

## AI and CHILDREN

2024



### What is AI?

**Artificial Intelligence, or AI** refers to machine-based systems that can intelligently make predictions, recommendations, or decisions that influence real or virtual environments. AI systems interact with us, act on our environment, can be made to operate autonomously, and can adapt their behavior. *(UNICEF, 2021)*

### What are Generative AI and Large Language Models?

**Generative AI** is artificial intelligence that can create new content, including written text, images, or music, without overt human direction. **Large Language Models, or LLMs**, are a type of generative AI trained on enormous datasets of human language in order to understand and create language-based content. *(Family Online Safety Institute, 2023)*

## Perceptions and Use of AI by Children

### GENERATIVE AI



#### Usage:

- **67%** of teens in the United States have used GenAI
- **73%** for analytical tasks
- **67%** for creative tasks
- **59%** for efficiency-boosting tasks *(Family Online Safety Institute, 2023)*

#### Students 12-18:

- **50%** used ChatGPT for school (with 26% of parents aware of this use)
- **38%** without teacher permission
- **50%** used ChatGPT 3x more than Google
- **51%** think schools should limit use of LLMs until safeguards can be put in place
- **92%** interested in AI-powered educational tools for learning *(Common Sense Media, 2023)*



### Young Children

Children ages 0-7 are at the “sensorimotor” and “preoperational” stages of cognitive development - developing an understanding that objects/beings exist independently, sometimes attributing lifelike qualities to objects.



### Older Children

Children ages 7-11 are at the “concrete operational” stage of cognitive development - developing logical thinking skills and the ability to understand the perspectives of others.



### Adolescents

Adolescents are at the “formal operational” stage of cognitive development - developing abstract reasoning skills and expanding their understanding of moral, philosophical, social, and political issues.

### ASSISTANTS



#### Usage:

- **Nearly 60% of children and 66% of teens** interact daily with a voice-activated assistant.
- **53% of teens** use assistants for information searching. *(Common Sense Media, 2019; Internet Matters, 2020)*

**Perception of human vs machine:** 3-6 year olds who interacted with a smart speaker during free and structured play reported that the speaker was sociable, emotional, and intelligent. But they did not ascribe full humanness to it, as interpreted from their free drawings representing the speaker as a mix of human and machine. *(Xu & Warschauer, 2020)*

**Perceived intelligence:** Children (ages 6-10 years old) considered personal home assistants and smart toys as more intelligent than they are even if these devices could not always answer their questions. *(Druga et al., 2018)*

**Trust:** A study of 4-8 year olds showed that as children got older, they showed more trust and preference in a voice assistant than a human for factual information (reversed for personal information). *(Girouard-Hallam & Danovitch, 2022)*

**Communication:** Three studies with kids (ages 3-6 years old) have found that kids communicate less (reading and speaking) with AI agents in smart speakers than with humans, controlling for a number of conversational factors. *(Aeschlimann et al., 2020; Gampe et al., 2023; Xu & Warschauer, 2020)*

### Perception – Parents/Students Concerned About:

**66%**

Kids' dependence on AI for school

**60%**

Cheating

**66%**

Inappropriate content

**Only 26% of parents believe their child's school has rules in place for AI use.**

*(Common Sense Media, 2023)*

# AI, Schools, and Student Cheating - A Digital Divide

Research indicates significant differences in both the perception and use of AI among student in public schools vs students in private schools. *(Lee et al., 2024)*

USE	Students report using AI to:	Private School Students	Public School Students
	Generate ideas for a paper project or assignment	39.13%	50%
	Complete or edit a portion of a paper project or assignment	5.8%	31.65%
	Write all of a paper project or assignment	1.45%	19.68%

BELIEFS	Students think AI SHOULD be used for:	Private School Students	Public School Students
	Generate ideas for a paper project or assignment	Never: 31.55% Sometimes: 54.01% Often: 14.44%	Never: 18.7% Sometimes: 58.7% Often: 22.61%
	Complete or edit a portion of a paper project or assignment	Never: 63.93% Sometimes: 29.51% Often: 6.56%	Never: 48.66% Sometimes: 41.52% Often: 9.82%
	Write all of a paper project or assignment	Never: 95.36% Sometimes: 3.09% Often: 1.55%	Never: 86.58% Sometimes: 9.09% Often: 4.33%

48%

of administrators report their districts allow teachers/staff to use GenAI

25%

allow students to use GenAI

35%

of administrators indicate their districts have provided training for GenAI *(Michaelson & Carter, 2024)*

## AI, Errors and Bias

Generative AI is not always factually correct and reflects the bias of the sources it is trained on. This bias can in turn influence the development of bias in humans using the these AI. *(Vicente & Matute 2023)*

Research has demonstrated various types of bias in LLMs that may be consequential for critical outcomes like health care decision making. Research has also shown that human decisions and viewpoints are demonstrably influenced by interactions with biased AI GPT detectors, themselves of questionable utility, may exhibit bias against non-English speakers. *(Caliskan, 2023; Liang et al., 2023; Ranard et al., 2024; Vincente & Matute, 2023)*

## Key Skills to Develop for Youth AI Literacy

### Concepts to Develop Understanding in Youth K-12 and Early Childhood

*(adapted from Su & Yang, 2023)*

#### THE BIG FIVE IDEAS

Perception

Representation and Reasoning

Learning

Natural Interaction

Societal Impact

K-12



Computers perceive the world using sensors.

Agents maintain representation of the world and use them for reasoning.

Computers can learn from data.

Intelligent agents require many kinds of knowledge to interact naturally with humans.

AI can impact society in both positive and negative ways.

EARLY CHILDHOOD



AI systems use sensors to understand the world around them.

AI systems use rules and algorithms to process and analyze data.

AI systems can process a large amount of data and learn from it to provide solutions.

AI systems can interact with humans in ways that seem natural.

AI systems will produce impacts on human lives and the world.

