

# Overview of Emerging Technologies and AI in Education

Tuesday, July 18th, 2023



# CIRCLS

Center for Integrative Research in  
Computing and Learning Sciences

**Welcome! Please introduce yourself in the chat:**

- Name, Role, Institution/Organization



This work was supported by the National Science Foundation under grant number #2040753 and #2021159. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the NSF.



**SRI** Education



# Introductions



**Pati Ruiz**



**Cassandra Kelley**

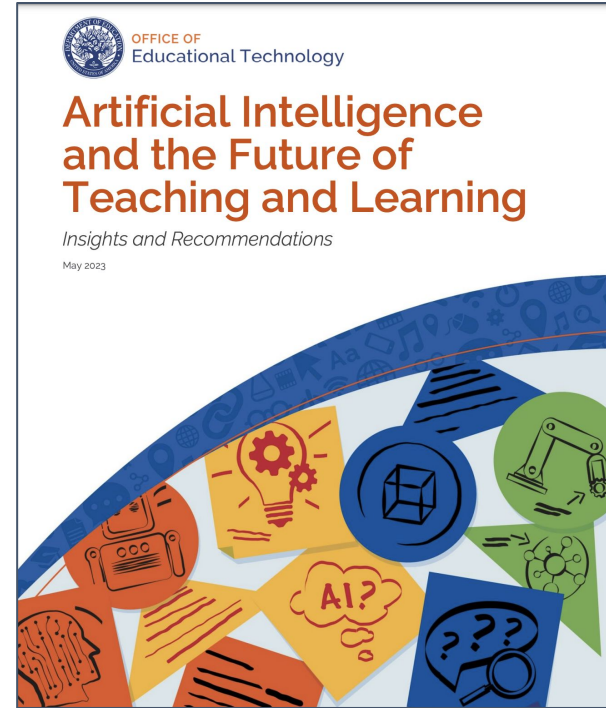


**Kip Glazer**

# AI in Education: Background

# Office of EdTech: AI and the Future of Teaching and Learning

- Emphasize Human-in-the-Loop, and not Replacing Teachers
- Inform and Involve Educators, Prioritizing Building Trust
- Work with Constituents to Develop Guidelines and Guardrails



[Report: Artificial Intelligence and the Future of Teaching and Learning](#)

## The Report is Based On

- o Long-standing research on AI for education (since 1970)
- o Breadth of recent federal research on AI for education
- o Expert Panel (2020)
- o Landscape Review (2021)
- o Public Listening Sessions (2022)
- o Blueprint for an AI Bill of Rights (2022)

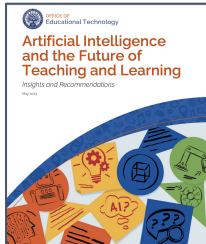
## Definition of AI: Associations and Automation

AI supports two broad shifts from today's edtech use:

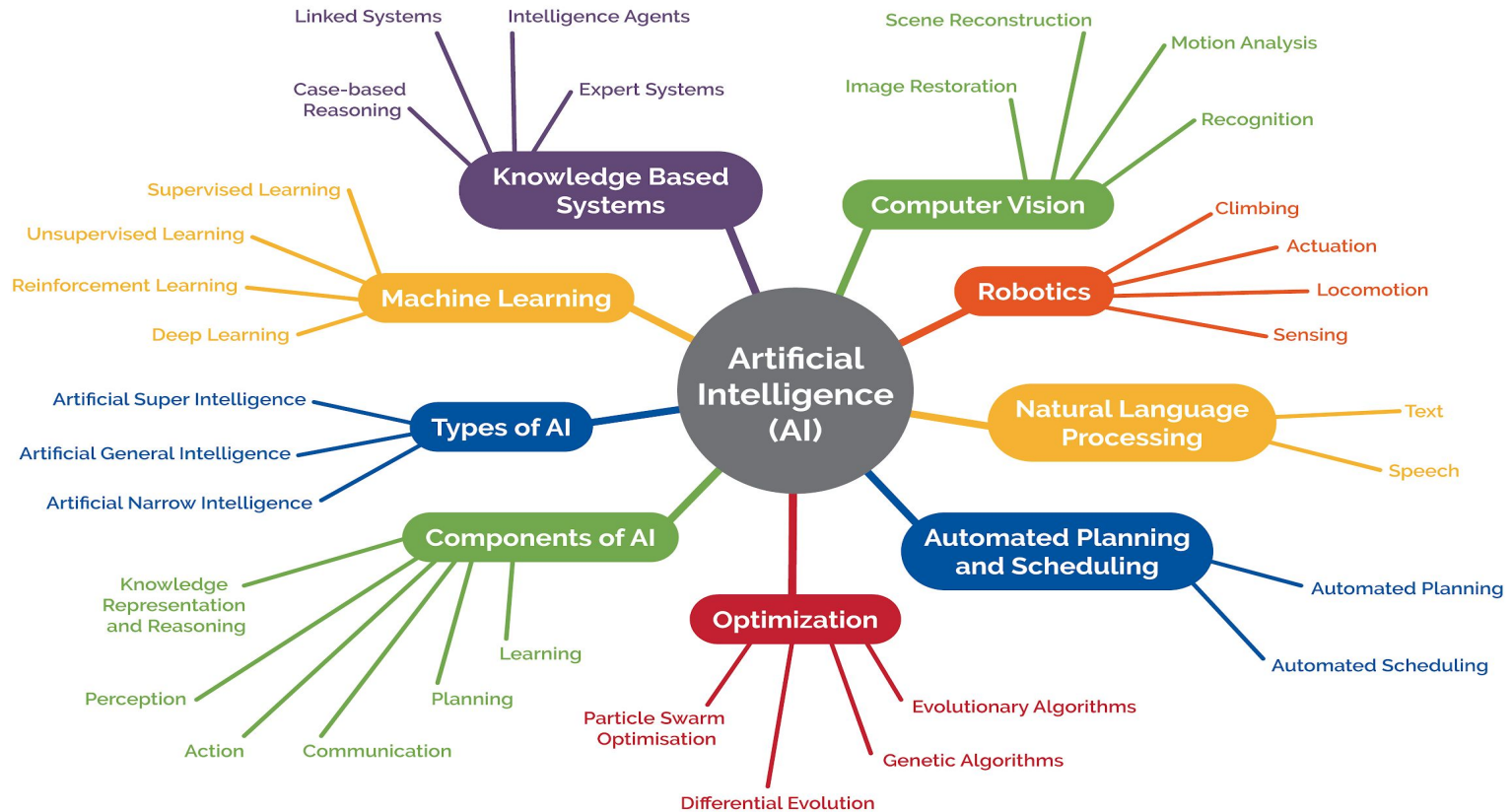
1. From capturing data to ***detecting patterns in data***
2. From providing access to instructional resources to ***automating decisions*** about teaching and learning processes.

These shifts are **accelerating, expanding, and creating new opportunities and risks.**

[See report pages 11-16](#)



# Defining AI Broadly (It's not just essay writing tools)

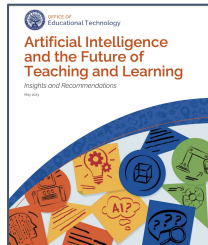


# Insights about AI in Education

**AI goes beyond existing educational technology capacity to advance teaching and learning in multiple ways**

- o AI enables new forms of interaction.
- o AI can support educators via assistants.
- o AI can help educators address variability in student learning.
- o AI supports more powerful forms of adaptivity.
- o AI can enhance feedback loops

**See report pages, 15, 18,  
26, 39, 44, and 52**





# Blueprint for an AI Bill of Rights



AI should be safe and effective



AI should not discriminate unjustly



Data privacy and security should be protected



You should know when AI is being used and how it affects you



You can opt out and interact with a person

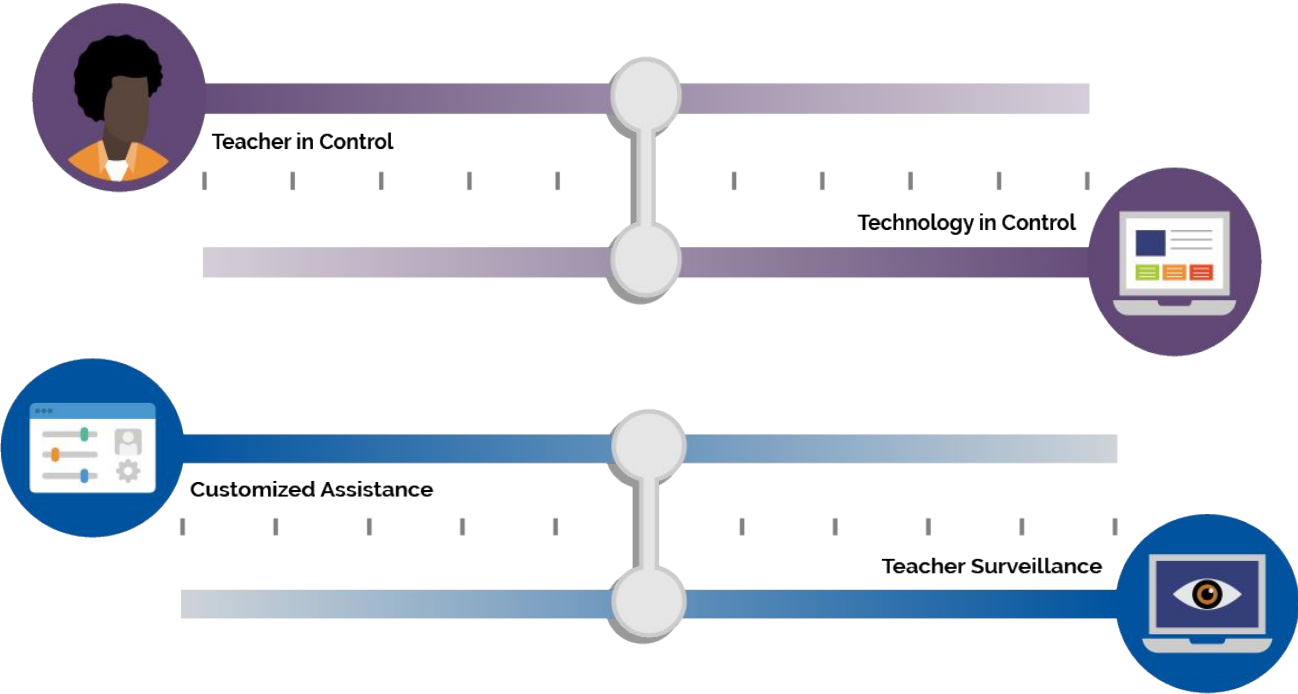
*This blueprint provides necessary principles & shares potential actions. It is a tool for educating the agencies responsible for protecting & advancing our civil rights and civil liberties. Next, we need lawmakers to develop government policy that puts this blueprint into law.*

— Algorithmic Justice League  
(@AJLUnited) October 4, 2022

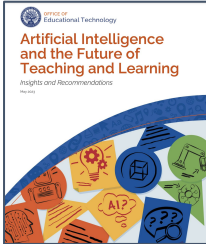
We envision a technology enhanced future more like an electric bike and less like robot vacuums. On an electric bike, the human is fully aware and fully in control, but their burden is less, and their effort is multiplied by the supporting technology.



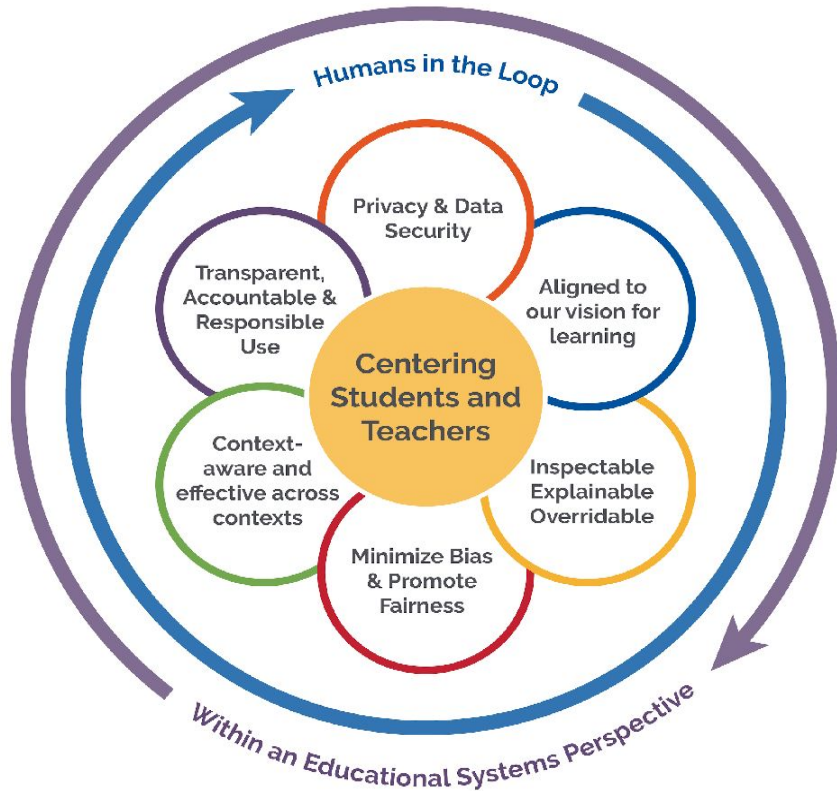
# Tensions in Selecting, Using and Evaluating AI Tools



See report pages 30-36

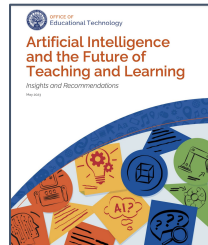


# Evaluating AI in Education : Multiple Dimensions to Consider



- How does the system center teachers and students?
- How does the system address not only data privacy and security, but other key factors?
- How are humans in the loop?
- How do AI systems integrate with educational systems?

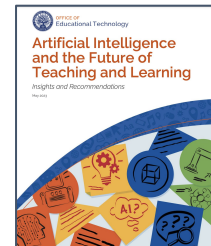
See report page 55



# Recommendations for AI in Education

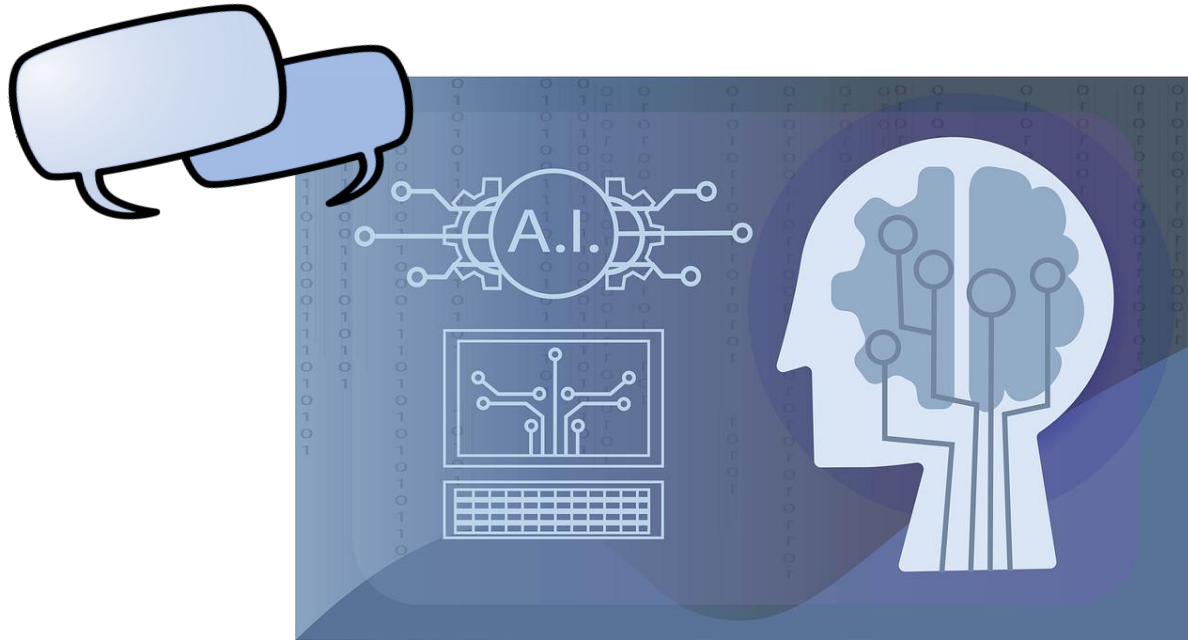
1. Emphasize Humans in the Loop
2. Align Models to a Shared Vision for Education
3. Design Using Modern Learning Principles
4. Prioritizing Strengthening Trust
5. Inform and Involve Educators
6. Focus R&D on Improving How AI Addressing Context
7. Develop Guidelines and Guardrails

[See report pages 52-61](#)



# Waterfall Activity:

## How do you feel about AI in education?





# AI in Education: Generative AI (aka. Chat GPT)



# Generative AI (like Chat GPT/GTP4) Overview

ChatGPT is a chat-based generative pre-trained transformer:

**Generative:** can generate responses to questions,

**Pretrained:** was trained in advance on a large amount of the written material available on the web,

**Transformer:** processes sentences differently than other types of models. They can take the context of the words into account and understand relationships between the words

A very simple definition is that it's a chatbot that allows a user to ask a question in plain language and get a response in a way that's similar to how a human would reply.

# Generative AI (like ChatGPT/GTP4): How Teachers are using these

Educator's recent experiences and heard powerful examples:

- When a coach was unable to run basketball practice, their 10 year old child used Chat GPT to design a coaching plan for a parent to use so the practice could go on as scheduled.
- A school found that using generative art AI tools could enable greater inclusivity for students with disabilities.
- Another school leader used Generative AI to generate to extract details they needed to sort scholarship applications more quickly and efficiently.

# Risks in Artificial Intelligence

Risks arise because of **how AI is built, who participates in design and testing, lack of disclosure, how it is evaluated, “wild west” free of regulation, and more...**

## Risks in Artificial Intelligence

“AI is just math. I don’t think that everything in the world should be governed by math. Computers are really good at solving mathematical issues. But they are not very good at solving social issues, yet they are being applied to social problems.”

**Meredith Broussard**, data scientist and author of [\*More Than a Glitch\*](#), to MIT Tech Review

# ChatGPT: Neither Wise nor Threatening

January 11, 2023 by Cathy O'Neil

“First of all, we don't need to fear that ChatGPT is going to replace humans. It doesn't have a model for truth; it's simply writing words and phrases that are akin to the patterns it has observed in the historical speech it was fed....Any kind of thoughtfulness that might be observed in its output is a combination of the human wisdom that is embedded in its training data and the projected credit that we tend to give others when we hear them making an attempt to formulate thoughts.”

# Teaching Artificial Intelligence in PK-12

[Tool: WolframAlpha](#)

[AI4K12 Activities](#)

[Speech Recognition Demo Guide](#)

- [Speech Recognition Tool](#)

[Intelligent Assistant with Keywords](#)

[Building a Chatbot](#)

[Lesson Plan: Teaching and Learning in the Era of ChatGPT](#)



# Teaching Artificial Intelligence in PK-12 Reports

- [Teaching Digital Citizens in Today's World: Research and Insights Behind the Common Sense Digital Citizenship Curriculum](#)
- Europe: [Ethical guidelines on the use of artificial intelligence and data in teaching and learning for educators](#)

# Breakout Discussion

**What is your experience with AI?**

**In what ways have these technologies made your work (or your students' work) easier or more difficult?**





# Share Out & Reflect:

What insights or questions do you have?

What are your insights about today's discussion on AI in education?

What questions do you still have?

Add section

+

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[Share your thoughts](#)

# Summer Discussion Series

## Upcoming Sessions

**July 18th:** *Overview of Emerging Technologies and AI in Education*

**July 20th:** *Assessment, Identity and Agency*

**July 25th:** *Collaborative Learning and Community Building*

**July 27th:** *Equitable and Ethical Practices and Interactions*

**August 2nd:** *Social Robotics*

**August 15th:** *Learning and Productivity*



[Learn more and register](#)

*Everyone is welcome! You do NOT need to apply for  
or attend the convening to participate!*



# CIRCLS '23 CONVENING

*Shaping AI and Emerging Technologies  
to Empower Learning Communities*

November 2–3, 2023

[August 1st, 2-3PM ET](#) or [August 3rd, 1-2PM ET](#): Drop in to ask about the CIRCLS '23 Convening and learn how to apply.

# Thank you

# &

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