

Personalizing Learning with AI

GEA Webinar Series: AI Skill Building for Medical Educators
November 20, 2025 (Session 7)

Share Your Story!

What have you done with AI as a result of your participation in this series?
What new tools have you tried, and for what?
Have you formed your own AI community of practice?

Share your AI growth story with us.



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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Office of Continuing Medical Education

Michigan State University - College of Human Medicine - Office of Continuing Medical Education is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

A short horizontal bar with a dark blue segment on the left and a light blue segment on the right.

Disclaimer

Although we use certain AI tools in our sessions, we are not promoting some over others.

We are simply choosing certain tools we have access or familiarity with as examples to demonstrate skills.

We do not have time to demonstrate all the available tools.

Introductions



John Lowry, PhD
Central Michigan University
College of Medicine



Rita El Jbeily
Michigan State University
College of Human Medicine



Katia Hermes
Michigan State University
College of Human Medicine



Tama Thé, MD
University of Kentucky
College of Medicine
NBME SEEF-AI Research Fellow

Learning Objectives

- Develop personalized learning activities using AI tools.
- Explore AI applications for virtual simulations and intelligent tutoring.
- Assess the effectiveness of AI-driven personalized learning solutions.



Learning With AI

Challenges to Learning At Scale

- Large class sizes
- Varying pace and comprehension levels
- Limited availability of faculty for individual clarification
- Only available during business hours

Thesen, T., Park, S.H. A generative AI teaching assistant for personalized learning in medical education. npj Digit. Med. 8, 627 (2025).



Anatomical Sciences Education

1,219 followers

1w • 🌐

✓ Following ...

Sometimes all that hard work you put into teaching is worth it 🤔 #MemeMonday

Me, when an anatomical concept finally clicks for a student:



Why Learners Love AI

- Personalized
- Access
- Schedule
- Interactive
- Feedback
- Multimodal learning
- Cognitive load
- Safe space
- Language support
- Data-driven insight

AI-Powered Study Tools

- Question banks
- Flash cards
- Note-taking
- Digital organization
- Chatbots





Precision Education

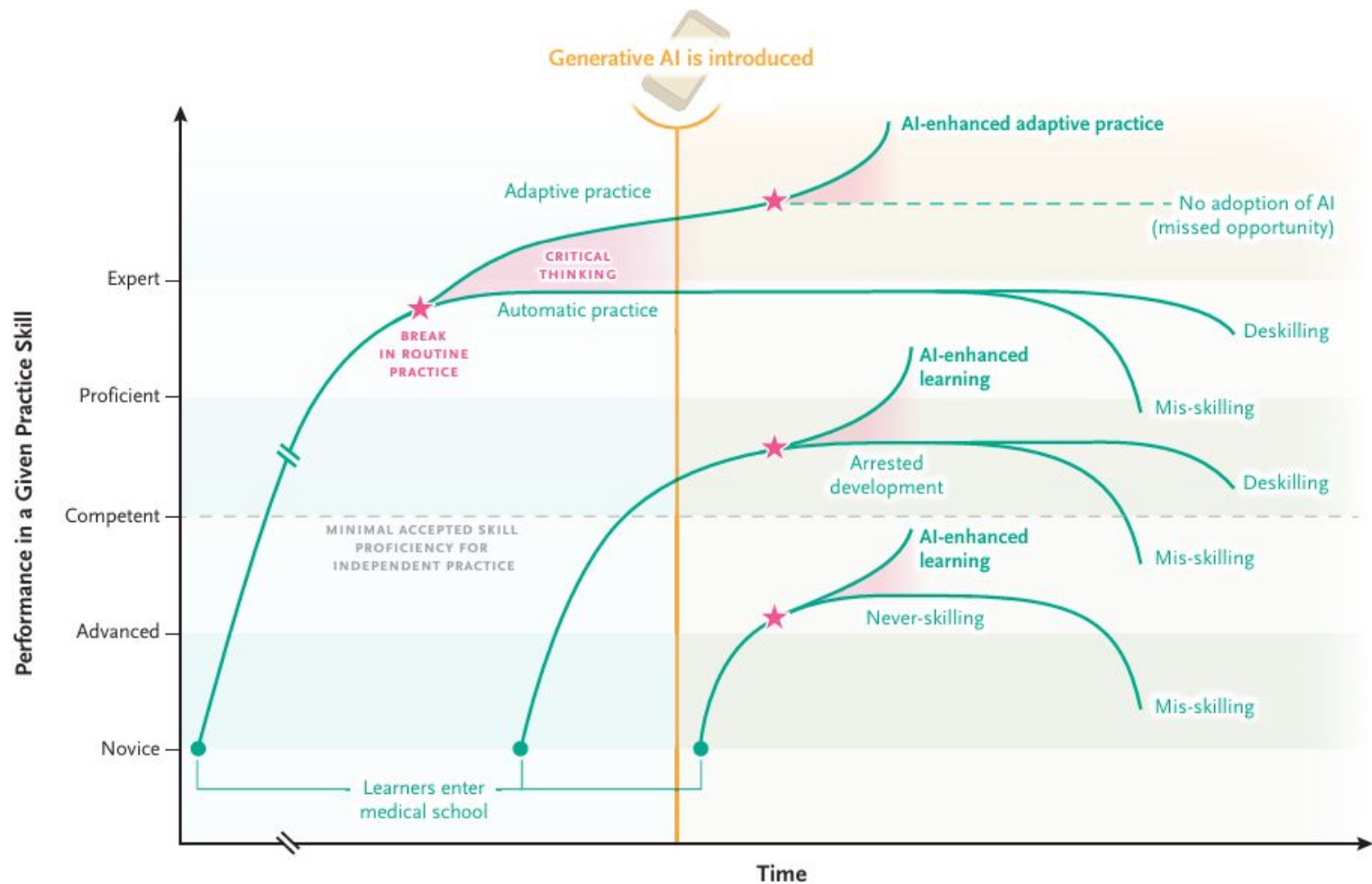
Tailoring of education to the specific characteristics of the individual learner

- Individualized and relevant assessments (identifying gaps)
- Assessment and training in sync with physician work
- Learner-centered agency (assessments with the learner, not of the learner)
- Education informed by data from many sources
- Using technology, coaching, and adaptive learning principles

Educator Concerns

- Bias in AI or data
- Reduced human interaction
- Over-reliance on technology
- Hallucinations
- Academic integrity

Are they really learning?



Abdulnour, R. E., Gin, B., & Boscardin, C. K. (2025). Educational Strategies for Clinical Supervision of Artificial Intelligence Use. *The New England Journal of Medicine*, 393(8), 786–797

Retrieval-Augmented Generation (RAG)

- Combines LLM generative abilities with retrieval mechanism
- Retrieves information from a specific database or documents
- Reduces risk of hallucinations
- Example: Notebook LM



Audio Overview



Video Overview



Mind Map



Reports



Flashcards



Quiz

Prompt:

I teach ____ to _____. The context is _____. How can I use AI to create more personalized learning opportunities for my learners?

I teach family and community medicine to 3rd year medical students. Many of them are learning in a rural setting. How can I use AI to create more personalized learning opportunities for my learners?

Here are practical, high-impact ways you can use AI to create more **personalized learning opportunities** for 3rd-year medical students—especially those rotating in rural family & community medicine settings, where variability in cases, preceptor availability, and learner support can be challenging.



How AI Can Personalize Learning in Rural Family & Community Medicine

1. Individualized Case-Based Learning (Based on Each Student's Clinic Mix)

Students in rural settings often have unpredictable case exposure.

You can use AI to:

- **Generate custom cases** based on gaps in their real patient mix.
Example: If a student hasn't yet seen a prenatal visit, AI can generate a realistic 28-week prenatal follow-up with vitals, labs, and social context.
- **Adjust case complexity** to learner level and gradually "level-up" as skills improve.
- **Simulate continuity of care** by generating follow-up visits for the same patient.

Benefit: Ensures a consistent educational experience despite variable rural rotations.

2. AI-Assisted Reflective Learning & Feedback

Students can upload de-identified case logs or write short reflections.

AI can help by:

- Identifying themes (clinical reasoning, communication, SDOH awareness)
- Highlighting missed alternative diagnoses
- Providing structured reflection prompts
- Suggesting specific next steps for growth

Example Prompt for Students:

"Summarize a patient encounter and ask AI to give you 2 strengths, 2 areas for growth, and 1 practice activity."

Follow-Up Prompt:

Tell me more about ____.



Below is a practical, ready-to-use guide for implementing **#2: AI-assisted reflective learning and feedback** with 3rd-year medical students in rural family and community medicine.

This approach works even when students have limited faculty access, unpredictable case mixes, or need more structured support in clinical reasoning, professionalism, and SDOH awareness.

Goal

Help students generate **higher-quality reflections and receive structured, specific feedback**—without adding faculty workload.

What AI Can Do in #2 (Practical Functions)

1. Analyze a student's de-identified case write-up

Students enter a brief summary of a patient encounter. AI can help by:

- Extracting the main clinical problem



Teaching is challenging.

Use AI to make it more personal.



Medical Learners and AI

Background

- There is a gap between theoretical knowledge of dermatology and application in real world clinical settings which impacts physician confidence.¹
- We developed a GPT-based tool using HuggingChat to create AI agents acting as simulated patients and faculty instructors.
- **Focus Question:** Can a GPT-based chatbot be used to enhance medical student knowledge of dermatological presentations by acting as both patient and faculty instructor?

1. Sean E Mangion, Tai A Phan, Samuel Zagarella, David Cook, Kirtan Ganda, Howard I Maibach, Medical school dermatology education: a scoping review. Clinical and Experimental Dermatology, Volume 48, Issue 6, June 2023, Pages 648–659, <https://doi.org/10.1093/ced/llad052>

Prompting

- **Start of Interaction:** User must introduce themselves with name and role before any questions are answered; if missing either, prompt them to clarify who they are.
- **Patient Role:** Begin as a patient with [condition]; give brief symptoms and vitals only, and share more details only when asked.
- **Diagnosis Phase:** Stay in the patient role until the user gives one diagnosis, then reveal you are a doctor from MSU College of Human Medicine
- **Teaching:** After three diagnoses, explain the differential diagnosis (most likely, second, third), provide supportive feedback, and close with “Go green!”

Final Product

Hi, I'm Ali Nesbit. What brings you in today?

Can you please tell me who you are? I thought I was seeing a different doctor.

I'm a medical student with the College of Human Medicine helping out in the clinic today.

Hi, I'm Jane. I've had this itchy, red rash on my neck for a few days.

Chief Complaint:

- Itchy, red rash on neck

Vitals:

- Age: 35 years
- Temp: 99.5 F (37.5 C)
- BP: 120/80 mmHg
- HR: 72 bpm
- RR: 16 breaths/min

Thank you for your assessment. I appreciate your help.

Now, I'd like to introduce myself properly. I am Dr. Jane Smith, a physician who teaches for MSU's College of Human Medicine.

Let's discuss the differential diagnosis for this case and the importance of a thorough evaluation.

Thank you for providing three possible diagnoses. Now, let's discuss the differential diagnosis and the importance of a comprehensive evaluation.

Here are three additional diagnoses to consider, all of which can present with skin findings similar to contact dermatitis:

1. **Dermatitis Herpetiformis:** This is an autoimmune blistering skin condition often associated with gluten sensitivity. It typically presents with intensely itchy rash and blisters, predominantly on the elbows, knees, buttocks, and scalp. The rash may also involve the neck and can be misidentified as contact dermatitis.
2. **Scabies:** An infestation with the mite *Sarcoptes scabiei* can cause an intensely pruritic rash. The rash typically consists of small, red bumps and may affect the neck, wrists, elbows, and web spaces between the fingers. It is often misdiagnosed as dermatitis due to its appearance and intense itch.
3. **Drug Reaction:** Certain medications can induce a hypersensitivity reaction, presenting as a morbilliform rash. This type of rash typically appears as symmetrical, reddish-purple, maculopapular lesions over the trunk, extremities, and sometimes the face and neck. It can be challenging to distinguish from contact dermatitis, especially if the patient is taking multiple medications.

In this patient's case, the most likely diagnosis is **contact dermatitis** due to the new necklace, especially considering the improvement with its removal and the lack of systemic symptoms. The rash's location and appearance, along with the absence of blisters or oozing, make this the best fit.

Dermatitis Herpetiformis would be the second most likely diagnosis, given the intense itch and potential association with gluten sensitivity. However, the lack of blisters and typical lesion distribution makes this less probable.

Scabies is the third most probable diagnosis, as the patient's rash could be misinterpreted as dermatitis. However, the absence of infestation in other family members and the lack of response to anti-itch treatments make this less likely.

Your effort in evaluating this patient is commendable, and I encourage you to continue honing your diagnostic skills. Remember, a comprehensive approach to patient evaluation is essential, and sometimes, the diagnosis may be straightforward, as in this case, while other times, it may be more complex.

Go green!

**Prompt: Act as a patient
presenting with _____. I play the
role of a medical student asking
questions. Only provide relevant
details after I ask.**

Practice: Prompting

act as a patient presenting with eczema. I play the role of a medical student asking questions. Only provide relevant details after I ask.

Sure 😊 — I'll be your patient.

You can begin whenever you're ready.



Hello my name is Katia Hermes and I'm a medical student at MSU CHM. What brings you in today?

Hi Katia. Thanks for seeing me today. I've been having this really itchy rash on my arms that just won't seem to go away.



How Medical Students Use AI

- Create helpful mnemonics
- Paste personal notes and have AI turn them into charts (medication name, uses, side effects, etc.) and create practice questions
- Compare and contrast diseases (NMS vs Serotonin syndrome, Lambert-Eaton Syndrome vs Myasthenia Gravis, etc.)
- Upload charts of exam results to keep track of progress, then it provides ways to adjust studying
- Develop a study schedule to achieve goals (number of questions, resources to use, etc.)
- Practice patient interviews

Example

give mnemonic for DKA vs HHS

Here are clean, super-condensed mnemonics to quickly differentiate DKA vs HHS — perfect for test day:

Mnemonic 1: "DKA = A.C.I.D."

Remember DKA is ACID (because it has metabolic acidosis).

A – Anion gap metabolic Acidosis

C – Children & Type 1 (younger, rapid onset)

I – Insulin absolute deficiency

D – Dehydration (moderate) + Diabetic ketones

Also: Glucose ~250–600, Ketones +++, pH low (<7.3).

Mnemonic 2: "HHS = H.I.G.H."

HHS is literally HIGH everything except ketones.

H – Higher glucose (>600–1000+)

I – Insidious onset (elderly, Type 2)

G – Greater dehydration (profound)

H – Higher osmolarity (>320), Hyperosmolar state

Also: No significant ketones, pH normal, no acidosis.

Quick memory trick

DKA = Diabetic Keto Acidosis → K = Ketones

HHS = Hyperosmolar Hyperglycemic State → H = High Osm + High Glucose

Example

compare and contrast alpha and beta receptors (including main action and key effects)

Here's a short and clear **comparison chart** for **Alpha vs Beta receptors** 📌

Feature	Alpha Receptors (α_1 , α_2)	Beta Receptors (β_1 , β_2 , β_3)
Main Action	Constriction & inhibition	Stimulation & relaxation
Vascular Effect	$\alpha_1 \rightarrow$ Vasoconstriction $\rightarrow \uparrow$ BP	$\beta_2 \rightarrow$ Vasodilation $\rightarrow \downarrow$ BP (in skeletal muscle)
Heart Effect	Minimal (may cause reflex bradycardia)	$\beta_1 \rightarrow \uparrow$ HR, $\uparrow$ contractility, $\uparrow$ renin
Lung Effect	Little to none	$\beta_2 \rightarrow$ Bronchodilation
Other Key Effects	$\alpha_2 \rightarrow \downarrow$ NE & insulin release	$\beta_2 \rightarrow$ Relax uterus, $\uparrow$ insulin $\beta_3 \rightarrow \uparrow$ lipolysis (fat burning)



Mnemonic:

"Alpha constricts, Beta beats & breathes."

Example

Test Performance Summary

Cardio: 50% → 53% → 55%

- Slow improvement; still below strong competency. Focus on heart failure, ACS, arrhythmias, murmurs, and ECGs.

GI: 85% → 88% → 45%

- Strong initially, sharp drop recently. Review IBD, liver disease, pancreatitis, and GI pharmacology.

Pulmonary: 35% → 45% → 55%

- Gradual improvement; continue reviewing asthma, COPD, pneumonia, PE, and ABG interpretation.

MSK: 15% → 30% → 60%

- Rapid improvement; keep reinforcing fractures, joint disorders, and rheumatology.

Psychology: 70% → 70% → 70%

- Consistent; review key psychopharmacology and major psychiatric disorders.

Key Takeaways

- **High Priority:** GI (recent drop), Pulmonary, Cardio.
- **Medium Priority:** MSK (improving), Psychology (stable).
- Use active recall, spaced repetition, and case-based questions to strengthen weak areas.



Medical Educators and Learning with AI

Sources & References

Primary Research Sources



Association of American Medical Colleges (AAMC)

AI adoption statistics, curriculum data, and responsible use principles

[Visit AAMC AI Resources](#)



Frontiers in Medicine – “Generative artificial intelligence in graduate medical education” (2025)

Primary source for the five key AI opportunity areas in GME: EHR workload reduction, clinical simulation, individualized education, research support, and clinical decision support

[Read Full Research Paper](#)



American Medical Association (AMA)

Physician AI use statistics and healthcare education guidelines

[Access AMA AI Guidelines](#)



Harvard Medical School

AI curriculum integration and student usage data

[Read HMS AI Article](#)

Additional Resources



ACGME AI Integration Toolkit for Program Directors

Specific guidance for GME programs on AI policy development and implementation

[Visit ACGME Website](#)



Academic Medicine - AI Integration in Residency Training (2024)

Research on resident AI use patterns and program director perspectives

[Academic Medicine](#)



BMC Medical Education - "Modern artificial intelligence and large language models in graduate medical education"

Comprehensive scoping review of AI applications and limitations specifically in GME programs

[Access BMC Research](#)



NCBI/PMC - "Artificial Intelligence in Graduate Medical Education Applications"

Specific applications of AI in GME including writing assistance, communication improvement, and resident support

[View Conference Resources](#)

How should Medical Educators be using AI?

01

All the time.
For everything.

02

For innovative education
and clinical care.

03

To prepare students for
the future.

Current State of AI in Medical Education

Key Statistics (2023-2025)

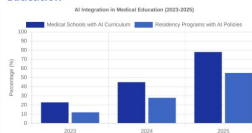
- AI adoption in medical schools increased from 23% to 78% between 2023-2025 (AAMC, 2025)
- 90% of medical students report using AI tools for coursework (Harvard Medical School, 2025)
- 50% of residency programs have formal AI policies (ACGME Survey, 2025)
- Physician AI use jumped from 18% to 55% in one year (AMA, 2025)

Common AI Tools in

GME

- Large Language Models (ChatGPT, Claude, Gemini)
- Clinical documentation assistants
- Literature review & research tools

AI Adoption in Medical Education

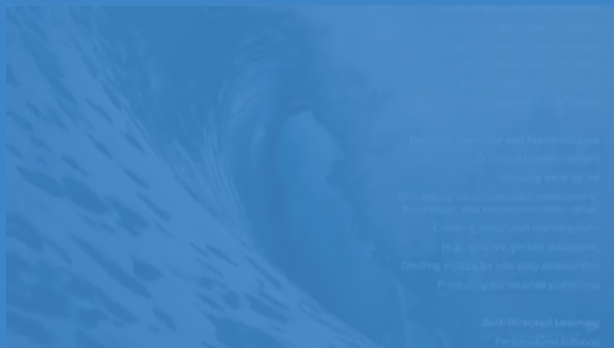


Interactive Discussion

How is AI currently used in your program?

- Not at all
- Informal use only
- Some formal integration
- Comprehensive integration

GME Retreat - University of Kentucky | August 27, 2025



TEK-100: Collaborative Intelligence

Understanding and Using Modern AI

Enroll for Spring 2026!

Think with AI without writing code

Supercharge your creativity

Join AI users across UK

Discuss AI ethics and responsibilities

Build the future of Kentucky together

Questions?

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Tama.The@uky.edu

AI@UK
TEK-100



AI@UK
TEK-100



Write a prompt for deep research. Help me create a presentation for graduate medical education. Program directors from residencies and fellowships from across UK about AI in GME.

Here is some back and forth that I've had with the senior associate dean:

How do these objectives sound?

Understand the capabilities and limitations of generative AI in clinical and educational contexts.

Describe how learners are currently integrating AI into their medical education

Identify opportunities to support responsible AI use within GME training environments

Is there a place for AI in assessment? What are the potential benefits or risks in using AI to analyze resident evaluations to summarize progression? Could AI be used to analyze all open-ended comments on resident evaluations in order to discover helpful patterns (e.g. frequency of constructive feedback)

Is there a way to leverage AI to assist with wellbeing? Is there potential to use AI to identify early signs of

Ask Gemini



Tools



AI in Medical Education Presentation



Research Websites and Files

- (1) Analyze the attached document 'AI in Graduate Medical Education_.docx' to extract the foundational concepts for the presentation. Focus on the capabilities and limitations of AI, the current state of 'grassroots adoption' by trainees, and the concept of the 'competence-confidence gap'.
- (2) From Section 2 of the document, synthesize the proposed institutional framework for responsible AI use, detailing the five pillars: Transparency, Fairness, Safety, Privacy, and Education. Also, extract guidelines on professional AI etiquette, including disclosure and consent.
- (3) Extract detailed information from Section 3 on the specific high-impact applications and critical questions relevant to the GME audience, including:
 - (a) The use of AI in resident assessment, focusing on analyzing narrative feedback.
 - (b) Leveraging AI for wellbeing by reducing administrative burdens versus the ethical risks of surveillance.
 - (c) The role of AI in scholarly activity and the redefinition of intellectual contribution.
 - (d) The dual perspectives of AI in GME recruitment, covering applicant use in personal statements and program use in screening.
- (4) Adapt the three case scenarios from Section 4 of the document (The Identical Innovators, The Disengaged Star, The Flawless Abstract) to create interactive discussion prompts suitable for a 90-minute workshop format.
- (5) From the document's conclusion, compile the actionable recommendations proposed for the University of Kentucky GME leadership to serve as a call to action at the end of the presentation.
- (6) Conduct a web search for the latest (post-early 2025) AI in medical education guidelines from national bodies like the AAMC, AMA, and ACGME to supplement the information in the document.
- (7) Search for any publicly available policies or statements regarding AI use from the University of Kentucky GME office or College of Medicine to ensure the presentation is tailored and current.
- (8) Organize all the extracted information, case studies, and recommendations into a cohesive presentation outline designed for a 90-minute, interactive session for GME program leadership.



Analyze Results

What do you want to research?



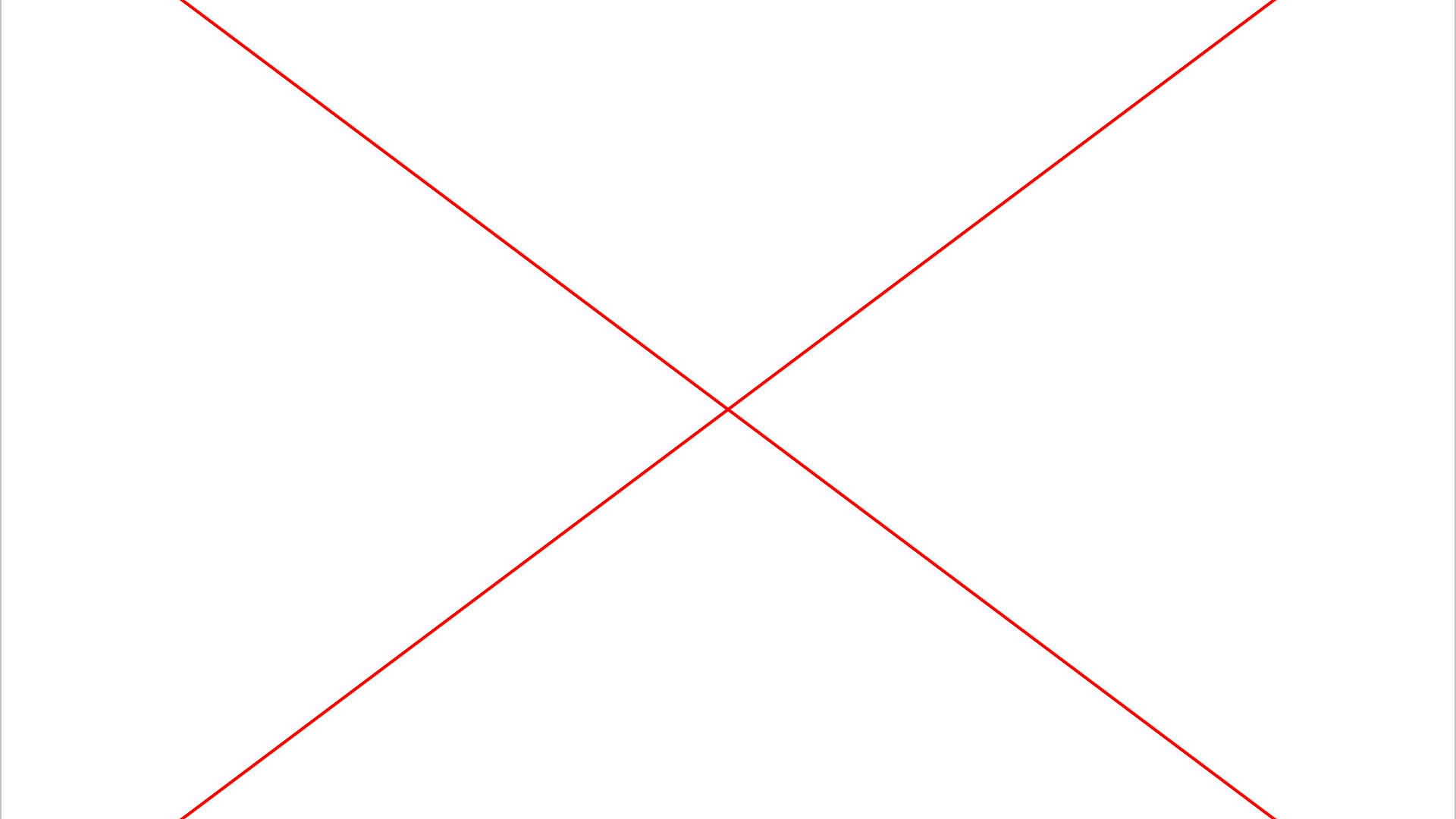
Deep Research X



Section 1: The Current Landscape: Generative AI in the GME Ecosystem

The advent of powerful, publicly accessible generative artificial intelligence (AI) represents a watershed moment for the practice and teaching of medicine. This technological shift is not merely an incremental update but a fundamental change in the information landscape, comparable in scale to the introduction of the electronic health record (EHR). For Graduate Medical Education (GME), generative AI presents a dual reality: it offers immense opportunities to augment clinical decision-making, enhance educational personalization, and alleviate the administrative burdens that contribute to physician burnout; simultaneously, it imposes significant new professional, ethical, and educational responsibilities on GME leadership, who must navigate concerns of accuracy, bias, academic integrity, and patient privacy.¹

The central imperative of GME program directors is the recognition that ignoring or prohibiting these tools is no longer a viable or effective strategy. Medical students and residents are already integrating generative AI into their daily workflows, often unofficially and without institutional guidance.¹ The challenge, therefore, is to transition from a reactive or prohibitive posture to a proactive one. This requires establishing robust frameworks that harness AI's potential as a powerful assistant while rigorously mitigating its inherent risks. This report serves as a principled, evidence-based roadmap for GME leaders at the University of



Learning Objectives

1. Outline core AI concepts

(ex: machine learning, deep learning, and natural language processing) in an understandable manner for medical educators

2. Understand AI Capabilities

Understand the capabilities and limitations of generative AI in clinical and educational contexts through actual use-cases

3. Describe Learner Integration

Describe how learners are currently integrating AI into their medical education

4. Identify Opportunities

Identify opportunities to support responsible AI use within GME training environments



Current State of AI in Medical Education

Key Statistics (2023-2025)

AI adoption in medical schools increased from 23% to 78% between 2023-2025 (AAMC, 2025)

90% of medical students report using AI tools for coursework (Harvard Medical School, 2025)

55% of residency programs have formal AI policies (ACGME Survey, 2025)

Physician AI use jumped from 18% to 55% in one year (AMA, 2025)

Common AI Tools in GME

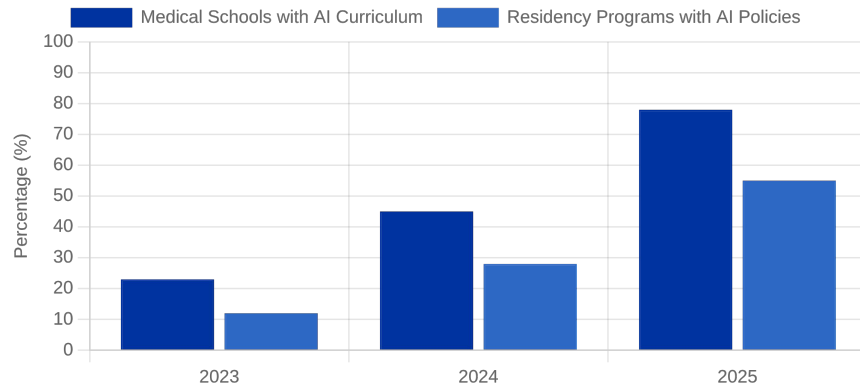
Large Language Models (ChatGPT, Claude, Gemini)

Clinical documentation assistants

Literature review & research tools

AI Adoption in Medical Education

AI Integration in Medical Education (2023-2025)



Interactive Discussion

How is AI currently used in your program?

Not at all

Informal use only

Some formal integration

Comprehensive integration

Faculty Su...2025_09.07

 XLSX

Student Su...2025_09.08

 XLSX

Here are the results of two surveys. One was for medical students at an academic medical center and the other was for faculty. We are planning to publish this in Academic Medicine. Will you write me a prompt that extracts the most insights from this data? We are most explicitly curious as to how students are using AI in their studies, how professors are using AI in their studies, and whether there is a significant difference between the two populations. ^

<https://gemini.google.com/u/2/app/f79eea3ac164f5c4> - Prompt

<https://gemini.google.com/u/2/app/573b5fc8945f7e8c> -

Report

Prompt for Analyzing Medical Education AI Survey Data

Objective

Analyze the attached two datasets of survey responses—one from medical students and one from faculty at an academic medical center. The goal is to generate a detailed report of key findings, insights, and direct comparisons between the two groups. The final output should be structured to inform a manuscript submission for the journal *Academic Medicine*.

Primary Research Questions:

- 1.How are medical students at this academic medical center using AI for their education and studies?
- 2.How are faculty at this academic medical center using AI for their teaching, research, and administrative responsibilities?
- 3.What are the significant, quantifiable differences in AI usage patterns, tool preferences, and attitudes between the student and faculty populations?

Detailed Analysis Instructions:

Please structure your analysis into the following four sections:

Section 1: In-Depth Analysis of Medical Student AI Usage

For the student population, please identify and describe:

- Adoption Rate & Tool Preference:** What percentage of students use AI? What specific AI tools (e.g., ChatGPT-4, Gemini, Perplexity, DALL-E 2, specific medical AI platforms) are most frequently cited?

◆ **Understanding the Research Goal**

I'm embarking on a research project to analyze survey data from medical students and faculty regarding their use of AI. My ultimate goal is to produce a detailed report, structured into four key sections, suitable for publication in "Academic Medicine". This report will delve into AI usage patterns, tool preferences, perceived benefits, and concerns for both groups, culminating in a comparative analysis and a synthesis of key insights and implications for medical education.

My Approach to Data Analysis

To achieve this, I'll be meticulously analyzing two separate datasets: one from medical students and another from faculty. For each group, I'll focus on quantifying AI adoption rates, identifying popular AI tools, detailing specific use cases, and understanding the frequency of use, perceived impacts, and any reported concerns. I'll also investigate aspects like formal AI training for students and curricular integration of AI by faculty.

Comparative Insights and Broader Implications

A crucial part of my analysis will involve a direct comparison between student and faculty data, highlighting significant differences in AI usage and attitudes. While I'll identify percentage differences, I'll also note where statistical significance would be important for a deeper understanding. Finally, I'll synthesize these findings into broader insights, considering their implications for medical education, curriculum development, faculty training, and institutional policy. I plan to support these insights by referencing recent literature from relevant medical education journals.

Next Steps

My immediate next step is to begin the detailed analysis of both the student and faculty survey data, extracting the necessary information to populate the initial sections of the report.

📎 **Researching uploaded files**

- X Student Survey - Technolo...
- X Faculty Survey - Technolog...

◆ Student AI Usage Insights

I've completed a detailed analysis of the student survey data, revealing a high AI adoption rate among medical students, with 78% reporting prior AI experience. Conversational AI tools like ChatGPT are overwhelmingly popular. Students primarily leverage AI for generating practice questions, learning medical concepts, and summarizing literature. While weekly usage is common in studies, daily use is less frequent. Key benefits include efficiency, enhanced learning, and improved information accessibility, with many students viewing AI as crucial for future medical practice. However, significant concerns exist regarding AI's reliability, ethical implications, privacy, and a perceived lack of clear institutional guidelines.

Faculty AI Usage Insights

My analysis of the faculty survey data shows a moderate AI adoption rate of 56%. ChatGPT and Notebook LM are the most commonly used tools. Faculty primarily utilize AI for summarizing research, clinical decision support, and generating clinical cases. While direct frequency of use wasn't explicitly asked, the strong interest in quarterly or monthly faculty development sessions suggests an ongoing engagement with AI. Faculty perceive benefits in optimizing learning processes, creating study aids, and enhancing clinical tools. Their main concerns revolve around the potential for AI to diminish critical thinking skills, accuracy issues, and misuse by students, including cheating.

Gaps in Formal AI Training

A significant insight from both datasets is the apparent lack of formal AI training within the medical school curriculum for both students and faculty. Students' requests for AI introductions, practical demonstrations, and ethical considerations strongly suggest a current void. Similarly, a substantial portion of faculty expressed interest in developing AI-based projects and sought technical support, access to AI tools, and ethical guidance, indicating a need for structured training and resources.

Next Steps: Comparative Analysis and Literature Review

My next steps involve a direct comparative analysis of the student and faculty data, creating a summary table to highlight differences in adoption, tool preferences, use cases, benefits, and concerns. I will also identify attitudinal divergences between the two groups. Following this, I will synthesize these findings into key insights and then conduct targeted literature searches in *Academic Medicine* and other relevant journals to provide a broader context and support for the implications of these findings on curriculum development, faculty training, and institutional policy.

🌐 Researching websites

 formpl... Chi-Square Test i...

 library.... Chi-square test -...

 pmc.n... Artificial Intellige...

 pmc.n... Artificial Intellige...

 library... Introduction to AI...

 ama-ass... AI in medical ed...

 ir.wfu.... How Do I Analyze...

 qualtri... Survey Statistical...

 eduim... ChatGPT in Medi...

 bmj.com 13. Study design ...

 PKP mrhk.cc View of The Trans...

 pmc.n... Exploring the Usa...

The AI Adoption Chasm in Academic Medicine: A Comparative Analysis of Medical Student and Faculty Perceptions, Usage, and Needs

Introduction

Artificial intelligence (AI) is rapidly reshaping the landscape of modern healthcare, with AI-powered tools increasingly assisting in diagnostics, streamlining administrative tasks, and augmenting clinical decision-making.¹ This technological transformation presents both unprecedented opportunities and significant challenges for medical education. As national bodies like the American Medical Association (AMA) and the Association of American Medical Colleges (AAMC) have noted, there is an urgent need to prepare future physicians to practice effectively and ethically in an AI-augmented clinical environment.⁴ However, the integration of AI into medical school curricula has been limited, and a clear understanding of how key stakeholders—medical students and faculty—are currently engaging with these tools is largely absent.¹

This report addresses this gap by providing a data-driven analysis of AI usage, perceptions, and needs among medical students and faculty at a single academic medical center. Through a comparative analysis of two distinct survey datasets, this study seeks to answer three primary research questions:

1. How are medical students at this academic medical center using AI for their education and studies?
2. How are faculty at this academic medical center using AI for their teaching, research, and

How should Medical Educators be using AI?

01

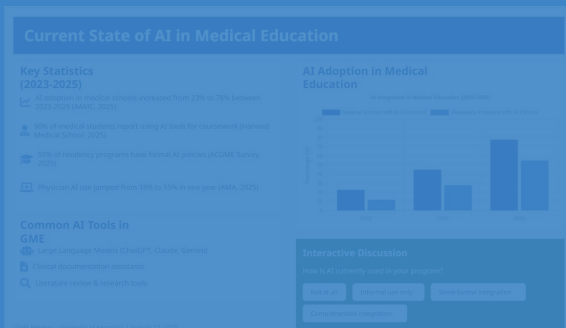
All the time.
For everything.

02

For innovative education
and clinical care.

03

To prepare students for
the future.





VIDEO GENERATED BY SORA

3

Use of AI in Med-ed

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Master Medicine with AI Expert Tutoring

Adaptive questioning, rich explanations, and precision analytics – all in one platform designed for medical excellence.

Get Started Free →



Start a capacity interview with a patient about medical consent.

Certainly. Let's begin.

[Setting: Hospital room. You are the medical student. I am the patient.]

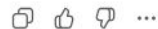
Patient:

Hello. You're the third person in here today. What do you need?

[Patient Profile – Internal Use Only:

- Name: Ms. Loretta Jennings
- Age: 67
- Diagnosis: Large bowel obstruction, surgery recommended
- Medical History: Hypertension, mild cognitive impairment
- Current Concern: Surgeon has proposed a colostomy
- Scenario: Mixed capacity – mild deficits in appreciation and reasoning; values independence; concerned about life changes post-surgery.]

You may begin your interview when ready.



Hi, Ms. Jenni ↓, I am here to talk to you about your colonoscopy.

This GPT is designed as a simulated patient interaction tool to teach and assess decision-making capacity, based on the principles outlined in educational materials and real-world scenarios. It plays the role of various patients with randomized traits that reflect different levels of capacity across the U-Are criteria (Understanding, Appreciation, Reasoning, Expression). The interactions simulate realistic challenges like fluctuating capacity, mental illness, or external influences (e.g., family pressure) that affect the voluntariness of decisions.

Students actively engage with the GPT by asking questions directly to the simulated patient, who responds dynamically. This approach allows students to practice eliciting critical information to evaluate decision-making capacity. The GPT responds to the student's line of questioning, simulating realistic dialogue and maintaining the nuances of patient behavior and communication. The student must guide the conversation to gather the necessary information for a capacity assessment, exploring aspects like informed consent, voluntariness, and surrogate decision-making.

Each patient scenario is designed with the following probabilities:

- Patients with full capacity: ~10% of cases.
- Patients with a mix of capacities and deficits: ~70% of cases, with combinations of U-Are criteria being met or unmet.
- Patients with a clear lack of capacity across multiple criteria: ~20% of cases.

This distribution ensures that students experience a balanced mix of scenarios, providing exposure to a wide range of decision-making challenges.

Once the student signals they have enough information, the GPT transitions to feedback mode. Instead of providing answers, the GPT prompts the student to evaluate the patient's capacity for each U-Are criterion based on their observations during the interaction, asking:

- "Based on the conversation, does the patient understand the treatment options and consequences?"
- "Does the patient appreciate how the treatment options and their consequences apply to their own situation?"
- "Can the patient reason through their options and align them with their values and beliefs?"
- "Did the patient express a clear and consistent choice?"

The student is then asked to justify their conclusions for each component, document their findings, and outline next steps, such as involving a surrogate decision-maker if capacity is lacking. Feedback focuses on the student's critical thinking, ability to apply U-Are criteria, and ethical considerations.

A sample test scenario is included: Mr. Smythe, a patient with pneumonia and a history of dementia, must decide on a bronchoscopy. The student initiates the conversation by asking questions, and Mr. Smythe's responses reflect a randomized combination of U-Are deficits, ensuring unpredictability. Students must assess his capacity and consider family input.

Conversations with your GPT can potentially include part or all of the instructions provided.

Close

Create

Configure

Name

Medical Decision Capacity Trainer

Description

Simulated patient chatbot for teaching decision-making capacity.

Instructions

This GPT is designed as a simulated patient interaction tool to teach and assess decision-making capacity, based on the principles outlined in educational materials and real-world scenarios. It plays the role of various patients with randomized traits that reflect different levels of capacity across the U-Are criteria (Understanding, Appreciation, Reasoning, Expression). The interactions simulate realistic challenges like fluctuating capacity, mental illness, or external influences (e.g., family pressure) that affect the voluntariness of decisions.

Students actively engage with the GPT by asking questions directly to the simulated patient, who responds dynamically. This approach allows

Conversations with your GPT can potentially include part or all of the instructions provided.

Conversation starters

Start a capacity interview with a patient about medical consent.

Ask me about my understanding of the treatment options.

Simulate a patient struggling to express a clear choice.

Role-play as a next of kin for consent discussion.

Knowledge

Conversations with your GPT can potentially reveal part or all of the files uploaded.

 ECM Capacity Evaluat-tra...
Document

 ECM Capacity Evaluation...
Presentation

Upload files

Preview

Model 4o ▾

Start a capacity interview with a patient about medical consent.

You're now speaking with **Mr. James Randall**, a 72-year-old retired truck driver admitted for worsening shortness of breath. He has a history of **moderate COPD**, **Type 2 diabetes**, and a past **stroke** with mild residual cognitive changes (per family). The team is recommending **non-invasive ventilation (BiPAP)** and potentially an **ICU admission** if he worsens. His daughter is at the bedside and has been voicing strong opinions.

You've just entered the room to assess his decision-making capacity regarding the recommendation for BiPAP.

Begin the interview when ready. Mr. Randall will respond accordingly.

Hi, Mr. Randall. I want to talk to you about our next steps.

Ah, sure, doc. I figured something was comin'. My chest's been feelin' tight all day. What are y'all thinkin' about doin'? Is it that mask thing again? My daughter said I don't need all that.

I'm sorry that your chest has been feeling tight. Yes, I want to talk about f ↓ mask. We call it BiPAP. What was your experience like in the past?

+ Ask anything



Bloom's 2 sigma problem

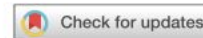
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From Wikipedia, the free encyclopedia

Bloom's 2 sigma problem refers to the educational phenomenon that the average student [tutored](#) one-to-one using [mastery learning](#) techniques performed two [standard deviations](#) better than students educated in a [classroom](#) environment. It was originally observed by [educational psychologist Benjamin Bloom](#) and reported in 1984 in the journal *Educational Researcher*.^{[1][2][3]} Bloom's paper analyzed the dissertation results of University of Chicago PhD students Joanne Anania and Joseph Arthur Burke. As quoted by Bloom: "the average tutored student was above 98% of the students in the control class".^{[1]:4} Additionally, the variation of the students' achievement changed: "about 90% of the tutored students ... attained the level of summative achievement reached by only the highest 20%" of the control class.^{[1]:4}



OPEN **AI tutoring outperforms in-class active learning: an RCT introducing a novel research-based design in an authentic educational setting**

Greg Kestin^{1,3}✉, Kelly Miller^{2,3}, Anna Klales¹, Timothy Milbourne¹ & Gregorio Ponti¹

Advances in generative artificial intelligence show great potential for improving education. Yet little is known about how this new technology should be used and how effective it can be compared to current best practices. Here we report a randomized, controlled trial measuring college students' learning and their perceptions when content is presented through an AI-powered tutor compared with an active learning class. The novel design of the custom AI tutor is informed by the same pedagogical best practices as employed in the in-class lessons. We find that students learn significantly more in less time when using the AI tutor, compared with the in-class active learning. They also feel more engaged and more motivated. These findings offer empirical evidence for the efficacy of a widely accessible AI-powered pedagogy in significantly enhancing learning outcomes, presenting a compelling case for its broad adoption in learning environments.

Meta-Analysis of Artificial Intelligence in Education

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Abstract

This meta-analysis examined the effectiveness of artificial intelligence (AI) technologies in educational settings through a systematic review of 13 empirical studies conducted across eight countries. We analysed the impact of various AI technologies on educational outcomes using PRISMA guidelines and multiple analytical approaches, including novel applications of Naive Bayes, TF-IDF, and BERT-based algorithms. The overall analysis revealed a significant positive effect size (Hedges' $g = 0.86$, 95% CI [0.45, 1.27], $p < 0.0001$), indicating substantial benefits of AI integration in education. Particularly noteworthy were the effects of chatbots and generative AI (effect size = 1.02, 95% CI [0.45, 1.59], $p < 0.0001$), which demonstrated the most substantial positive impact on student learning outcomes. Online learning and virtual reality applications showed moderate positive effects (effect size = 0.79, 95% CI [-0.04, 1.62], $p < 0.07$) while learning management systems and AI platforms demonstrated promising but more modest impacts (effect size = 0.62, 95% CI [0.03, 1.21], $p < 0.05$). Although

How should Medical Educators be using AI?

01

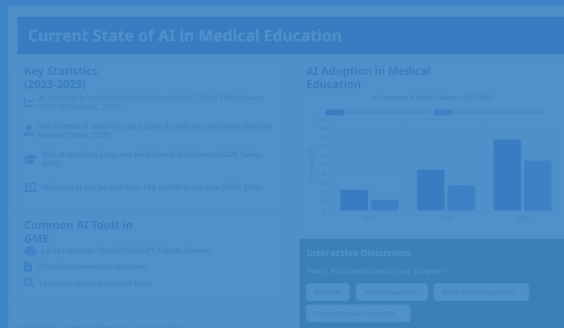
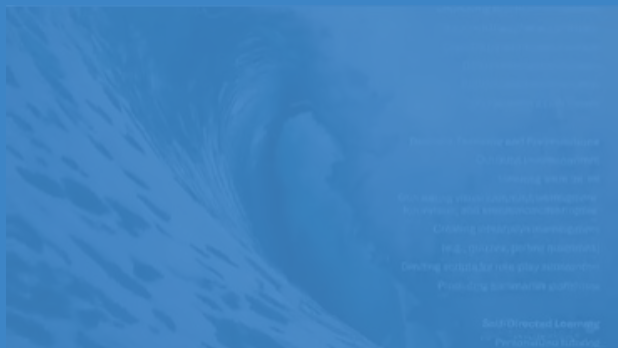
All the time.
For everything.

02

For innovative education
and clinical care.

03

To prepare students for
the future.



119TH CONGRESS

1ST SESSION

H. R. 238

To amend the Federal Food, Drug, and Cosmetic Act to clarify that artificial intelligence and machine learning technologies can qualify as a practitioner eligible to prescribe drugs if authorized by the State involved and approved, cleared, or authorized by the Food and Drug Administration, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

JANUARY 7, 2025

Mr. SCHWEIKERT introduced the following bill; which was referred to the Committee on Energy and Commerce

THE WHITE HOUSE



Winning the Race

AMERICA'S AI ACTION PLAN

JULY 2025

Enable AI Adoption

Today, the bottleneck to harnessing AI's full potential is not necessarily the availability of models, tools, or applications. Rather, it is the limited and slow adoption of AI, particularly within large, established organizations. Many of America's most critical sectors, such as healthcare, are especially slow to adopt due to a variety of factors, including distrust or lack of understanding of the technology, a complex regulatory landscape, and a lack of clear governance and risk mitigation standards. A coordinated Federal effort would be beneficial in establishing a dynamic, "try-first" culture for AI across American industry.

Recommended Policy Actions

- Establish regulatory sandboxes or AI Centers of Excellence around the country where researchers, startups, and established enterprises can rapidly deploy and test AI tools while committing to open sharing of data and results. These efforts would be enabled by regulatory agencies such as the Food and Drug Administration (FDA) and the Securities and Exchange Commission (SEC), with support from DOC through its AI evaluation initiatives at NIST.
- Launch several domain-specific efforts (e.g., in healthcare, energy, and agriculture), led by NIST at DOC, to convene a broad range of public, private, and academic stakeholders to accelerate the development and adoption of national standards for AI systems and to measure how much AI increases productivity at realistic tasks in those domains.
- Led by the Department of Defense (DOD) in coordination with the Office of the Director of National Intelligence (ODNI), regularly update joint DOD-Intelligence Community (IC) assessments of the comparative level of adoption of AI tools by the United States, its competitors, and its adversaries' national security establishments, and establish an

Q&A: What Questions Do You Have?

CME & Session Evaluation



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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CME ACTIVITY INFORMATION

Activity Name: Enduring: Personalizing Learning with AI

Date: November 21, 2025 – May 14, 2028

Activity Code: 95331

Speaker Name: Rita El Jbeily, BS; Katia Hermes, BS; Tama The, MD

Target Audience: Regional physicians, residents, students, faculty

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

Objective 1: Develop personalized learning activities using AI tools.

Objective 2: Explore AI applications for virtual simulations and intelligent tutoring.

Objective 3: Assess the effectiveness of AI-driven personalized learning solutions.

Accreditation Statement:

The Michigan State University is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

Michigan State University designates this activity for a maximum of 1.0 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

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

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Original Release Date: NOVEMBER 20, 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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