

Overview of Artificial Intelligence (AI) in the Context of Assistive Technology

University of Wyoming
ECHO in Assistive Technology
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Who is Shelley, and what is TechPotential?

Technology for learning & executive function challenges

- ▶ RESNA-certified AT Professional (ATP), Rehabilitation Engineering Technologist (RET)
- ▶ 39 years AT experience
- ▶ Former aerospace engineer

Independent AT Consultant – in Arizona & online nationally

- ▶ AT Assessment, Training, Tech Assistance, Consultation, PD for schools

Previously directed assistive technology at Stanford University

TechPotential short for “Technology to Unlock Potential”

- ▶ My philosophy on “why use technology”
- ▶ Name of new book (coming late 2025)

“Technology to Unlock Potential: A Practical Guide to Assistive Technology for Learning Differences”

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Disclosure & Learning Objectives

Disclosure: Nothing at this time

Learning Objectives:



- ▶ Explain what AI is (and is not) and its innate limitations.
- ▶ Describe types of AI, and explain why generative AI (GenAI) is such a game changer.
- ▶ List factors to consider when deciding whether GenAI or traditional "fixed function" AT tools best support a student's needs.

What is artificial intelligence (AI)... ...and what is it not?




Analogy: search engine vs. genAI*

*generative AI


MASSIVE LIBRARY
 Web, books, images, videos, databases, lots more
 

LIBRARIAN (basic search engine)		RESEARCH ASSISTANT (genAI)
Search terms	You provide	Prompt: carefully worded request for info task the assistant should do
Librarian lists resources most likely to have search terms	You receive	Assistant gathers info, distills it into requested form
You search the resources for desired info	Next steps	Continue conversation with assistant to refine responses

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Text description of previous slide

Photo on top: inside view of massive semi-circular library with five floor levels of stacked materials

- ▶ Labeled: MASSIVE LIBRARY - Web, books, images, videos, databases, lots more


Bottom half of slide shows simple images of two people in library:
 Librarian (basic search engine) & Research Assistant (genAI/generative AI)

Librarian (basic search engine)

- ▶ You provide: Search terms
- ▶ You receive: Librarian lists resources most likely to have search terms
- ▶ Next steps: You search the resources for desired info

Research Assistant (genAI)

- ▶ You provide: Prompt: carefully worded request of info task assistant should do
- ▶ You receive: Assistant gathers info, distills it into requested form
- ▶ Next steps: Continue conversation with assistant to refine responses

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What is A.I.? (and what it's not)

Artificial Intelligence (AI): a collection of sciences and technologies with the goal of *simulating** human intelligence

- ▶ Leverage speed and capacity of digital technology

*What do you mean "*simulating* human intelligence"?

- ▶ Some might say "imitate" or "mimic"

- ▶ Let me rephrase that...

AI: a collection of sciences and technologies that can perform tasks typically requiring human intelligence

- ▶ Not a replacement for human intelligence, but an alternative means to achieve certain goals

Let's first look at human intelligence...

Consider: What is human intelligence?

Innate cognitive abilities of humans to perceive, interpret, reason, and adapt to the world around us

Wide range of mental faculties include (to name just a few):

- ▶ Pattern recognition and discrimination
- ▶ Attention (including selective attention)
- ▶ Language and communication
- ▶ Concept formation and generalization
- ▶ Understanding of cause and effect
- ▶ Critical thinking and reasoning
- ▶ Creativity
- ▶ Flexibility and adaptation
- ▶ Intention and motivation (includes setting goals)
- ▶ Intuition
- ▶ "Common sense" acquired through human experience (see 2023 video tinyurl.com/25vfeahc)
- ▶ Emotions and empathy (derived from shared human experiences)
- ▶ Ethical and moral reasoning
- ▶ Self-awareness

Keep this list in mind when considering how AI might perform tasks that typically require human intelligence

AI isn't that new – we've been using it for decades

Type of AI (1st appeared)	Description - each level adds capabilities	Examples of child using same capability
Reactive (1960s)	Follow fixed rules: "If this, then do that" No memory, no learning, no planning ahead (Camera autofocus, programmable thermostat)	Play "Simon Says" without considering earlier rounds or future strategy
Discriminative (1960s-1970s)	Learn patterns in data, classify, and label Recognize boundaries between categories	Sort picture cards of animals (pets, farm, zoo) Recognize animals separate from background
Predictive (late 1980s)	Examine historical patterns in data, predict future events (extrapolate) or missing events (interpolate) (Weather forecasting, win predictions in sports)	2, 4, __, 16, 32, ... what is missing number? Anticipate outcome of science experiment
Generative (2014 - images 2022 - text)	Internalize patterns in data, create new content (text, image, audio, video) that fits these patterns	Understand key traits of a "persuasive essay" Write persuasive essay based on topic prompt
Agentic (2023)	Use memory, planning, reasoning to pursue goals autonomously (w/o monitoring, intervention)	Plan & carry out science fair project (idea => design => experiment => revise => present)

Progression of cognitive complexity:

- ▶ Just react to inputs + classify + predict + decide + create + learn from feedback + plan & act

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Discriminative AI: learn, classify, decide

Discriminative AI used productively since 1960s

- ▶ Identify and recognize patterns & relationships within data
- ▶ Classify data, make decisions based on learned patterns

Examples of discriminative AI tools and features

- ▶ Optical character recognition (OCR) for text (Kurzweil, 1974)
- ▶ Speech recognition, audio transcription, handwriting recognition
- ▶ First contextual grammar checkers (e.g., Grammarly, Ginger, Ghotit)
- ▶ Facial and fingerprint recognition (biometrics)
- ▶ Email spam filtering ("Is this legit or junk?")
- ▶ Credit card fraud detection ("Match user's typical spending habits?")

OCR as example of discriminative AI

device

Analyze input

device

Decide how to parse input

a b c d e ...
A B C D E ...
a b c d e ...
A B C D E ...
a b c d e ...
A B C D E ...

How well does data match any pre-learned patterns?

device

Make decisions

Discriminative AI in speech recognition: parses sound into phonemes, compares them with sound files & words in database (how well do they match?)



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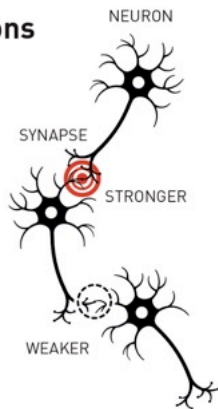
AI achieves ends similar to those of human intelligence, but uses different means

"Neural Networks in the News"

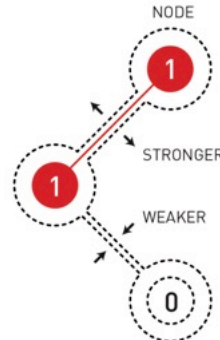
- ▶ 2024 Nobel Prize in Physics awarded to John Hopfield and Geoffrey Hinton "for foundational discoveries and inventions that enable machine learning with artificial neural networks."
- ▶ tinyurl.com/yyr96f94

Natural and artificial neurons

The brain's neural network is built from living cells, neurons, with advanced internal machinery. They can send signals to each other through the synapses. When we learn things, the connections between some neurons get stronger, while others get weaker.



Artificial neural networks are built from nodes that are coded with a value. The nodes are connected to each other and, when the network is trained, the connections between nodes that are active at the same time get stronger, otherwise they get weaker.



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Artificial neural network "loosely inspired" by structure and function of human brain

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How discriminative AI is trained (very simplified explanation)



- 1 Inputs: 1000s of images with labels | dog | cat | other |

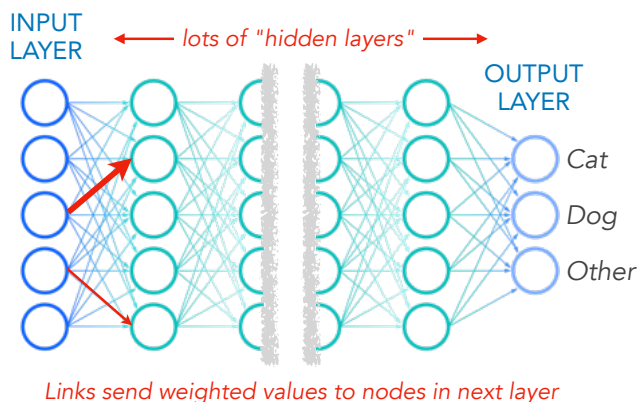
- 2 Network identifies patterns & structures in images (e.g., edges, colors, textures, shapes, combinations, proportions) = "cues"

- 3 Network randomly makes initial guesses (dog, cat, other)

- 4 Which cues statistically more/less predictive of correct guess?

- 5 Tweak **weights of links between layers** (i.e., "pay more/less attention to certain cues")

- 6 Repeat for all training images (10 to 150+ times) Each pass refines accuracy



- 8 Same approach can be applied to classifying text, audio, etc.

- 7 Model has now "internalized" mathematical concepts of "dog-ness" and of "cat-ness" (but not "Everdeen" ;-)

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Text description of previous slide

Slide explains how discriminative AI trained to recognize patterns, classify inputs

- ▶ Very simplified explanation of eight steps, each accompanied by images

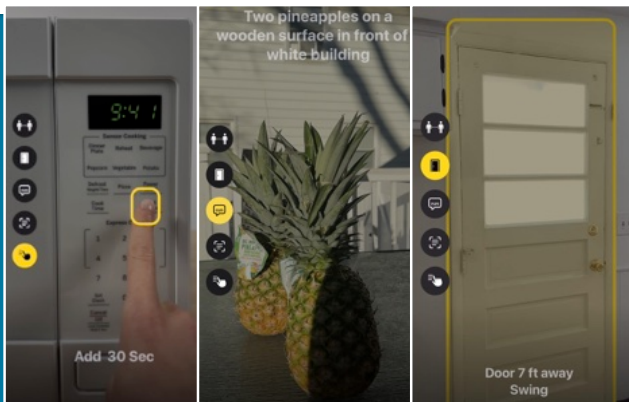
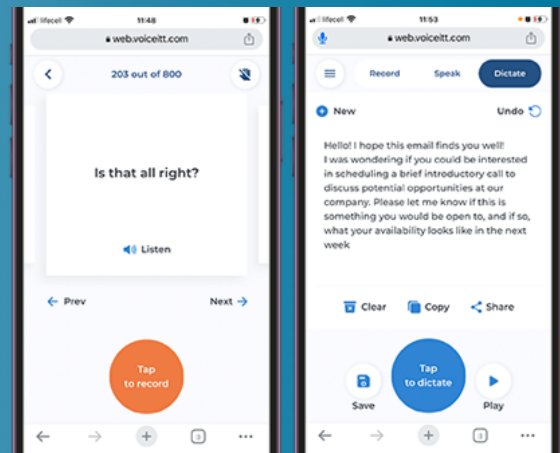
Text and images for eight steps

1. Inputs: 1000s of images with labels | dog | cat | other |
[Image: 9x9 matrix of dog photos and 9x9 matrix of cat photos]
2. Network identifies patterns & structures in images (e.g., edges, colors, textures, shapes, combinations, proportions) = "cues" [Image: neural network looks like rows and columns of circles (nodes), each connected to the others by thin lines (links)]
3. Network randomly makes initial guesses (dog, cat, other)
4. Which cues statistically more/less predictive of correct guess?
5. Tweak weights of links between layers (i.e., "pay more/less attention to certain cues") [Image: two links on neural network images shown as thick and thin red arrows; accompanying red text reads "Links send weighted values to nodes in next layer"]
6. Repeat for all training images (10 to 150+ times). Each pass refines accuracy
7. Model has now "internalized" mathematical concepts of "dog-ness" and of "cat-ness" (but not "Everdeen" ;-)
8. Same approach can be applied to analyzing text, audio, etc.

Examples of AT tools using discriminative AI: classify input, make decision

Voiceitt speech recognition

- ▶ Understand speakers w/ non-standard speech (dysarthria, other speech issues)
- ▶ User reads aloud text, Voiceitt learns to associate atypical (but consistent) speech patterns with words being read
- ▶ Takes many hours of training



iPhone detectors, live image description

- ▶ Part of iOS/iPadOS Magnifier app
- ▶ Use camera to detect people, doors, text
- ▶ Live description of images in view (text + TTS)
- ▶ Point at text with finger, read aloud

Contrast this with generative AI ("the new stuff")

Simulates far more complex and demanding cognitive task

Models pre-trained on MASSIVE datasets (millions of examples)

- ▶ **Different goal:** learn distribution of data – how often do certain elements and patterns occur, and in what contexts? (e.g., words in text, relative parts of images, audio sequences in voice/music)

Iteratively builds new content that fits learning, guided by prompts

- ▶ **Generate text:** What is the most likely "next word" according to my learning?
- ▶ **Generate image:** Digital equivalent of "How to sculpt an elephant? Get a big block of marble and chip away everything that isn't the elephant."

Much bigger neural networks required

Neural network for:	Number of links between nodes	If links were people (1000 links = 1 person)
Discriminative AI	10 to 50 <u>million</u> links	Sold-out Dodger stadium in LA
GenAI for images	1 to 4 <u>billion</u> links	Population of LA (just the city)
GenAI for text	0.1 to 2+ <u>trillion</u> links	Population of India + U.S.

Examples of genAI at work

Create an image that...

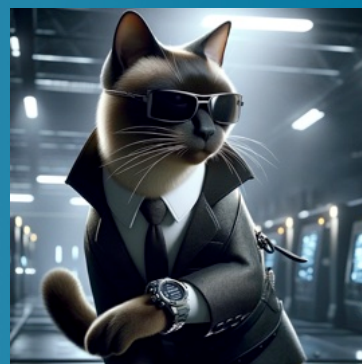
- ▶ Fits patterns/distributions commonly linked with "dog" + "superhero"
- ▶ Fits patterns/distributions commonly linked with "cat" + "secret agent"

Extrapolate from word patterns & structures, too

- ▶ Word choice/phrasing/patterns associated with Shakespeare...
- ▶ ...to explain Newton's First Law...
- ▶ ...using language that a 6th grader would understand

(Newton's First Law: An object at rest remains at rest, or if in motion, remains in motion unless acted on by an external force)

"Hark! An object, be it a humble stone or gallant steed, moveth not lest it be moved, nor halteth if already in motion, unless some force—be it push or pull—doth bid it stop or turn."



Analogy: discriminative human intelligence vs. generative human intelligence

Name different animals in a picture, or group pictures of animals by type (**discriminative**)

- vs. -

Apply your knowledge of animals to draw a picture of a dog, or describe one verbally or in writing (**generative**)



Identify misspelled words and grammar errors in text (**discriminative**)

- vs. -

Create text using correct spelling and grammar (**generative**)

Why is this distinction important (especially in education)?

Consider:

- ▶ Discriminative AI tools help users **access and work with existing info**
- ▶ Generative AI tools help users **create new info** – sometimes accelerates learning, sometimes bypasses acquiring needed skills

Decide: What is the goal of using AI for specific task?

- ▶ Make learning more efficient? - or - Substitute for a learning goal?

Blast-from-the-past analogies

- ▶ **Spellchecker** - Is educational goal learn to spell? ...or facilitate written expression?
- ▶ **Calculator** - Is goal learn math facts? ...or show understanding of math problem-solving procedure?

See article "*When Helping is Hurting*" (tinyurl.com/4d6c73s4)

- ▶ Learning small things well makes bigger things easier
- ▶ Avoid using AI when it robs students of learning small things



How does text genAI perform its magic?!

(and why that's important to know)

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Understanding human language is HARD

What does "it" refer to in each of these two sentences?

- ▶ I poured water from the bottle to the cup until **it** was full.
- ▶ I poured water from the bottle to the cup until **it** was empty.

How do you know this?

Could you teach such "language rules" to a child?
...or to a computer?

Language is full of ambiguities

- ▶ Many grammatically-correct statements can't be resolved without real-world knowledge and cause-effect reasoning (typically obtained through human experience)



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How do you train a computer to "think like a human"?*



So much of what we learn, know, and apply comes through human experience

Language reasoning: the Holy Grail of computing for decades

▸ How can computers learn language skills as humans do?

Virtually impossible to teach computers all these context-specific "rules"

**You don't*

"Aha!" moment in AI for language

Don't program computers w/ static rules to understand human language – instead:

- Analyze MASSIVE amounts of human language (how humans write)
- Large Language Model (LLM) learns patterns & distributions in text data
- Generalizes these patterns and applies them to prompts

*Remember that
MASSIVE library of
human-generated info?*

Models learn to perform human-like tasks by practicing w/ feedback

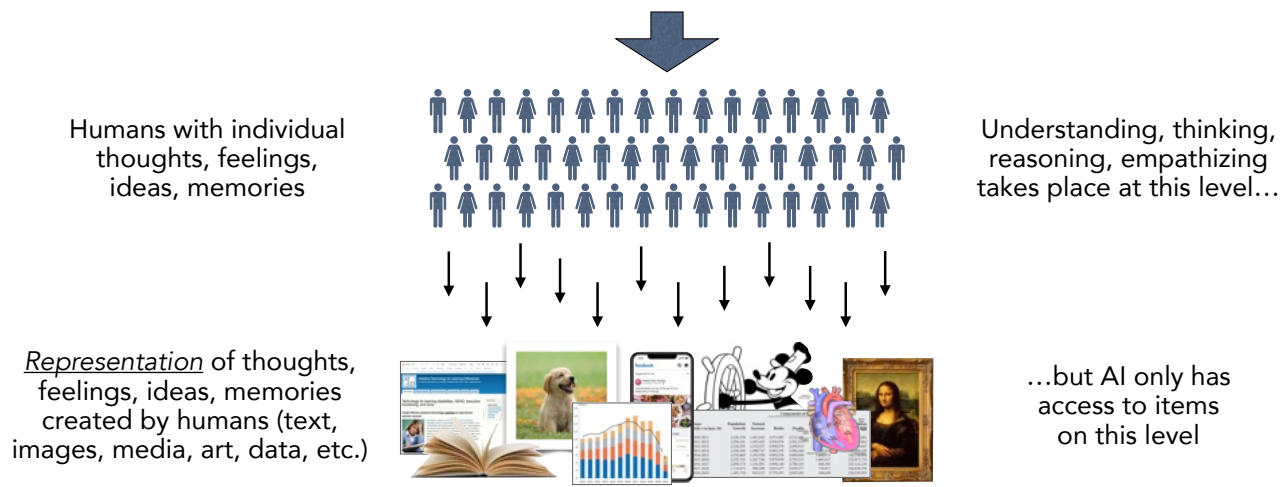
- **Examples:** Show millions/billions of text cases
- **Clear goal:** "Guess correctly what word comes next" for various prompts
- **Practice:** System makes guess
- **Feedback:** Check what it got wrong, nudge model to be less wrong next time – repeat MANY times

Simulates human intelligence – not actually "intelligent"

- **"Stochastic parrot"** – Simulates understanding, but does not understand what it's saying, or why

What artificial intelligence is missing

COLLECTIVE SHARED HUMAN EXPERIENCE



Language knowledgebase \neq Human knowledgebase

Text description of previous slide

Slide shows three levels of images and text (top to bottom)

Text at top level reads "COLLECTIVE SHARED HUMAN EXPERIENCE"

Second level shows dozens of people icons with the following text:

- ▶ Humans with individual thoughts, feelings, ideas, memories
- ▶ Understanding, thinking, reasoning, empathizing takes place at this level...

Third level shows icons of book, webpage, data, photo, art, and cartoon with the following text:

- ▶ Representation of thoughts, feelings, ideas, memories created by humans (text, images, media, art, data, etc.)
- ▶ ...but AI only has access to items on this level

Text at bottom: "Language knowledgebase \neq Human knowledgebase"

Thinking about generative AI as AT – a novel perspective

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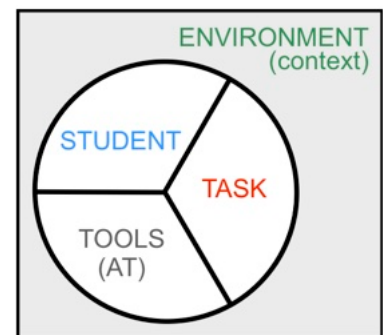
Start with core assistive technology concepts & principles

Goal of AT: "*increase, maintain, or improve*" person's "*functional capabilities*"

- ▶ Per IDEA, ADA, many other laws that address assistive technology

Professionals working with AT use various established concepts, procedures, and resources to:

- ▶ Identify the problem: what necessary tasks are difficult or impossible?
- ▶ Gather relevant info (SETT framework, shown at right)
- ▶ Consider assistive technology solutions to bypass functional difficulties
- ▶ Conduct trials and data-driven assessment of outcomes
- ▶ Implement solutions, monitor progress, refine as needed



Key concept is *feature matching* – connect individual's functional needs with appropriate tool capabilities (features)

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AT feature match: select features to provide needed capabilities

Think of a technology "feature" as a capability to:

- ▶ Enhance or repurpose existing abilities
- ▶ Compensate for abilities they don't have or can't use effectively

These features (capabilities) are pre-programmed into tech tool

- ▶ We can refer to these AT tools as "**fixed-function tools**"

Need the ability to...	Consider this FEATURE
Hear accessible text spoken aloud in selected voice & reading speed	Text-to-speech
See words highlighted (color, underline) as they are spoken to aid visual tracking	Dynamic visual highlighting
Create text by speaking vs. typing	Speech-to-text, dictation
Suggest correctly-spelled words based on letters typed, even phonetic spelling	Word prediction
Visually organize ideas for writing, planning, comprehension, etc.	Mind map
Capture auditory learning, link to typed or handwritten notes to navigate audio	Notes linked to audio recording
Remove/hide distractive elements & non-relevant items, reformat page text	Webpage simplifier

ChatGPT, Gemini, Claude, & other genAI as AT tools

Consider: what functional capabilities can genAI tools like ChatGPT
increase, maintain, or improve?

Capabilities seem endless, right?

- ▶ Depends on what you ask the tool to do

Exactly! Capability resides in the prompt (what you ask it to do)
– not pre-programmed into the tool itself

Actually more like asking a human assistant to do something for you

- ▶ Hmm-m...

Prompting is the new programming

Functional capabilities embedded in prompts, not pre-programmed code

- ▶ Chatting with a LLM is analogous to coding with a programming language

Think of a Large Language Model as a complex programming language that you "program" (instruct) using natural language

	Typical apps, software	Generative AI
Programming language	C++, Python, PHP, Java, Swift, many others	LLM + chatbot interface
Capabilities provided by...	Computer program - sequence of intricate rules-based instructions ("if this...then do that")	Prompts and chatting Type, speak, upload files & images
Skills required to create instructions	Specially-trained programmers write code, test, debug, and maintain (update) as needed	Use natural language to prompt LLM Ability to describe tasks

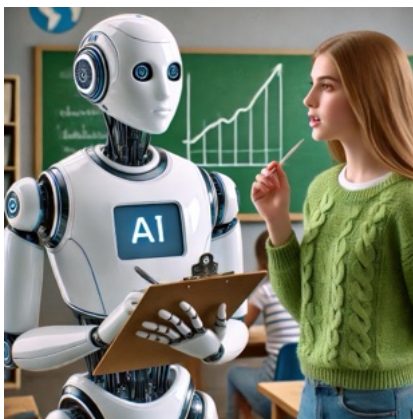
Novel (and helpful) perspective for using generative AI as AT

GenAI apps are less

"tools with pre-defined features (functional capabilities)"

and more

"skilled digital assistant that can adapt & respond to a wide range of tasks"



If student had 24/7 human assistant/aide/tutor...

- ▶ What would you have that aide do (and not do) to help them?
- ▶ How would you unambiguously instruct a human aide/tutor to assist the student or perform the task for them?

If you had 24/7 human aide/intern to help you...

- ▶ How would you instruct human aide/intern to help you with tasks?
- ▶ How would you monitor & validate human aide's performance?

Value of genAI as a 1:1 learning aide aligns w/ research

Benjamin Bloom's "The 2-Sigma Problem" showed the benefits of 1:1 instruction

- ▶ In 1984, large-scale 1:1 instruction was not practical

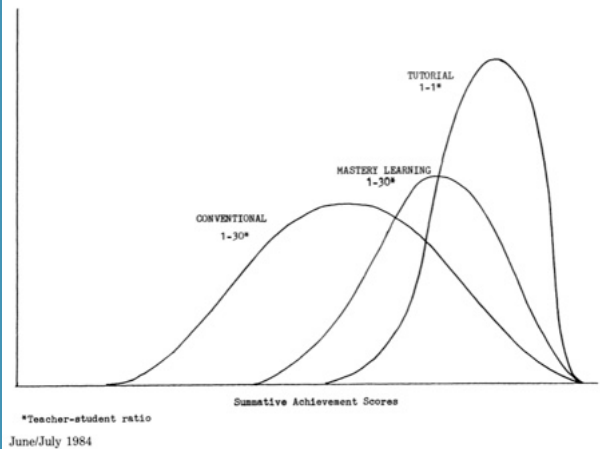
We've come a long way since then

- ▶ Computer-based & online adaptive learning platforms, differentiated instruction help facilitate "mastery learning"
- ▶ Generative AI can supplement 1:1 instruction provided by human educators for some situations
- ▶ Ability to learn about & adapt to user, available 24/7

Also see Sal Khan video

- ▶ "How AI Could Save (Not Destroy) Education | Sal Khan | TED (April 2023)" (tinyurl.com/tzcfa99e)

FIGURE 1. Achievement distribution for students under conventional, mastery learning, and tutorial instruction.



Graph from "The 2 Sigma Problem: The Search for Methods of Group Instruction as Effective as One-to-One Tutoring" (Dr. Benjamin Bloom, 1984)

Know your new genAI assistant's limitations, shortcomings

Nine generative AI problem areas from my previous presentations:

1. **Currency of training data** - through what date? (outdated training => false factual info)
2. **Guard rails** - prevent responses deemed illegal, unethical, religious/political advocacy, etc.
3. **Privacy of data** - how are your prompts and responses used? (most tools now offer opt-out)
4. **Errors and bias** - responses may echo mistakes & biases in training data
5. **Flawed reasoning** - generate wrong conclusions from correct info
6. **"Hallucinations"** - plausible responses that are incorrect or nonsensical
7. **Content not original** - seemingly adapted from existing (possibly copyrighted) content
8. **Lacks ethical/moral reasoning** - "parrots" empathy & understanding; no ethical comprehension
9. **Anthropomorphism** - illusion of human intelligence (can be misleading/harmful, esp. for kids)

What's improved, what's still problematic?

GenAI shortcomings that produce flawed responses

Errors and bias – responses echo mistakes & biases in training data

- Trained w/ info from Web, including social media - "*Info came from the Internet, so it must be true*"
- **IMPLICATION:** Reinforces incorrect info/cultural biases, or overcompensates to reduce bias

Flawed reasoning – generates wrong conclusions from correct info

- Uses "next most likely word" approach to writing
- **IMPLICATION:** Users trust responses with incorrect or fabricated "facts"

"Hallucinations" – writes plausible responses that are incorrect, nonsensical

- [AI for Education](#) (2024) estimate (tinyurl.com/bdcryjyk): 3-20% of chatbot responses contain inaccurate or false info
- **IMPLICATION:** Users trust responses with incorrect or nonsensical info

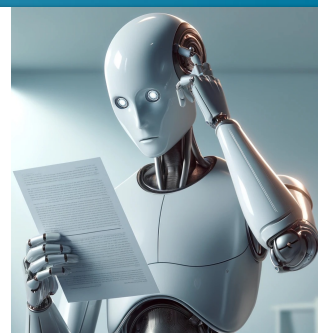
★ **New capabilities** (late 2024+) help mitigate these problems

- Reasoning, self-critique, cross-checking facts, citations

New features reduce errors (but do not eliminate them)

"Reasoning" or "thinking" vs. "predict next best word"

- **Multi-step chain of thought** – "*show your work, explain how you got answer*"
- **Tools** to assist with sub-goals – e.g., calculator for math, Web search for facts
- **Self-critique** - prepare multiple responses, fix contradictions ("peer review"), consult several sources
- **Cite sources** for human review



Analogy to student thinking & reasoning

- **First genAI chatbots:** student strings together textbook phrases that share keywords with question
- **2025 genAI models with reasoning:** student breaks project into sequential sub-tasks, consults reliable resources, double-checks before handing in work

However...

- Still lacks understanding, conscious insight – AI's "thinking" is just pattern-generated text
- Ethical judgment still just mimicking patterns gleaned from training data, not lived experience
- Still incumbent on user to verify factual info

ChatGPT makes up biography of non-existent astronaut (from early 2023 ChatGPT - no reasoning)

SH Please write a 300-word essay describing the life of deceased astronaut Bill Carlile, his contributions to space travel, and how he died.



William "Bill" Carlile, a pioneering astronaut who made significant contributions to the field of space travel, was born on January 12, 1947, in Akron, Ohio. Growing up, Carlile was inspired by the space race and the achievements of astronauts like Yuri Gagarin and Neil Armstrong...

Carlile earned a degree in aerospace engineering from the Massachusetts Institute of Technology (MIT) and later obtained a master's degree in mechanical engineering from Stanford University. ... He was selected as an astronaut candidate in 1978. ...

Tragically, Bill Carlile lost his life on October 28, 2021, during a routine spacewalk outside the ISS. While conducting necessary maintenance, a small but high-velocity micrometeoroid struck his spacesuit, puncturing it and causing rapid decompression. ...

ChatGPT o3 (with advanced reasoning) cautiously works through prompt about fake astronaut



Thought for 1m 59s [excerpts from long internal monologue as it "thinks"]

I think the user wants an essay on Bill Carlile, but I'm not sure if there's a real astronaut by that name. **It's possible they're testing me or maybe there's a mix-up with a different astronaut.** I'll need to verify by doing a quick search online to see if Bill Carlile was actually an astronaut and check any relevant details. It's important for me to make sure I'm accurate in my response. Let's look this up!

Searched the web

I don't find any records about a real astronaut by that name. It seems like there might be some confusion, or perhaps the user is asking for a fictional biography. ... **I need to make sure I'm not producing any false information.** ... I think the user may have made an error. Searching for "Bill Carlile astronaut" mostly returns music by Brandi Carlile and mentions "The Astronaut," but no actual astronaut. ... [thinking continues...]

Done [2 minutes later]

I'm having trouble finding any evidence—either in NASA's official astronaut biographies or in reputable news and historical sources—that anyone named Bill Carlile (or Carlisle) ever served in the U.S. astronaut corps. Instead, the name turns up in very different contexts: ...

[It] seems likely that: ...The person is fictional, or ...There is a mis-spelling or name mix-up, or ...You may be thinking of ...

How we can proceed...

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Additional considerations when weighing GenAI vs. "fixed function" AT tools

Apply AT decision-making basics: What functional capabilities does user need to achieve task goals/desired outcomes? (1 of 2)

Criteria	Fixed-Function AT Tools (pre-programmed)	Tools That Leverage Generative AI
Core Functionality	Perform predefined tasks based on accessibility needs Ideal for reading aloud text, visual magnification, basic AAC, text/math generation, OCR, spellcheckers, etc.	Provide dynamic responses based on user input & context, learn to adapt to user Ideal for personalized interaction to aid brainstorming, exploration, creativity
Consistency & Reliability	Consistent, predictable outcomes Ideal for repetitive tasks, and situations where consistent, reliable, dependable output is paramount	Capable of generating diverse responses , even for same basic inputs Results can vary in quality
Accuracy & effectiveness	Documented accuracy and effectiveness Ideal for supports designed to meet specific IEP or 504 Plan accommodations, and standardized assessments/ testing situations	Generative AI may not yet offer the same level of documented effectiveness for these purposes
Customization	Limited to predefined settings or features	Adapt outputs based on prompts

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Apply AT decision-making basics: What functional capabilities does user need to achieve task goals/desired outcomes? (2 of 2)

Criteria	Fixed-Function AT Tools (pre-programmed)	Tools That Leverage Generative AI
Training & Learning Curve	Easy for users after initial training Familiarity, repeatability, expected results is key	Need training to craft prompts effectively Outcomes depend on these abilities
Error Handling	Low chance of unexpected results => fewer cognitive demands	May produce errors or hallucinations, requiring supervision Errors may not be obvious to user
Access	Most tools work offline – connection not required, essential in settings with limited Internet access Many tools & apps work with common alternative access devices	GenAI typically needs Internet connection Ability to work with alternative access devices and utilities varies by tool
Data Sensitivity & Privacy	Often operate offline – limits access to student data Common school-wide AT tools requiring online connection adhere to COPPA & FERPA as needed	GenAI typically needs Internet connection May involve online interactions, raising privacy risks

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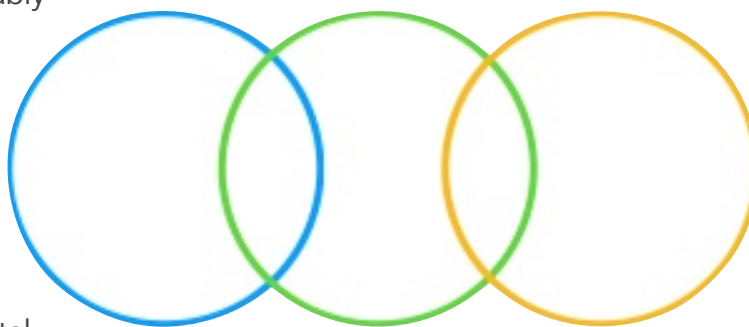
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Three broad categories of tools for functional assistance

Standard "fixed function" AT tools programmed to perform specific tasks consistently & reliably

Fixed-function AT tools with AI-enhanced features for specific pre-defined tasks

Open-ended genAI tools that adapt and create as instructed by the prompt



Examples:
text-to-speech, digital annotation, basic word prediction, graphic organizer, calculator, smartpen, to-do app

Examples:
see next slide

Examples: genAI chatbots (functional assistance is specified by the prompt)

Specific genAI functions built into existing tools

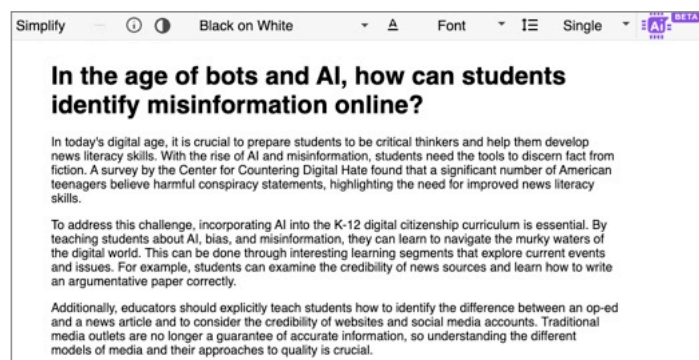
Many tools add genAI-assisted functions to enhance specific features

Example: *Simplify* vs. *Simplify AI (beta)* (Everway Read&Write)

- ▶ Original Read&Write "Simplify" tool visually declutters webpage (easier to read)
- ▶ Also summarizes content to reduce reading (selects most important sentences, deletes others)
- ▶ New "Simplify AI" (beta) summarizes text by rewriting content (uses genAI)

Underlying generative AI prompt with fixed functions

- ▶ Vendor-created, tested and refined, works in controlled context
- ▶ Level of user control varies by tool
- ▶ Other examples: Magic School (tools for teachers & students), Khanmigo, Grammarly, Genio Notes, many more



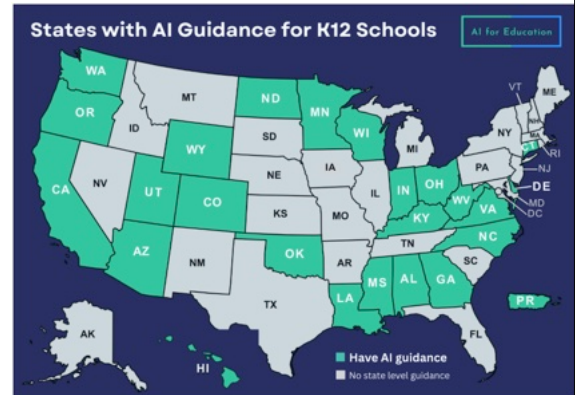
References

Links to selected sources are included on the relevant slides

To learn more about application of AI in schools, start with state resources:

State AI Guidance for K-12 Schools

- ▶ AI for Education: tinyurl.com/3y96yz2v
- ▶ 26 states + Puerto Rico have official AI guidance or policy as of July 2025 (see map at right)
- ▶ Find how your state approaches issues, avail yourself of resources, modify/adapt/build on as needed



AI Toolkit for School Districts

- ▶ Common Sense Education: tinyurl.com/8m4c4xaj
- ▶ "Step-by-step toolkit" – adaptable for districts of different sizes, with different needs & priorities

For more information & other AT resources...

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For more info on technology described herein, visit the AT Toolbox:

www.TechPotential.net/ATtoolbox

