SANTA BARBARA
County Education Office
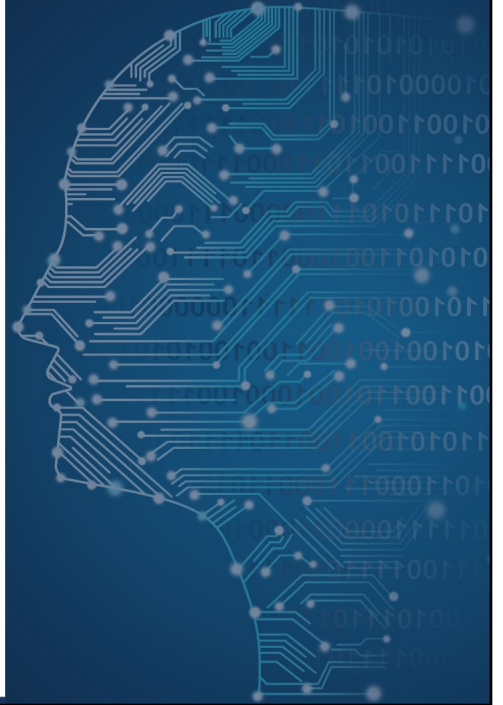Susan C. Salcido, Superintendent

Artificial Intelligence and Education in 2024

November 14, 2024

Tiffany Carson
Director, School and District Support

Lauren Aranguren
Director, Equitable Learning Systems

1
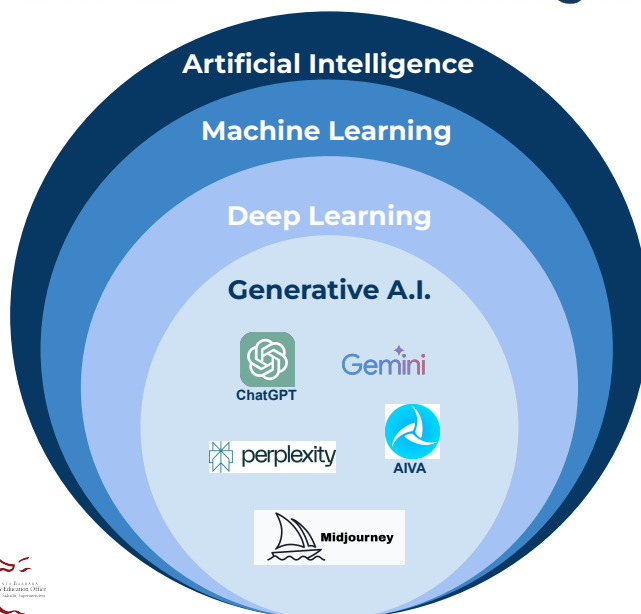What is Artificial Intelligence?

2
AI in Education

3
Support for Educators and Students in the Era of AI

SANTA BARBARA
County Education Office
Susan C. Salcido, Superintendent

What is Artificial Intelligence?

1 What is Artificial Intelligence?

What is Artificial Intelligence?

Artificial Intelligence

Machine Learning

Deep Learning

Generative A.I.

ChatGPT

Gemini

perplexity

AIVA

Midjourney

Artificial Intelligence: The ability of computers and machines to perform tasks that typically require human intelligence, such as learning, decision-making, and problem-solving.

Machine Learning: A type of AI that uses algorithms and data to learn patterns and make decisions without being specifically programmed for each task.

Deep Learning: A type of machine learning where computers use layers of neural networks (like a brain) to recognize patterns and make decisions from large amounts of data

Generative Artificial Intelligence: A type of artificial intelligence that creates *new content*, like text, images, or music, based on patterns it has learned from existing data.
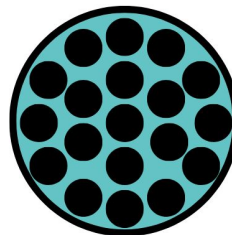
Find vs generate ?
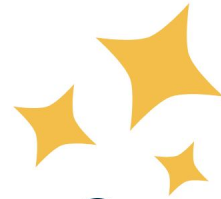
Generative AI
Simplified

A **datapoint** can come in the form of text, observations, figures, images, numbers, graphs, or symbols.
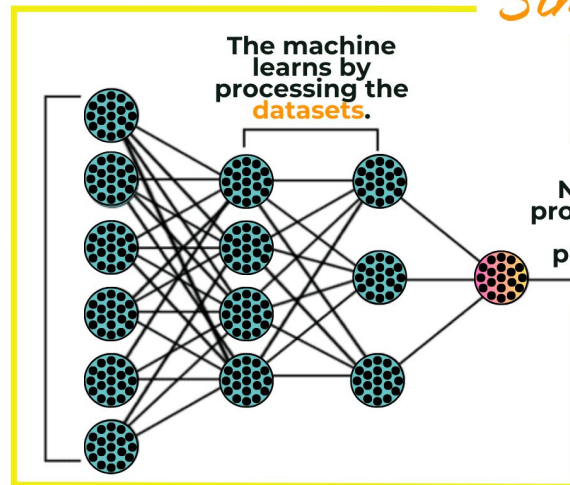
Datapoint

Dataset

A **dataset** is a combination of datapoints.

Generative AI
Simplified

The machine learns by processing the datasets.

Datasets are entered into the machine by humans.

New information is produced based on the combined and processed datasets.
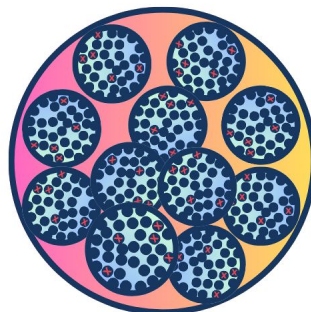
Neural Network

Machines are only as capable as the data they are trained on.

X
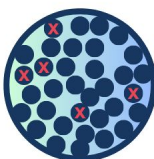
Data

Dataset

Generated Information

If the <u>DATA</u> is inaccurate, biased, or problematic,

Then the <u>A.I.</u> is inaccurate, biased, or problematic.

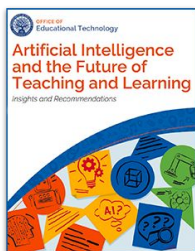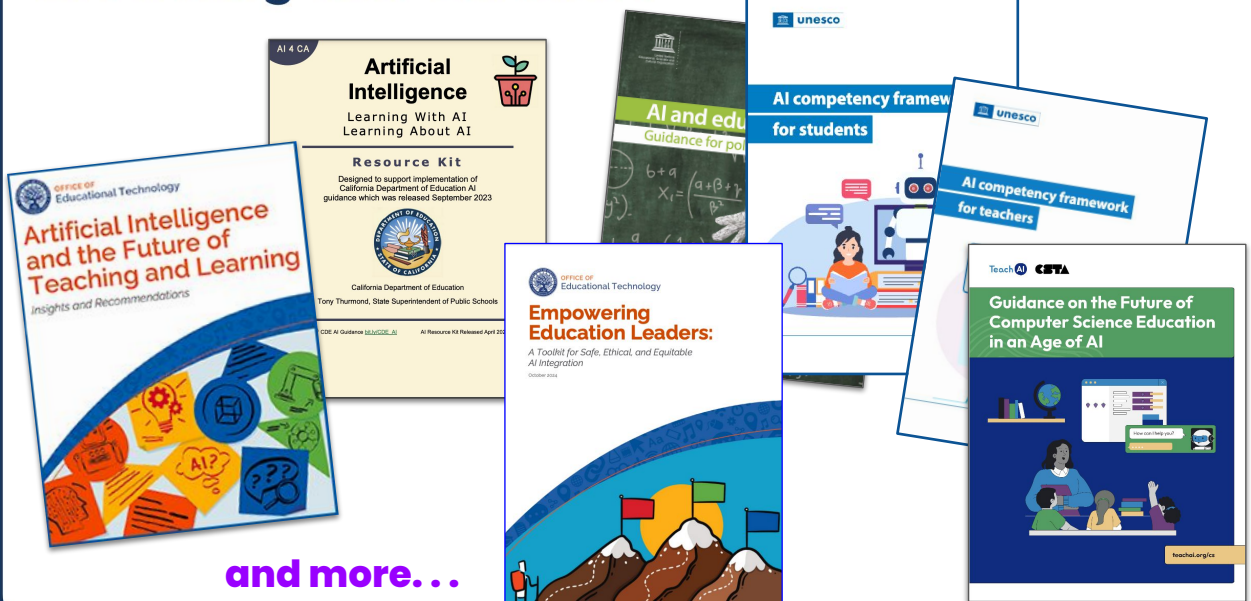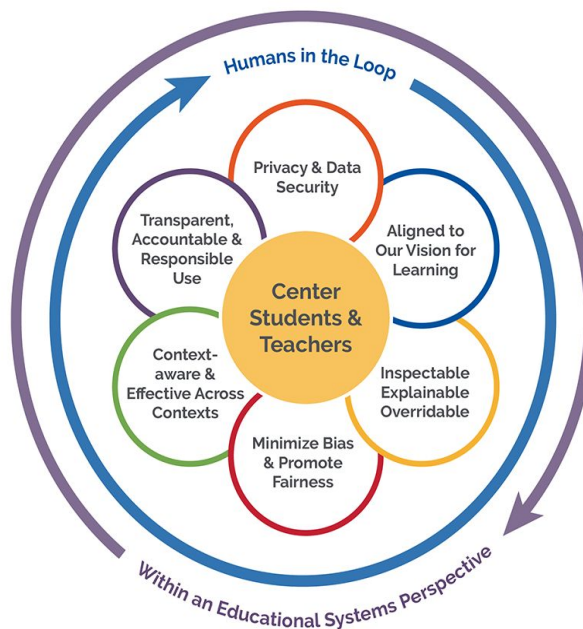# Let's experience ChatGPT together.

ChatGPT

chatgpt.com

2

Artificial Intelligence in Education

Grounding and Guidance

Artificial Intelligence
Learning With AI
Learning About AI

Resource Kit
Designed to support implementation of California Department of Education AI guidance which was released September 2023

California Department of Education
Tony Thurmond, State Superintendent of Public Schools

Artificial Intelligence and the Future of Teaching and Learning
Insights and Recommendations

AI and education
Guidance for policy...

unesco — AI competency framework for students

unesco — AI competency framework for teachers

OFFICE OF Educational Technology
Empowering Education Leaders:
A Toolkit for Safe, Ethical, and Equitable AI Integration
October 2024

Teach AI **CSTA**
Guidance on the Future of Computer Science Education in an Age of AI
teachai.org/cs

and more...

Artificial Intelligence and the Future of Teaching and Learning
Insights and Recommendations

From the US Department of Education, Office of Educational Technology
"Artificial Intelligence and the Future of Teaching and Learning"

Humans in the Loop

- Privacy & Data Security
- Aligned to Our Vision for Learning
- Inspectable Explainable Overridable
- Minimize Bias & Promote Fairness
- Context-aware & Effective Across Contexts
- Transparent, Accountable & Responsible Use

Center Students & Teachers

Within an Educational Systems Perspective

Tensions with A.I. and education

Potential Benefits of AI in Education

Content development and **differentiation**

Assessment design and timely, effective feedback

Tutoring and **personalized** learning assistance

Aiding **creativity, collaboration,** and **skill development**

Operational and administrative **efficiency**

Plagiarism and academic dishonesty

Diminished student and teacher agency and **accountability**

Compromised student **privacy** and unauthorized data collection

Overreliance and loss of critical thinking

Perpetuating **societal bias**

Potential Risks of AI in Education

Teach **AI**

A.I. Tools Most Commonly Used In Schools

school AI **Eduaide.Ai**
MAGIC SCHOOL

PLATFORMS

Curipod
Khanmigo **MegaMinds**
Snorkel

ChatGPT
Gemini

CHATBOTS

Claude
Copilot
perplexity

nearpod **Adobe Express** **Canva**
Quizizz

EXTENSIONS OR EMBEDDED FEATURES

Kahoot! **padlet**
Brisk Teaching

(These are only a representative few. There are many more, and many more to come. . .)
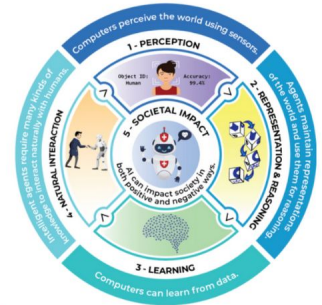
Computer Science Standards for California Public Schools
Kindergarten through Grade Twelve

Development begins in 2016
SBE adopts August 2018

OpenAI releases **ChatGPT 3.5**
November 2022

AI 4 K12 development
launches in 2018
CSTA / AAAI partnership

Why is computer science still crucial for students?

AI is not magic. It needs human expertise and guidance.

AI is not perfect. It needs human oversight.

AI will not replace the need for computer scientists.

AI needs human creativity and domain expertise.

AI can code, but there is more to computer science than code.

Adapted from Teach AI CSTA

A.I. Competency Framework for Students

Aspects	Progression		
	Acquire	**Deepen**	**Create**
Human-centered mindset	Human agency	Human accountability	Citizenship in the era of AI
Ethics of AI	Embodied ethics	Safe and responsible use	Ethics by design
AI techniques and applications	AI foundations	Application skills	Creating AI tools
AI system design	Problem scoping	Architecture design	Iteration and feedback loops
AI for learning	AI enabling student learning	AI to enhance learner curiosity	AI to support learner agency

🏛 unesco

CA Assembly Bill 2976

. . . **incorporate Artificial Intelligence (AI) literacy** content into future **curricular frameworks.**
(Mathematics, Science, and History-social Science)

. . . **include AI literacy** in its criteria for evaluation when the state board next adopts **instructional materials.**
(Mathematics, Science, and History-social Science)

. . . **define "AI literacy"** for these purposes as the knowledge, skills, and attitudes associated with how artificial intelligence works, including its principles, concepts, and applications, as well as how to use artificial intelligence, including its limitations, implications, and ethical considerations.

Approved by Governor September 29, 2024

3

Support for Educators in the Era of A.I.

A.I. Competency Framework for Teachers

Aspects	Progression		
	Acquire	**Deepen**	**Create**
Human-centered mindset	Human agency	Human accountability	Social Responsibility
Ethics of AI	Ethical principles	Safe and responsible use	Co-creating ethical rules
AI foundations and applications	Basic AI techniques and applications	Application skills	Creating with AI
AI pedagogy	AI-assisted teaching	AI-pedagogy integration	AI-enhanced pedagogical transformation
AI for professional development	AI enabling lifelong professional learning	AI to enhance organizational learning	AI to support professional transformation

Adapted from the AI Competency Framework for Teachers, unesco, September 4, 2024

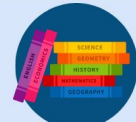# Artificial Intelligence and SBCEO

Exploration Challenges

sbceo.org/AI

Workshops for Educators

A.I. in our Communities

Engaging in our own learning

Key Take-Aways

- The emergence and rapid development of generative AI is both a **catalyst and an opportunity** for transforming teaching and learning.

- AI **can enhance** teaching and learning but must be **approached with caution** to avoid risks.

- Beyond "humans in the loop," **we must center human intelligence and creativity in the age of AI**. It is crucial that our students are positioned to be not just consumers, but creators of AI and future technologies.

- Educators are grappling with how to create the conditions so that **student potential** is not limited or boxed by their interactions with A.I. , but **amplified by their interactions with A.I.**

- Decisions we are making now will impact future generations. And– **Everybody is doing the best they can to figure it out**.

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Questions?

Thank you!

Visit us at sbceo.org/AI

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