347





The Value of this Series

- Skill-building
- Sources of information
- People
- Community of practice

Building Skills

AI-RELATED CLINICAL COMPETENCIES FOR HEALTHCARE PROFESSIONALS

Basic
knowledge
of AI

Social and
ethical
implications
of AI

Workflow
analysis for
AI-based
tools

AI-
enhanced
clinical
encounters

Evidence-
based
evaluation
of AI-based
tools

Practice-based learning and improvement

Russell, R. G. et al. (2023). Competencies for the Use of Artificial Intelligence–Based Tools by Health Care Professionals. *Academic Medicine*, 98(3), 348-356.



Skills with AI

- Prompt engineering
- Tool proficiency
- Data literacy
- Critical thinking and evaluation
- Ethics and responsible use
- Problem-solving
- Continuous learning
- Experimentation and creativity



Machine Learning

- Allows AI systems to learn from data and improve their performance without being explicitly programmed
- Algorithms can provide personalized interactions and automated tasks

Natural Language Processing

- Allows AI systems to understand, interpret, and generate human language
- Transcription, chatbots, summary tools



Neural Networks

- Computational models that mimic the human brain and uses machine learning
- Layers: receive information, processing, and outputs
- Enhances data-driven decision-making

Training & Data

- AI Model – set of algorithms and the data used to train the algorithms
- Data Pipeline – data collected, cleaned, and ready to use by the AI program



Generative AI

- AI systems that can generate new content, like text, images, audio, video, etc.
- Based on patterns learned from data and prompts



Prompt

- Input used to guide AI program to deliver a given output
- Key to quality outputs from AI programs
- Prompt engineering: crafting detailed and specific prompts for higher quality outputs

AI Tools



Large Language Models

- ChatGPT
- Google Gemini
- Microsoft Copilot
- Perplexity
- Claude
- Meta Llama

Skill #1: Prompting

—



Prompting

Step 1: Navigate to a large language model.

Step 2: Be thinking of a technical topic you know well.



Prompting

Prompt 1:

Create 6 flashcard questions about _____.

Prompt 2:

Create flashcard questions at all 6 levels of Bloom's taxonomy about _____. They should be appropriate for a college graduate. Indicate the correct answer **and** include a rationale for each possible answer.

**Better prompts
give better
outputs.**

—



AI Search Engines


- Perplexity
- Notebook LM

Skill #2: Searching & Analyzing

—


Welcome to NotebookLM

+ Create new




Reforming Higher Education...

Apr 8, 2025 · 1 source




Clinician Educator Competencies and...

Mar 19, 2025 · 2 sources




Clinician Educator Admin Skills: A...

Apr 24, 2025 · 2 sources




Teaching Gen AI to Medical Educators: ...

Apr 4, 2025 · 1 source




Educational Scholarship:...

Mar 11, 2025 · 1 source




NBME Item Writing Guide: Constructin...


Mar 4, 2025 · 1 source



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Dec 5, 2023 · 7 sources

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(Examples: marketing plans, course reading, research notes, meeting transcripts, sales documents, etc.)






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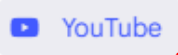

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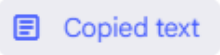
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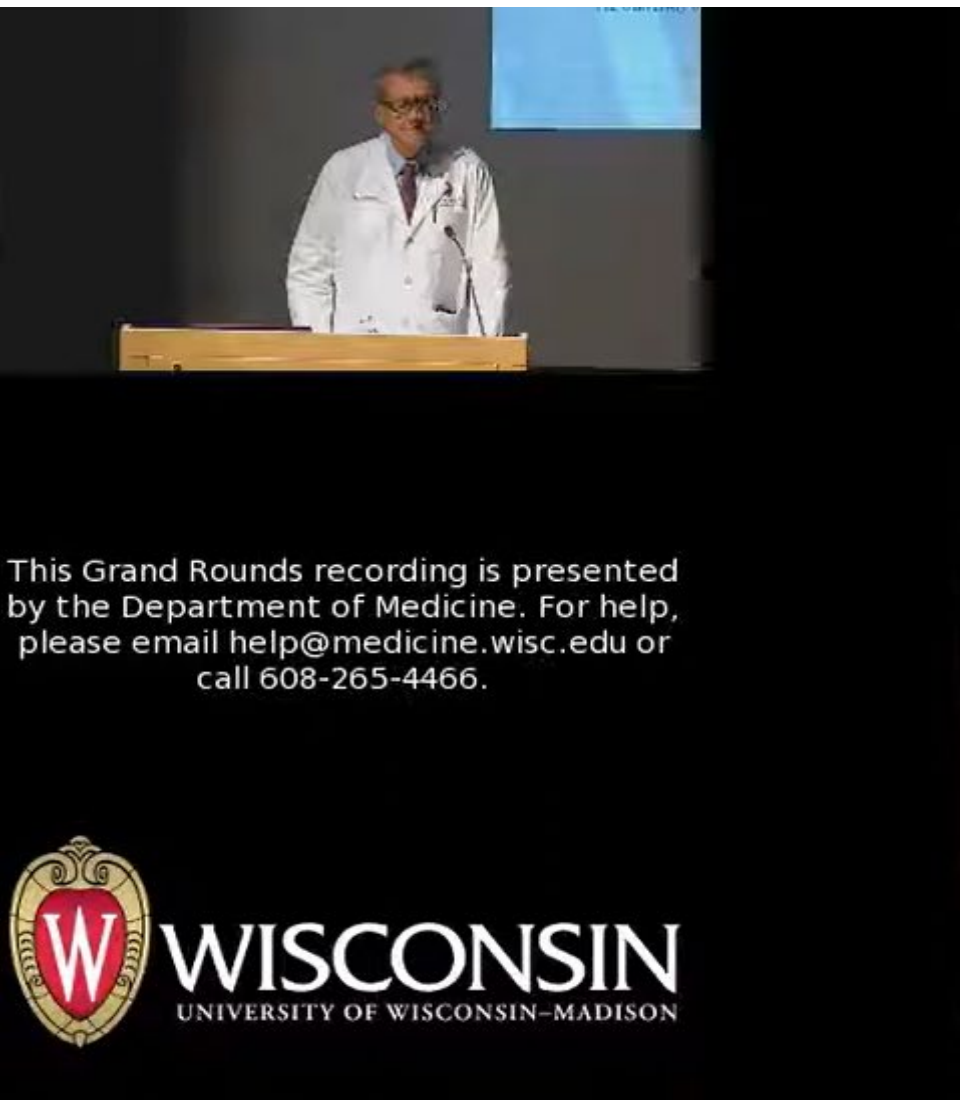
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This Grand Rounds recording is presented by the Department of Medicine. For help, please email help@medicine.wisc.edu or call 608-265-4466.



Department of Medicine *Medical Grand Rounds*

Jessica Tischendorf, MD
Clinical Instructor Administration University of Wisconsin - Madison

Teaching How to Teach: Developing the Next Generation of Medical Educators

- **FINANCIAL DISCLOSURE: No**
- **UNLABELED/UNAPPROVED USES DISCLOSURE: No**

ACCREDITATION STATEMENT

The University of Wisconsin School of Medicine and Public Health is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

CREDIT DESIGNATION STATEMENT

The University of Wisconsin School of Medicine and Public Health designates this live activity for a maximum of 1.0 *AMA PRA Category 1 Credit(s)*[™]. Physicians should claim only the credit commensurate with the extent of their participation in the activity.


<https://www.youtube.com/watch?v=fa79qw7YSNc>



Developing the Next Generation of Medical Educators

1 source

This text, a transcript from a medical presentation, explores the crucial role of **medical residents** in educating **medical students** and their peers. It highlights the **expectations placed on residents as teachers** by various governing bodies and faculty, and examines **how much time residents actually spend teaching**. The presentation discusses the **benefits of resident teaching for students, residents themselves, and the broader academic department**, while also acknowledging that residents often feel **unprepared for their teaching responsibilities** upon beginning their residency. Finally, it reviews various **resident-as-teacher programs** designed to develop these skills and suggests ways **faculty can support resident educators**.

 Save to note



Add note



Audio Overview



Mind Map

Provide 3 key take-home points from this video.



1 source



How do expectations for resident teaching align with the reality of their training environment?

What a



Provide 3 key take-home points from this video.

Based on the provided sources, here are three key take-home points from the video:

- Residents are **expected to teach** by oversight bodies and faculty 1, and they **spend a significant amount of their work week teaching** medical students and supervising junior House staff, with estimates averaging around 10% and 40% respectively 2 Residents also acknowledge teaching as a primary responsibility and the majority enjoy teaching 4.
- Resident teaching is **highly valuable and influential** for medical students, contributing significantly to their knowledge acquisition (around 40% in some studies) 3, impacting their clerkship satisfaction 5, and influencing career decisions 3. Teaching is also **beneficial for residents themselves**, enhancing their knowledge, reinforcing their skills, improving professional competence, and helping them master the material 4. Furthermore, residents engaged in teaching are more likely to stay in academic posts and have higher rates of scholarship, which is beneficial for the department 6.
- Despite their vital role and time spent teaching, **most residents feel unprepared** for this role when starting internship 6. However, residents **can be very effective teachers** 6 ..., and they are **interested in formal teaching skill development programs** 8. These "resident as teacher" programs are prevalent across Graduate Medical Education and have demonstrated positive outcomes in developing teaching skills 8 Faculty support through making expectations explicit, encouraging teaching opportunities, and providing observation and feedback is crucial for residents' development as educators 12

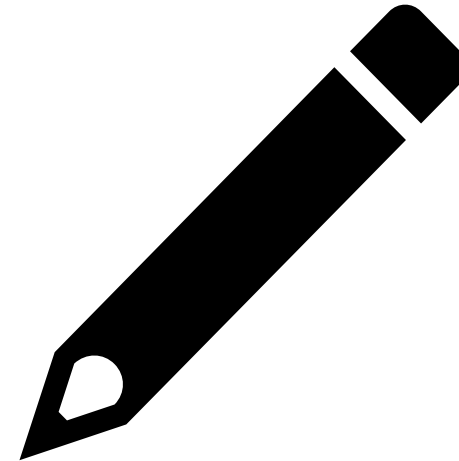
**How can searching
and analyzing with AI
be helpful to your
work?**

Images, Graphics, Presentations, and Video AI

- Canva
- Beautiful.ai
- Decktopus
- Gamma.app
- Adobe Firefly
- DALL-E
- Midjourney
- Stable Diffusion
- Google ImageFX
- OpusClip
- Jamie
- Veed.io
- Synthesia

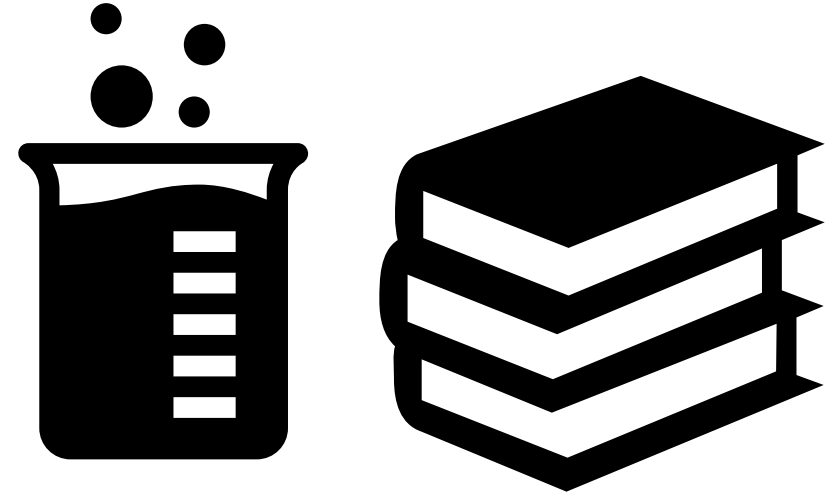
AI Writing Tools

- Grammarly
- Large Language Models
- Claude
- Rytr



AI for Research and Scholarship

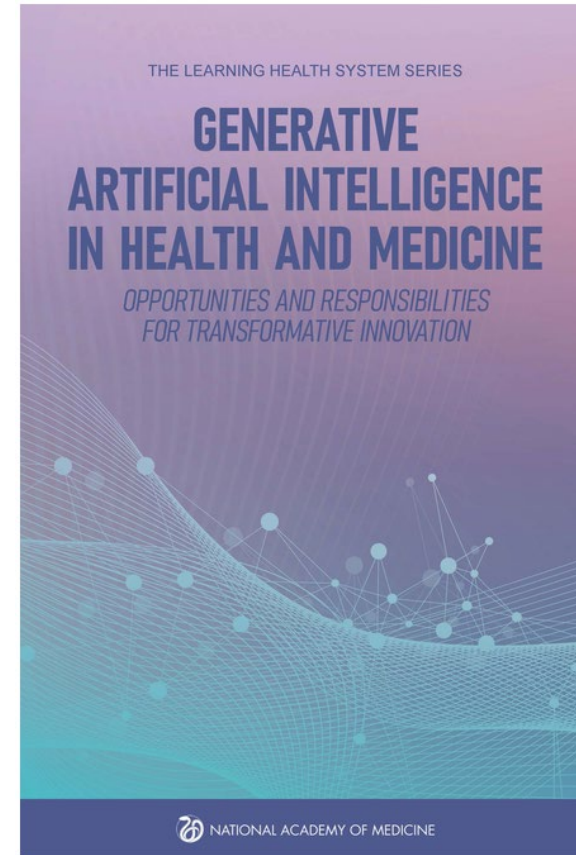
- Semantic Scholar
- Scite
- Consensus
- MedEdMentor
- Research Rabbit
- Elicit



Ethical Use

Risks of AI

- Data privacy and security
- Bias and equity
- Output limitations
 - **Algorithmic brittleness**
- Hallucinations



National Academy of Medicine. 2025. Generative Artificial Intelligence in Health and Medicine: Opportunities and Responsibilities for Transformative Innovation. Washington, DC: The National Academies Press.

Ethical Use

Do...

- Properly disclose
- Proofread and evaluate your outputs
- Follow academic integrity policies

Don't...

- Be lazy
- Copy, paste, forget
- Upload protected data
- Use AI to do your analysis for you

Ethical Use

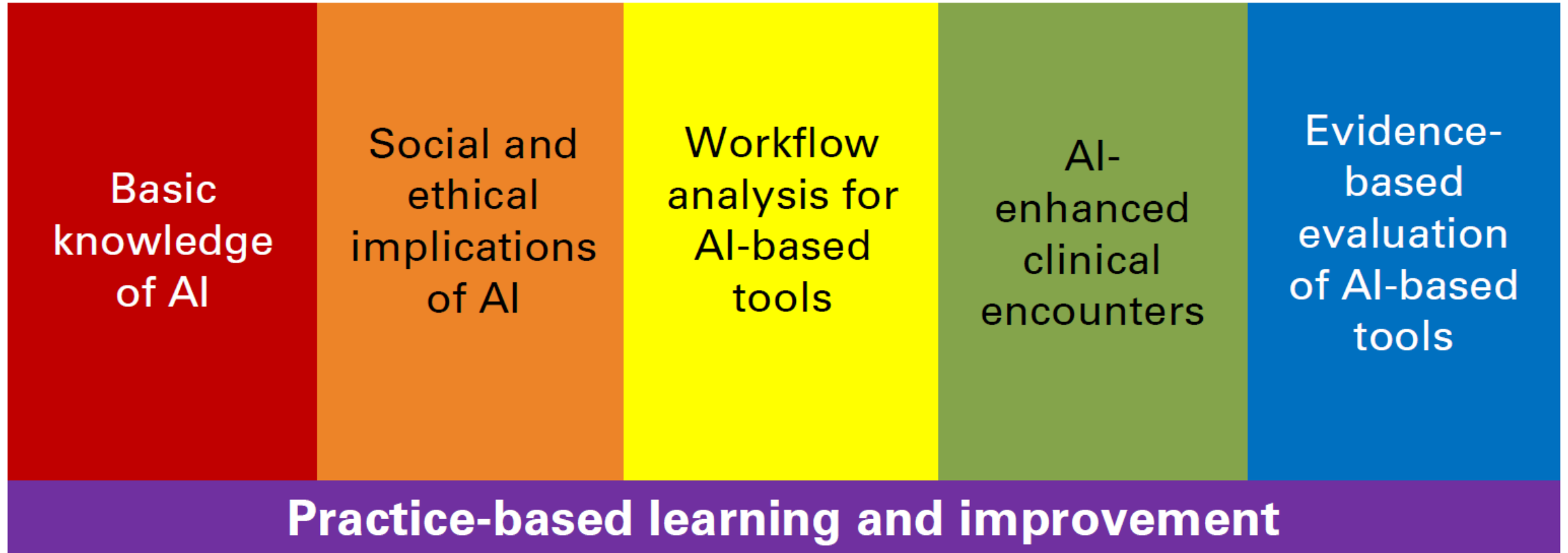
Do...

- Use your institution's secure AI platforms (if available)
- Use AI to brainstorm ideas
- Use AI to augment your own creativity
- Use AI to save time
 - Initial literature review
 - Summaries
 - Organizing
- Take ownership of anything you use from AI

Summary

- Medical educators wear many hats
- AI can be a useful tool for many tasks
- Better prompting gives better outputs
- Learn the variety of tools available
- Always use ethically
- Practice-based learning and improvement pays off

AI-RELATED CLINICAL COMPETENCIES FOR HEALTHCARE PROFESSIONALS



Russell, R. G. et al. (2023). Competencies for the Use of Artificial Intelligence–Based Tools by Health Care Professionals. *Academic Medicine*, 98(3), 348-356.

CME ACTIVITY INFORMATION

Activity Name: Introduction to AI in Medical Education Enduring: “Foundations of Skill-Building with Artificial”

Date: May 16, 2025 – May 14, 2028

Activity Code: 94868

Speaker Name: John Lowry, PhD

Target Audience: Regional physicians, residents, students, faculty

Learning Objectives: *at the conclusion of this educational activity, learners will be able to:*

Objective 1: Explain the fundamental concepts of AI, including machine learning, natural language processing, and data pipelines.

Objective 2: Define key AI terminology relevant to medical education.

Objective 3: Compare AI and Generative AI (GenAI).

Objective 4: Identify ethical considerations and guidelines for AI use in academia.

Objective 5: Self-assess AI competency in medical education.

Accreditation Statement:

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of Michigan State University and the Michigan Trauma Coalition. Michigan State University is accredited by the ACCME to provide continuing medical education for physicians.

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Summary of Financial Disclosures:

All planners, reviewers, faculty presenters have nothing to disclose.

Commercial Support Disclosure:

No commercial support was provided for this CME activity

Review Date: MAY 16, 2025

Original Release Date: MAY 15, 2025

Termination Date: MAY 14, 2028

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 - Complete the evaluation and attest to your time in attendance, then follow the screen instructions to print your certificate. Make sure your computer is set to allow pop-ups from the site or the certificate will not show.

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