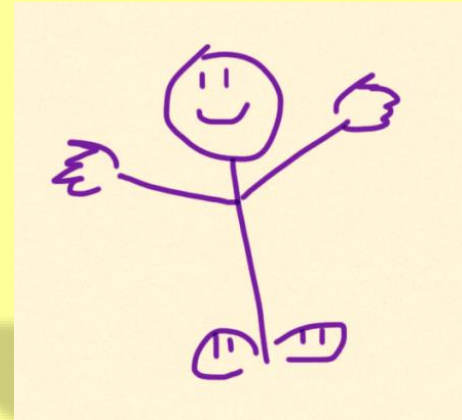


AI in Education

Meeker Public Library

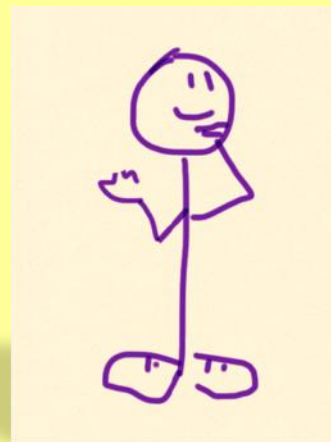
September 2026

Bob Dorsett, MD



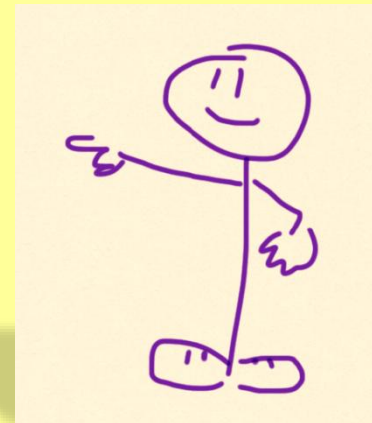
Introduction:

It's been just four years since the introduction of LLM's. In that brief time LLM's and generative AI have transformed the economy and society generally. They will determine our future. We are just beginning to understand their benefits and risks. It is our responsibility to help the next generation learn how to use them productively and safely.



Outline

1. The role of LLM's in education
2. Risks and benefits
3. AI as tutor
4. Essential LLM skills



Take-away (if you need to leave early):

- AI can provide considerable benefits in education, but it comes with substantial risks.
- Kids learn best with hands-on, direct experience – writing essays with pen and paper, reading printed pages, drawing pictures on a sketch pad, dropping reagents into test tubes, sculpting wood turning in a lathe, etc.
- AI offers access to information and applications that can facilitate learning, especially for well-motivated self-learners who understand the strengths and weaknesses of tools offered by LLM's.
- AI corporations actively encourage LLM's in our schools, but they do not necessarily have the best interests of children in mind. (Hint: \$\$\$\$\$)

Terminology

- **AI (artificial intelligence)**: computer systems that meet benchmarks comparable to human intelligence.
- **Agent**: a pre-formatted sequence of prompts that carries out all tasks necessary to achieve a goal like sorting email, filing your taxes, etc.
- **AGI (artificial general intelligence)**: computer systems that mimic human intelligence, set goals, and act independently to achieve those goals.
- **Generative AI**: AI systems built on deep neural networks that can generate text (ChatGPT, Gemini, Claude, others), images (Dall-E, Nano Banana, others), music, video, or other specialized output. **Expert Systems** are dedicated to particular tasks, e.g. protein folding, analysis of Webb data, Go, etc.
- **LLM (large language model)**: generative AI trained on enormous volumes of text. An LLM generates responses, one word after another, based on word patterns found in its training.
- **Prompts**: the commands you give the LLM.

We are interacting with a new intelligence:

LLM's incorporate a knowledge base far greater than any human, and they have exceeded all the standard measures of human intelligence. They outperform humans on tests like SAT and the GRE's. They perform at a level comparable to the very best competitors in the international Math Olympiad. They compete at the very highest level of specialized understanding in rigorous fields like physics, biology, and engineering. Recently LLM's have produced original proofs in mathematics using novel ideas that have enriched mathematics in general. Computer scientists anticipate that LLM's will achieve Artificial General Intelligence within the next five to ten years.

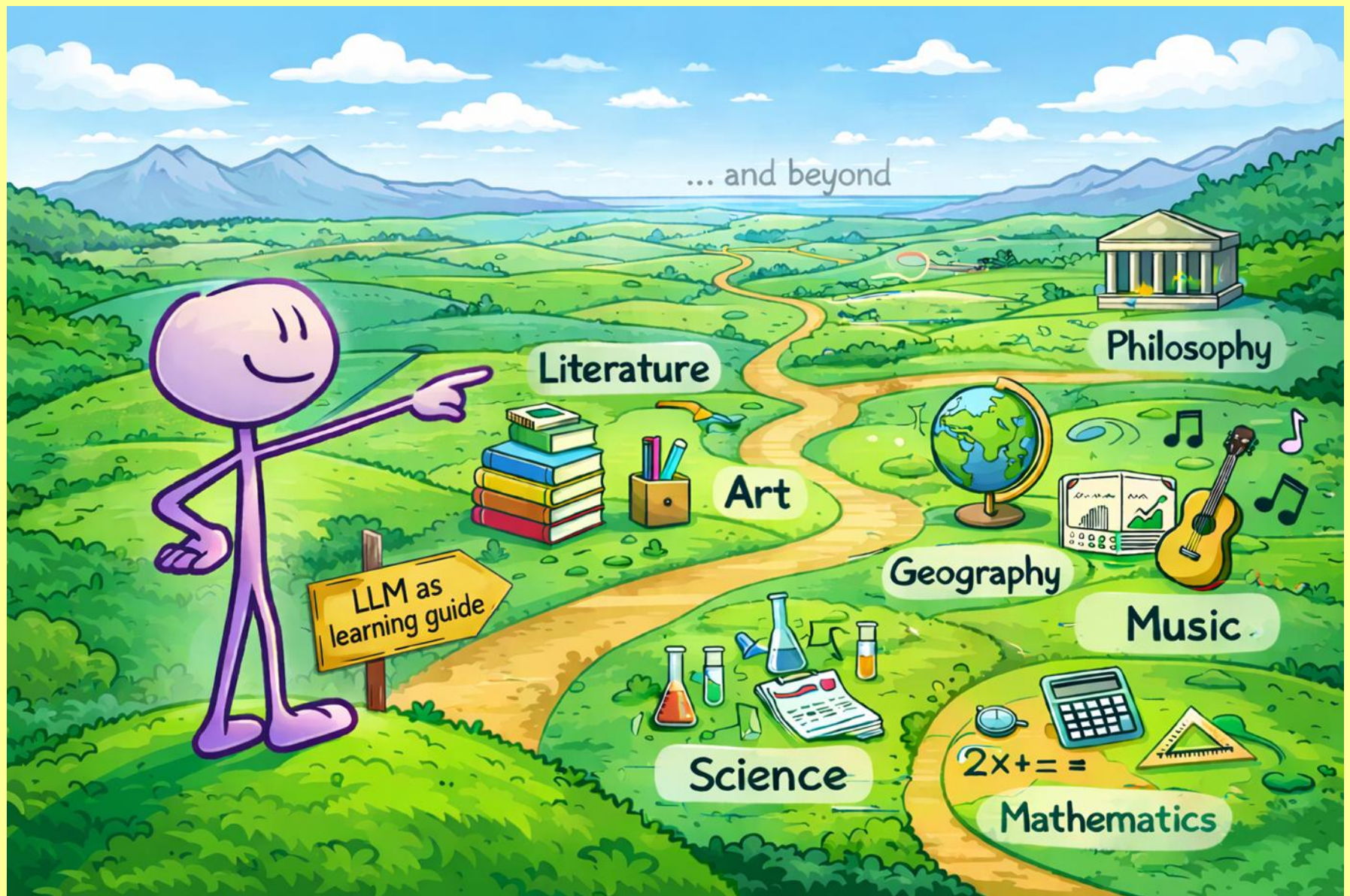


image by ChatGPT

Why we should worry today:

LLM's and expert AI systems already can

- create realistic, but false, narratives, e.g. life-like political propaganda
- infiltrate and hijack critical infrastructure, e.g. power grid, water systems, etc.
- facilitate access to dangerous technologies, e.g. bio-weapons, nuclear weapons, etc.
- disrupt normal social interaction and psychological development

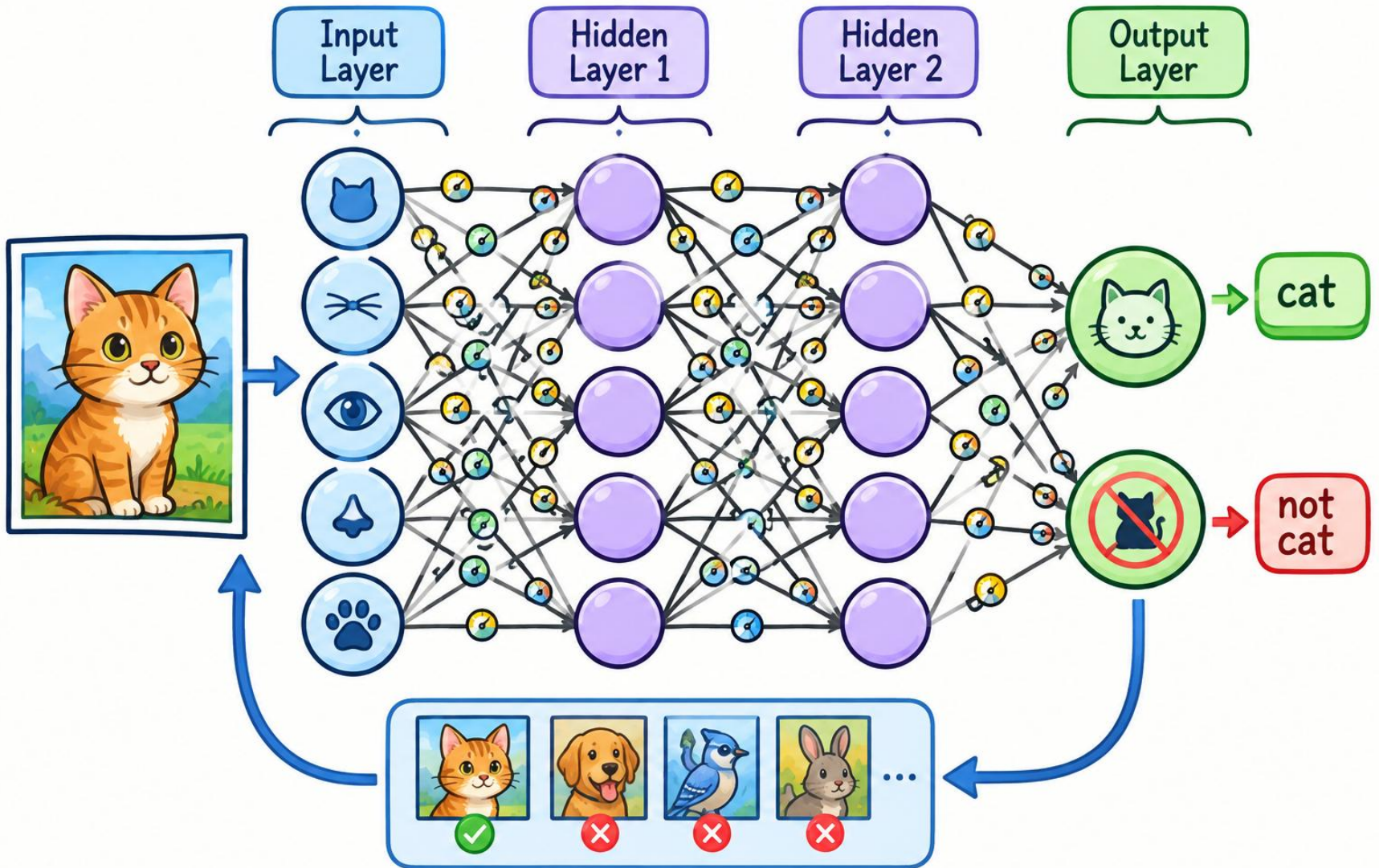
Why we should worry about tomorrow:

Artificial general intelligence will be able to

- iterate its own improvement, i.e. train itself very rapidly to enhance its own cognitive capacity and skills
- distribute itself widely across the internet
- determine its own goals and plans to achieve those goals . . .
- . . . which may or may not be in the best interest of humans

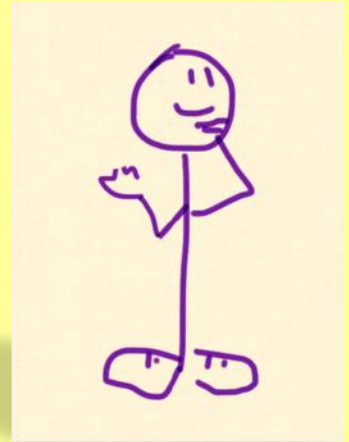
A modest recommendation: Keep humans in control.

Under the hood of AI: training a neural network



Available platforms

- **ChatGPT (OpenAI)**
 - strengths: creative writing, translation, chat interface
 - weakness: not up to date on factual information, more prone to hallucination, limited access
- **Gemini (Google)**
 - strengths: linked to other Google resources, multimodal, research and mathematical logic
- **Claude (Anthropic)**
 - strengths: trained on data considered appropriate for general users (PG-13 vs. R), more socially conscious, strong coding capabilities
- **Khanmigo (Khan Academy)**
 - strengths: this is a collaboration with OpenAI filtered for appropriate student content, linked directly to online Khan Academy courses, functions as a tutor
 - weaknesses: limited to Khan courses



LLM's offer wonderful new opportunities in education. They also present considerable challenges:

- shortcuts that undermine real understanding
- distraction
- misleading information
- potential psychological manipulation and harm

see (Bastani, 2026; Brookings Center, 2026)

AI is everywhere, but *real learning is hands-on.*



image: ChatGPT

Where AI shines in education today:

LLM's assist teacher lesson planning and administrative tasks. They free up human time for direct student mentorship.



image: ChatGPT

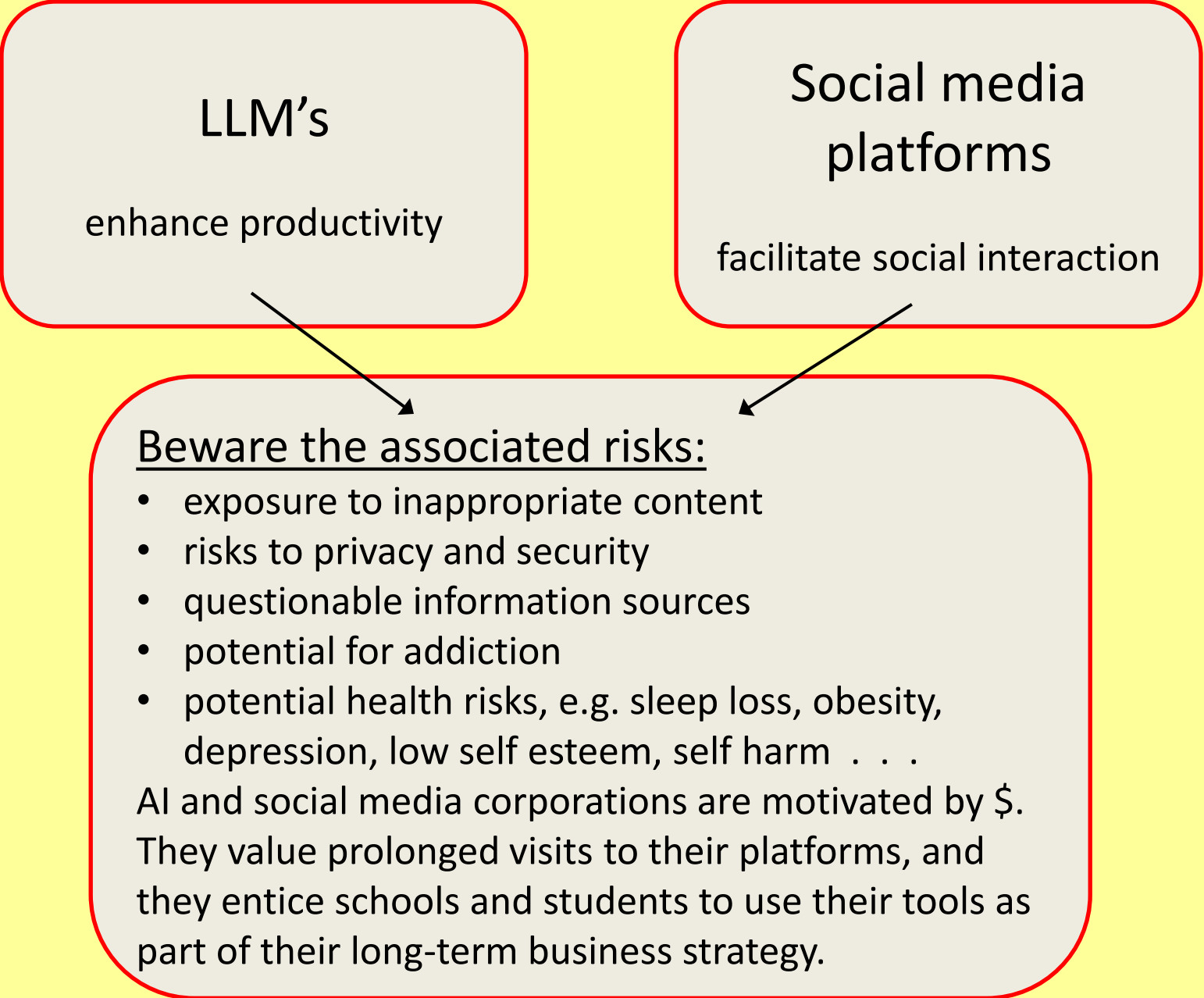
Why caution matters: the risks in online platforms

LLM's

enhance productivity

Social media
platforms

facilitate social interaction



```
graph TD; A[LLM's  
enhance productivity] --> D[Beware the associated risks:]; B[Social media platforms  
facilitate social interaction] --> D;
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Beware the associated risks:

- exposure to inappropriate content
- risks to privacy and security
- questionable information sources
- potential for addiction
- potential health risks, e.g. sleep loss, obesity, depression, low self esteem, self harm . . .

AI and social media corporations are motivated by \$. They value prolonged visits to their platforms, and they entice schools and students to use their tools as part of their long-term business strategy.

Best Practice

- No cell phone before age 14
- No unsupervised social media or AI before age 16
- Do not reveal personal data
- Parents supervise use and provide a good example of proper use
- Know what online sources to trust

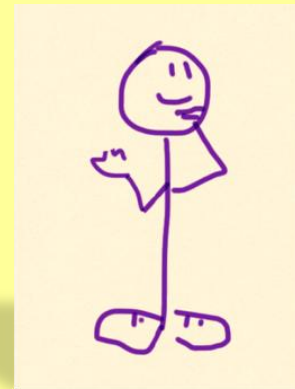
See AAP references at the end of this slide deck



The purpose of a public education

1. provide an environment for optimal cognitive development
2. help guide social and emotional development
3. provide the knowledge and skills necessary for self-fulfillment
4. produce an informed citizenry capable of active participation in our democracy
5. provide the knowledge and skills necessary to participate productively in our economy

As of this presentation (Fall 2026) AI offers useful tools to facilitate 1, 3, and 5 above. It fails 2 and 4.



Choices in education today: We can let students hop on the LLM helicopter and jump to a destination (final product for an assignment), or we can demand that they learn the skills to find the way themselves.



image: ChatGPT, illustrating concept from Terence Tao

Appropriate use of LLM's for instruction:

Use LLM's as Socratic tutors and debate foils. LLM's access the world of information, and they can

- guide a student through problem-solving with step-by-step hints
- provide unlimited age- and skill-appropriate examples for a student to try
- provide unlimited age- and skill-appropriate quizzes for a student to test their understanding
- test a student's understanding with vigorous debate
- offer insights and corrections and encouragement for a student's work
- add a lot of fun to the learning process with games and puzzles related to the learning goal
- provide multi-media tools to extend the three R's far beyond paper and pencil
- and much more . . .

see (Khan, 2026; Coursera courses)

How to build LLM tutors (and other useful agents): overview of best practices in prompt engineering

- clearly identify agent, audience, and goal
- define the task in detail
- ask for guidance, not answers
- establish guardrails and limits
- reflect and verify
- iterate, iterate, iterate



Appropriate use requires essential skills:

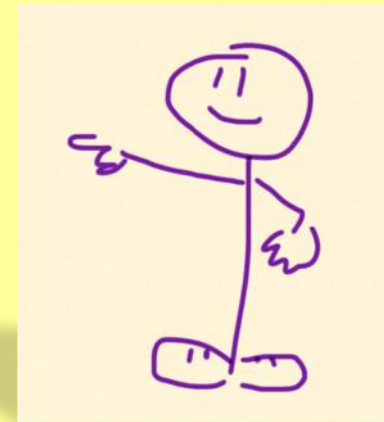
A short course in
prompt engineering

Build your skill set:

AI continues to evolve rapidly. If you want to sharpen your skills to use these tools most efficiently, there are excellent resources available online. Recommended especially are courses offered by *Coursera* and by *DeepLearning.ai*.

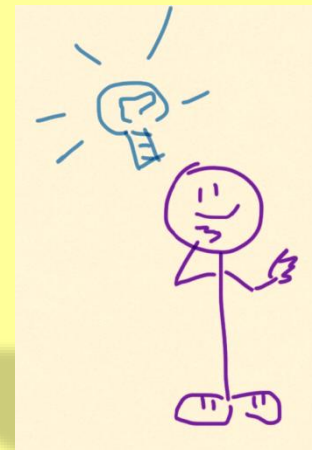
Start with [Prompt Engineering](#).

Follow that with a course in [Agentic AI](#) if you want to build your own AI agents.



Our AI Future

The past ten years have seen a revolution in generative AI, AI for big data analysis, recognition software, expert systems, and AI robotics. We have entered a whole new world. Even the people at the center of AI development are surprised how fast these systems are evolving. Each time the engineers add more connections to neural networks they find new and unexpected capabilities. We need to help kids understand these systems and prepare for a future we haven't yet imagined.



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<https://www.healthychildren.org/English/news/Pages/creating-a-child-friendly-digital-world-AAP-releases-new-media-recommendations.aspx>

Meeker School District Policies. [JICJ](#) (Cell Phones). [JS](#) (LLM's). [JS-E](#) (use agreement)

Prompt Engineering courses on *Coursera*. 2026.
<https://www.coursera.org/courses?query=prompt%20engineering>

Thank You!

Questions?

