Generative Artificial Intelligence in K-12 Education

Guidance for Arizona Schools and School Systems

A Balanced Perspective

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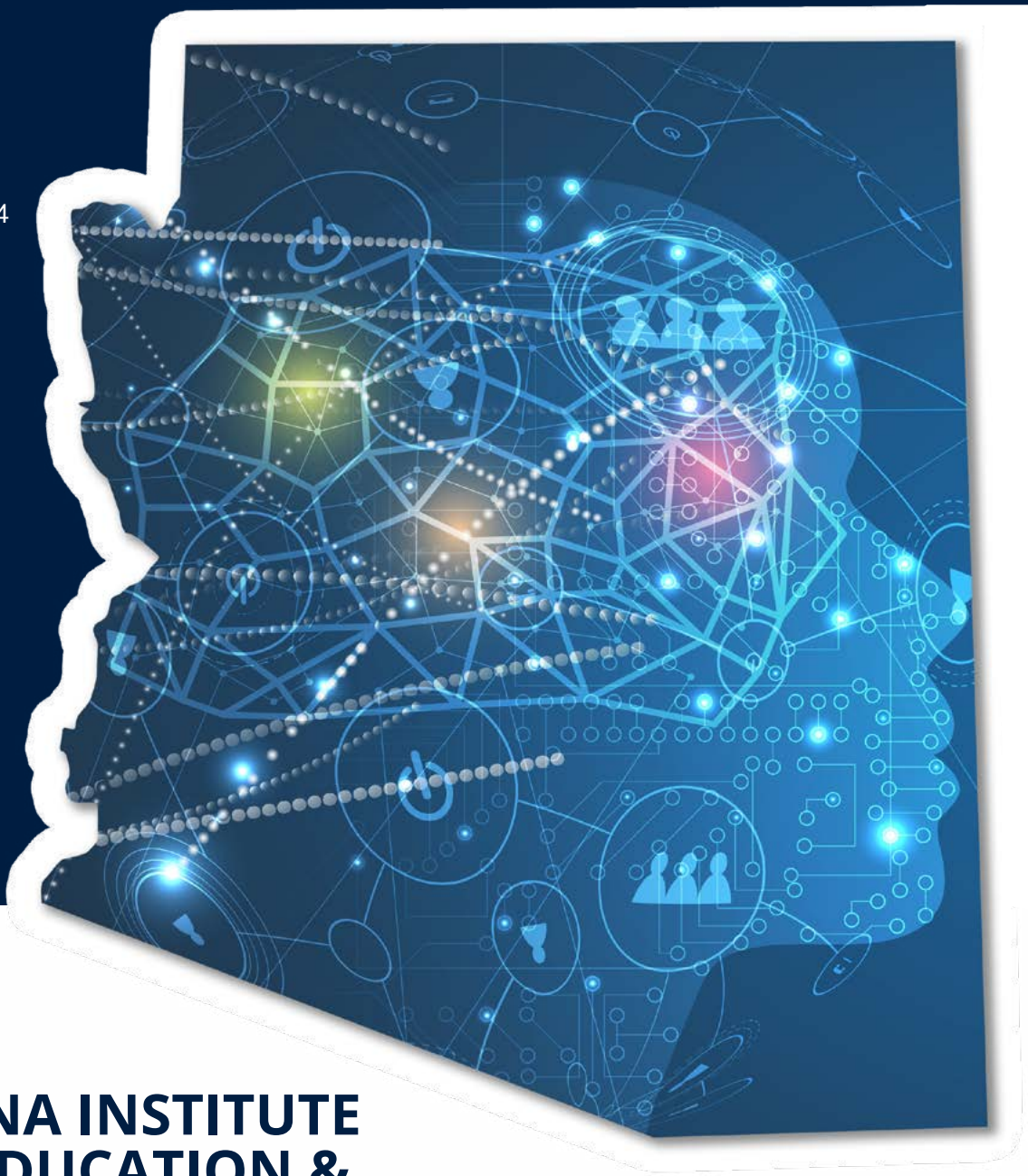

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ARIZONA INSTITUTE FOR EDUCATION & THE ECONOMY
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Direct questions about this document to LeeAnn Lindsey at the Arizona Institute for Education and the Economy.

Version History

DATE	VERSION	CHANGES & UPDATES
5/13/24	24.01	Original Publication
9/5/24	24.02	Modified colors and added alt tags to strengthen the document's accessibility
11/12/24	24.03	- Minor word choice revisions - External link updates - References updates - Additional Resources added - Minor content additions to strengthen or clarify key points: - AI literacy - Family engagement - Transparency of use - Teacher, student, and admin use case updates
5/12/25	25.01	- Added up-to-date information to the intellectual property section - Added additional AI literacy information and resources - Updated our stance on AI use guidelines to promote teaching effective and responsible use - Updated resources and links

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Our Message

Message from the Arizona Institute for Education and the Economy

When the Arizona Institute for Education and the Economy (AIEE) launched in 2023, few could have anticipated just how central artificial intelligence (AI) would become to our work. AI is now embedded into everyday technology and has influenced our daily lives, as well as projections for our workforce and economy. In turn, across the P20 continuum, educators have grappled with important questions about what that means as we prepare students for the future. *How do we create AI-literate students and educators? How might we use AI to transform teaching and learning? What are the short and long-term implications for individuals, communities, and society?*

Since our initial publication of the AI Guidance document for K-12 education systems in May 2024, momentum has only grown. We've learned from schools and districts around Arizona about what has worked, what they're excited about, and what keeps them up at night. We have challenged LEAs to complete foundational AI implementation tasks (3-in-3 Challenge), co-launched the AZ AI Alliance, presented locally and nationally, and fielded questions from every corner of the state and country. Our understanding of AI has continued to expand and evolve based on our continued work with education and business leaders, as well as the development of AI itself.

The May 2025 version of Arizona's official GenAI Guidance reflects our ongoing learning by incorporating updated resources, a more nuanced approach to use guidelines, and clearer guidance on AI literacy.

Our message remains clear: the light is green. Let's move forward—but let's do so wisely. AI is not and should not be a quick fix for education. It is a tool – powerful, disruptive, and full of potential - whose impact depends entirely on how we, as human educators and leaders, shape it and, therefore, choose to use it.

The subtitle of this guidance also remains the same, *A Balanced Perspective*. Yes, AI can transform teaching and learning. Yes, it can improve systems, elevate the profession, and engage students in new ways. But only if we lead with a clear north star rooted in student learning, equity and access, and ethics, and only if we ensure that human intelligence remains at the center of AI implementation.

As we continue this work together, we invite Arizona's educators to embrace what we call *collective intelligence*: a future in which the strengths of human expertise and the efficiencies of AI combine to close achievement and opportunity gaps, support a thriving educator workforce, and reimagine school systems for the better.

Dr. Chad Gestson

Dr. Chad Gestson
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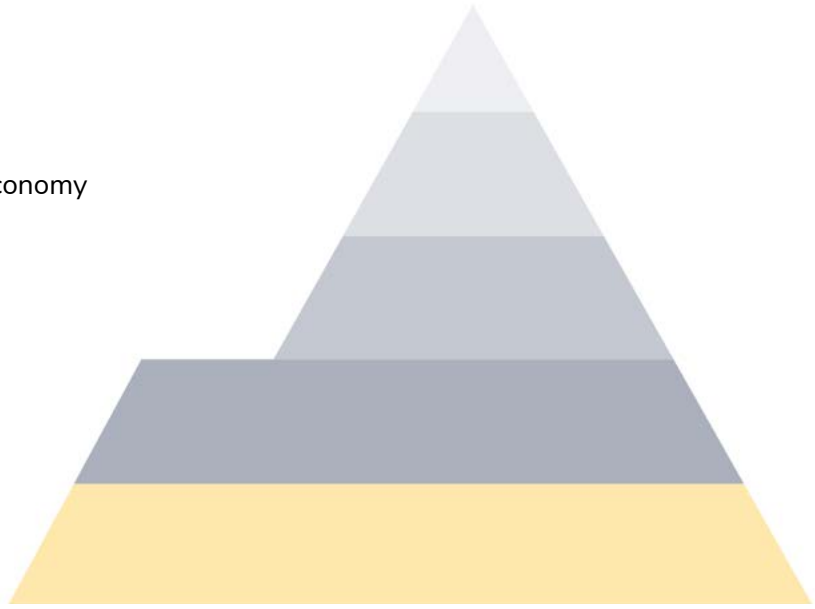

Acknowledgements

Core Team members determined the values and goals of the guidance found in this document. They also analyzed data, drafted, and revised the document's content using GenAI as a thought partner. The Reviewers provided critical feedback that further shaped the content of this guidance.

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Introduction

The Arizona Institute for Education and the Economy (AIEE) exists to cultivate solutions that improve K-12 education outcomes and ensure long-term statewide economic prosperity (AIEE, 2024). Sitting at the intersection of PK-12, higher education, and workforce development, we first seek to understand what is needed for Arizona's future to thrive, then work with stakeholders to innovate bold solutions to transform outcomes for our students.

The Future of Jobs Report 2025 suggests that AI will drive significant changes in workforce strategy over the next five years (World Economic Forum, 2025). According to the report, employers plan to hire new employees and reskill or upskill existing staff to effectively work with and alongside AI. Other research also underscores the need to prepare for workforce disruption driven by AI and related technologies (Eloundou et al., 2023). In light of these changes, educators and system leaders must consider how we equip students with the skills and mindsets needed for economic agency in an evolving landscape.

> *"In light of these changes, educators and system leaders must consider how we equip students with the skills and mindsets needed for economic agency in an evolving landscape."*

To help guide Arizona's education leaders in addressing AI technologies, the AIEE assembled a group of education experts to develop guidance that would assist Local Education Agencies (LEAs) to responsibly and confidently chart a path forward. As a team of education technology leaders, administrators, curriculum, and IT professionals, our collective experience is brought together in this document to offer a north star, proposed guardrails, and implementation recommendations.

This guidance is grounded in two core beliefs – 1. Artificial Intelligence has the potential to be the catalyst for positive transformation of education models, and 2. Responsible implementation requires a nuanced understanding of the ethical implications. With that in mind, our team has taken great care to present this guidance reflecting a **balanced perspective.**

About This Document

Since the release of the original guidance document in the spring of 2024, the rapid advancement of artificial intelligence, particularly GenAI, has continued to generate both excitement and uncertainty across the K–12 education landscape.

To navigate the AI journey with intention and clarity, LEAs should first establish a common language and develop a shared vision for AI use. The information provided in this document can help strengthen individual and collective understanding of GenAI, including the opportunities, imperatives, and risks inherent in its use.

Document Section(s)	Purpose
Understanding GenAI	**Explainer:** Build a basic understanding of Generative AI to effectively navigate this document and participate in AI-related conversations.
Powerful Teaching and Learning & School and Administrative Uses	**North Star:** Envision the possibilities to transform not only teaching, learning, and leadership, but also our profession, and unquestionably, our future workforce.
Responsible and Ethical Implementation	**Guardrails:** Strengthen understanding of what's at stake in order to move forward safely and responsibly.
Implementation Recommendations	**Recommendations:** Prepare to lead implementation. Those who have already begun can compare and confirm action plans.

Overarching Value: The Human Agency and Oversight Imperative

This guidance was built around a core value of human agency and oversight at every stage of GenAI-use and implementation. It's essential that humans serve as a critical navigator of AI use and ensure alignment with educational and societal goals. The U.S. Department of Education Office of Educational Technology's policy report, Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations, emphasizes "humans in the loop" stating, "Teachers, learners, and others need to retain their agency to decide what patterns mean and to choose courses of action (2023, p. 6). Likewise, in their AI guidance document, the Washington Office of Superintendent of Public Instruction suggests a "Human -> AI-> Human" frame to establish a collaborative partnership with AI that reflects human agency and governance over its use (2024).

As an overarching core value, human oversight considerations are found throughout every section of this document.

Join the Human Intelligence Movement to connect with people and resources that prioritize the development of human skills in the AI era.

About This Document

To further explain the human and AI relationship, Vera Cubero from the North Carolina Department of Public Instruction uses an analogy of three different bikes. She compares education without AI to a mountain bike – the human is in control with no assistance, too much reliance on AI to a motorcycle – fast but potentially dangerous, and partnership with AI to an e-bike – the bike assists and the human is in control (NCDPI, 2024).

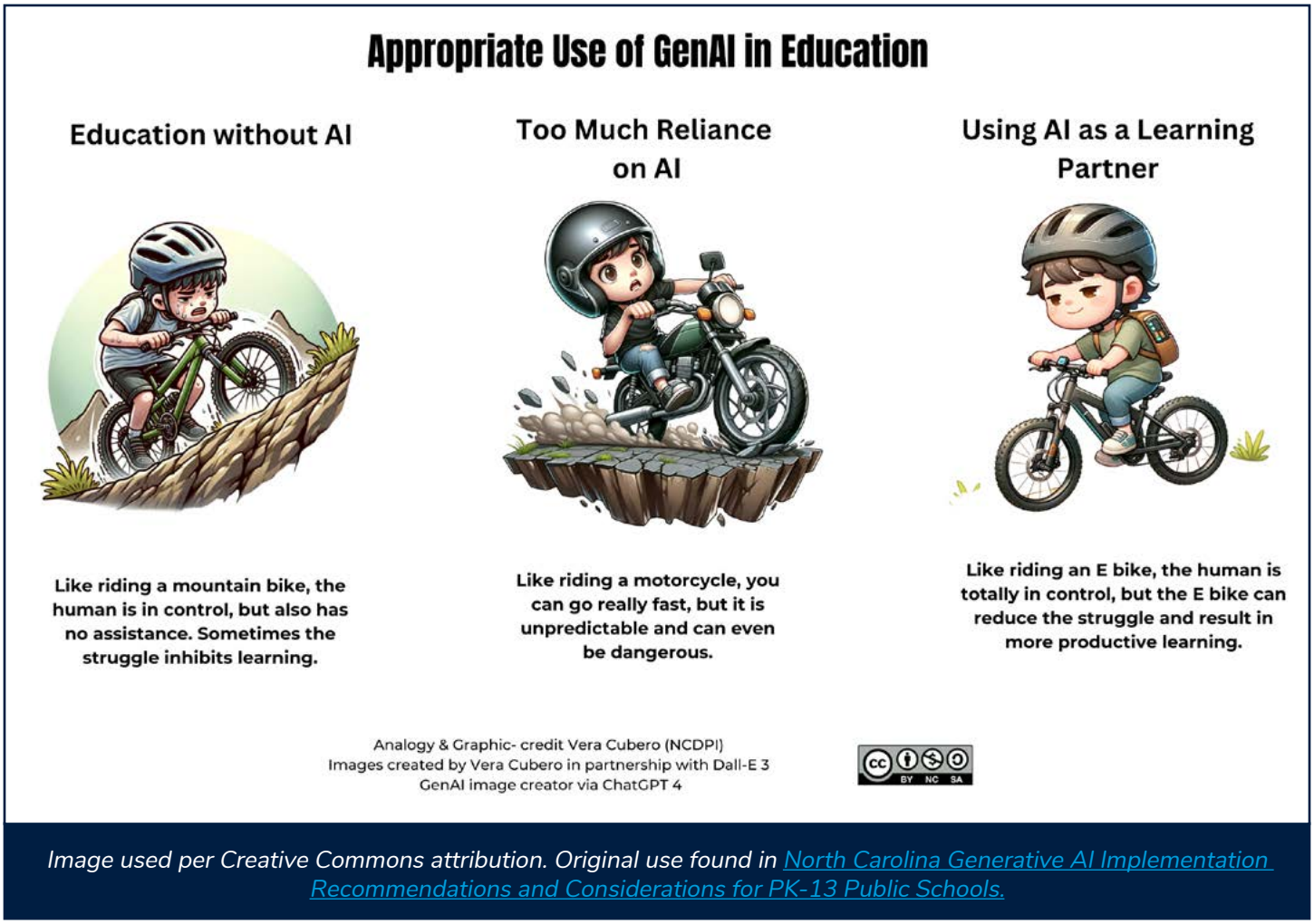


Image used per Creative Commons attribution. Original use found in North Carolina Generative AI Implementation Recommendations and Considerations for PK-13 Public Schools.

A complete long alternate description is available on page 31.

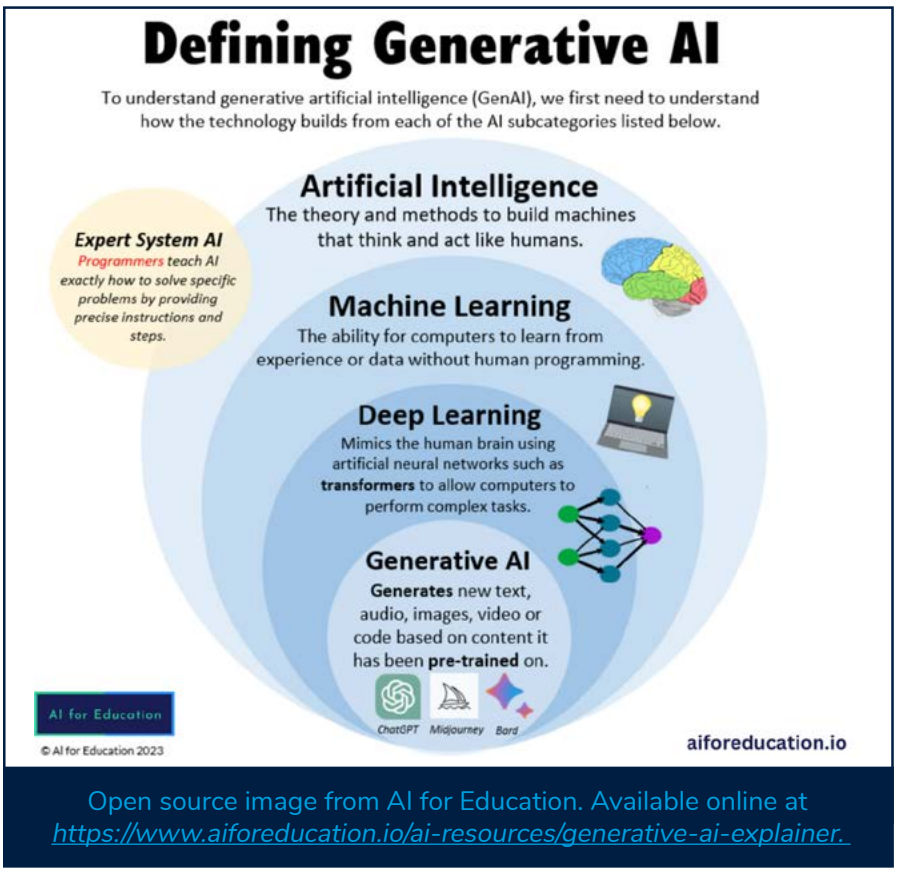
RESOURCE

The European Commission (2022, p. 19) provides questions to initiate reflection and dialogue about human agency and oversight in the implementation of AI in education.

Understanding GenAI

Artificial Intelligence (AI) refers to computer systems or algorithms that simulate human intelligence or problem-solving. It is not new technology – in fact, it has decades of use even in the field of education. In the 1990s, edtech companies used adaptive learning technologies to adjust the pace and style of digital content based on student needs, making learning faster or slower for students. In the 2000s, schools and colleges began using machine learning on their "big data" to predict student performance and intervention needs. Still, the release of ChatGPT in November 2022 caused a new flurry of interest in AI technologies.

Text-based interaction with AI ("chatbots") and AI-powered image & video creation tools are powered by a subset of AI called Generative AI which produces content that often appears as though it came from a "human hand." The graphic from AI for Education (2023) clarifies how GenAI is positioned in the broader field of AI.



Open source image from AI for Education. Available online at https://www.aiforeducation.io/ai-resources/generative-ai-explainer.

A complete long alternate description is available on page 31.

It is important to understand that AI tools, GenAI included, are not inherently knowledgeable; they learn from large amounts of data collected from all over the internet and world, which introduces an inherent bias to their output. Imagine two 18-year-olds, one who grew up in rural Arizona and one who grew up in bustling Tokyo. They are both human, but their differences in lived experiences cause their worldviews and perspectives to be drastically different. Just as humans are influenced by both nature and nurture, a GenAI tool will reflect the algorithms and the datasets that trained them, both of which are selected by companies whose interests are not always aligned with those of educators. Further, GenAI models that currently exist cannot precisely define how or why they produce an output. Therefore, when it comes to biased or inaccurate output that feels "human" it is important to understand that the tool gives the statistically best answer or product based on what we ask, shaped by the training data used in that model.

The ability of GenAI tools to *mimic* human patterns of communication and creation has potential to be valuable in the world of education. For example, the use of "tutor bots" that allow students to have individual coaching that *feels* like a human conversation is being explored by both technologists and educators. Other education groups are attempting to use AI as a lever to reconfigure instructional time during the school day. As these explorations unfold, we will learn more about the impacts and net effect.

With a high regard for innovation and to set the tone of possibility, we continue with an investigation of GenAI's role in **powerful teaching and learning.**

Powerful Teaching and Learning

Harnessed appropriately, GenAI can be a catalyst for pedagogical models that increase equitable learning conditions, foster learner agency, and equip students with highly valued future-forward skills. However, we must not treat GenAI as though it is a magic bullet that will miraculously improve student outcomes. Whether our instructional goals aim toward content achievement, digital literacy, or workforce skills, we should anchor instructional choices in a vision for powerful teaching and learning.

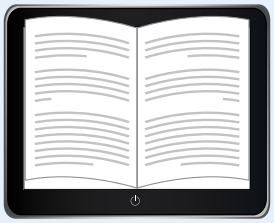
> *"Whether our instructional goals aim toward content achievement, digital literacy, or workforce skills, we should anchor instructional choices in a vision for powerful teaching and learning."*

Use the information in this section to spark conversations around the true value of GenAI-use in the classroom. Dialogue among teachers, administrators, instructional coaches, and curriculum leaders will help frame your organization's perspective on powerful practices for teaching and learning in an AI-powered world.

Educators can lean into the Arizona Academic Standards, including those for Computer Science, Educational Technology, and content areas to anchor instructional decisions.

Arizona Academic Standards

- Computer Science
- Educational Technology
- English Language Arts
- History and Social Science
- Mathematics
- Science



AI Literacy

AI literacy is the knowledge and skills that enable humans to critically understand, use, and evaluate AI systems and tools to safely and ethically participate in an increasingly digital world (Digital Promise, 2024)

As educators, we help shape students' understanding of the world to prepare them for active engagement in it. Because GenAI will continue to transform the way we work and live, we must make AI literacy a priority for all students and adults in our communities. Creating an AI-literate population is the only true approach to shaping an AI-driven world that is safe and just. AI-literate individuals are better equipped to be proactive and participatory in shaping the technology's use within our schools and our lives.

Our team's unwavering stance on the importance of AI Literacy as a core skill for the future has led to its inclusion at several points throughout this guidance document. We encourage all LEAs to create an AI Literacy plan that includes curriculum and professional development affixed to the Arizona Academic Standards.

Human Oversight: AI literacy equips teachers and leaders to provide informed human oversight for AI implementation.

Teaching AI Literacy

Developing AI literacy means much more than knowing how to use tools. In addition to foundational AI knowledge, it also includes understanding ethical implications, employing critical thinking to determine when and how it is used, evaluating its output, knowing and applying safeguards, and more. AI literacy can be taught to students of all ages, and many lessons, especially those for young students, do not require the use of AI.

- AI literacy frameworks and lessons can be found on the "Additional Resources" page within this document.
- Engaging students in meaningful dialogue around appropriate, ethical, and effective AI use helps build AI literacy skills. Using an AI Use Scale can help guide discussions.
- AI literacy intersects with other emerging literacies such as digital literacy, media literacy, and digital citizenship. Integrating these skills into content areas helps ground them in meaningful, real-world contexts.

The following table shows key alignment between AI literacy and AZ Academic Standards.

AI Literacy Goals	AZ Academic Standards
Safe, Responsible, and Ethical Technology Use *Critical source evaluation:* • Identify biases and misinformation in AI-generated content and understand their societal implications • Demonstrate source transparency, including GenAI tools and output • Critically evaluate information generated by AI across multiple sources *Data Management* • Manage and protect one's own and others' data when using AI *Cybersecurity* • Protect computers, networks, and data from unauthorized access or harm • Understand common cybersecurity threats	EdTech Standard 2: Digital Citizen EdTech Standard 3: Knowledge Constructor ELA Writing Anchor Standard 8 ELA Reading Anchor Standard 8 Social Studies Disciplinary Skills and Processes Anchor Standards 1, 2, 3, 4 Science and Engineering Practice 8 Computer Science Concept: Impacts of Computing Computer Science Concept: Networking and the Internet
Computational Thinking • Break down complex problems into smaller, more manageable parts • Detect patterns, trends, or regularities that can help inform decision-making and problem-solving processes • Develop step-by-step solutions that can be replicated • Assess and analyze the effectiveness of solutions to problems or tasks	EdTech Standard 5: Computational Thinker Computer Science Concept: Data and Analysis Computer Science Concept: Algorithms and Programming Standards for Mathematical Practice 1, 2, 4, 5, 6, 8 Science and Engineering Practices 1 - 8

AI Integration

Integrating GenAI into the classroom marks a transformative shift in educational practice as teachers and students use it to shift learning models where teachers serve as facilitators who coach students to develop learning agency. While some educators at first feared that AI would reduce the human aspect of teaching, if used appropriately, it holds vast potential to foster a more humanistic approach.

We share the classroom use cases below to paint a picture of the possibilities of intentional use of GenAI. Applications like these can improve instruction and create more space for human interaction between teachers and students.

Human Oversight:
Teachers partner with AI to enhance instructional opportunities for students and increase human interaction.

Teacher Use Cases

GenAI offers teachers a wide range of applications that can simplify routine tasks, create learning materials, or serve as a thought partner. Initially, educators may be most excited to use tools to accomplish everyday tasks more quickly. However, the real value of saving time happens when teachers reinvest that time into creating more effective lessons, fostering relationships, and having more real-time academic conversations with students.

Consider how the following examples of teacher use may foster a culture of personalized and inclusive education with strong teacher/student connections.

THOUGHT PARTNER

- **Idea Generation:** Use GenAI to generate fresh ideas, making learning more engaging and relevant for students.
- **Reflective Practice:** Engage with GenAI as a thought partner to improve lesson plans and bolster elements like differentiation, student choice, and collaboration.
- **Accessibility Check:** Ask GenAI to look for potential accessibility oversights in lesson plans and to provide strategies to strengthen inclusivity.
- **Feedback Loop:** Use GenAI to test for alignment between instructional plans, materials, and assessments.

PERSONALIZATION

- **Content Customization:** Leverage GenAI to reformat lesson materials into diverse media such as audio discussions, animated explainer videos, or interactive infographics to meet the unique needs of learners.
- **Adaptive Materials:** Use GenAI to modify reading levels of texts, design activities that cater to students' interests, and create visual aids for complex vocabulary or concepts.
- **Feedback and Assessment:** Use GenAI as a starting point to provide more regular and personalized feedback on student assignments, enabling timely and individualized responses.

ASSISTANT

- **Task Automation:** Use GenAI as a starting point for routine tasks such as composing emails, creating rubrics, or writing detailed instructions.
- **Interactive Presentations:** Have AI design engaging slide decks that include student engagement features.
- **Visual Content Creation:** Generate custom images with GenAI to support educational content.

Powerful Teaching and Learning

Student Use Cases

When ChatGPT was first released, it conjured images of students furiously copying and pasting, which some thought would surely be the demise of education. While this is an understandable first reaction, it is only so in the context of assignments and assessments that can be easily generated, copied, and pasted. In other words, GenAI can be the catalyst to push beyond the status quo of multiple-choice tests and basic essays, rethinking what we ask students to do and why.

GenAI offers capabilities that can allow students to be more independent and self-directed in their learning journey. Students may find additional uses that bring out curiosity, creativity, and reflection. Consider the following examples of student use.

Human Oversight: Teachers ensure student use is developmentally appropriate and adheres to age requirements.

SELF-DIRECTED LEARNING

- **Thought Partner:** Students collaborate with GenAI to brainstorm creative ideas for projects, essays, or presentations, helping them think outside the box and overcome mental barriers.
- **Ongoing Feedback:** Students use GenAI to receive continuous feedback on assignments, helping them refine their work and improve their understanding of the subject matter.
- **Reflection:** Students partner with GenAI to reflect on their learning processes, gaining insights into their progress and identifying areas for improvement.

PERSONALIZATION

- **Interactive Learning:** Students converse with GenAI in a Q and A format to gain deeper insights or clarification on topics.
- **Anytime Support:** Students use GenAI as a coach, receiving differentiated support available beyond classroom hours.
- **Writing Enhancement:** Students use GenAI throughout the writing process as a critical friend. AI can help brainstorm, outline, draft, revise, and proofread.

ACCESSIBILITY

- **Inclusive Tools:** GenAI tools such as Text-to-Speech (TTS) or Speech-to-Text (STT) can provide support to students who benefit from multi-modal input and interaction.
- **Language Support:** English Language Learners use GenAI to practice speaking or to translate textual and auditory content.
- **Content Acquisition:** Students use GenAI to create summaries and explanations that help them better understand assigned material.

Risks of Teacher and Student Use

Although there are many exciting possibilities for teacher and student use, educators also have a responsibility to consider possible downsides. In the spirit of the balanced approach this guidance seeks to encourage, consider these risks to integrating GenAI into teaching and learning practices.

Human Oversight: Human oversight is necessary to mitigate these risks.

- **Over-Reliance on Technology:** No technology can replace the deep understanding that educators have of their students' unique needs and preferences. Nor can it improve student learning if it is used as a crutch.
- **Dependence on Specific Tools:** GenAI tools are usually developed and maintained by private companies who may decide to stop offering the tool or change pricing in ways that are prohibitive for LEAs to fund its use.
- **Accuracy and Quality Assurance:** Some educators may find it challenging to verify the accuracy and quality of GenAI-generated content.
- **Loss of Human Interaction:** Automating solutions creates a risk of decreased human interaction (adult-student, adult-adult, student-student) in exchange for efficiency. In turn, this presents the potential to exacerbate loneliness, isolation, and anxiety.
- **Implementation Dip:** As GenAI and its use in education continues to evolve, we will learn more about best practices. In the meantime, it could result in an "implementation dip" with a beginning-stage net negative impact.

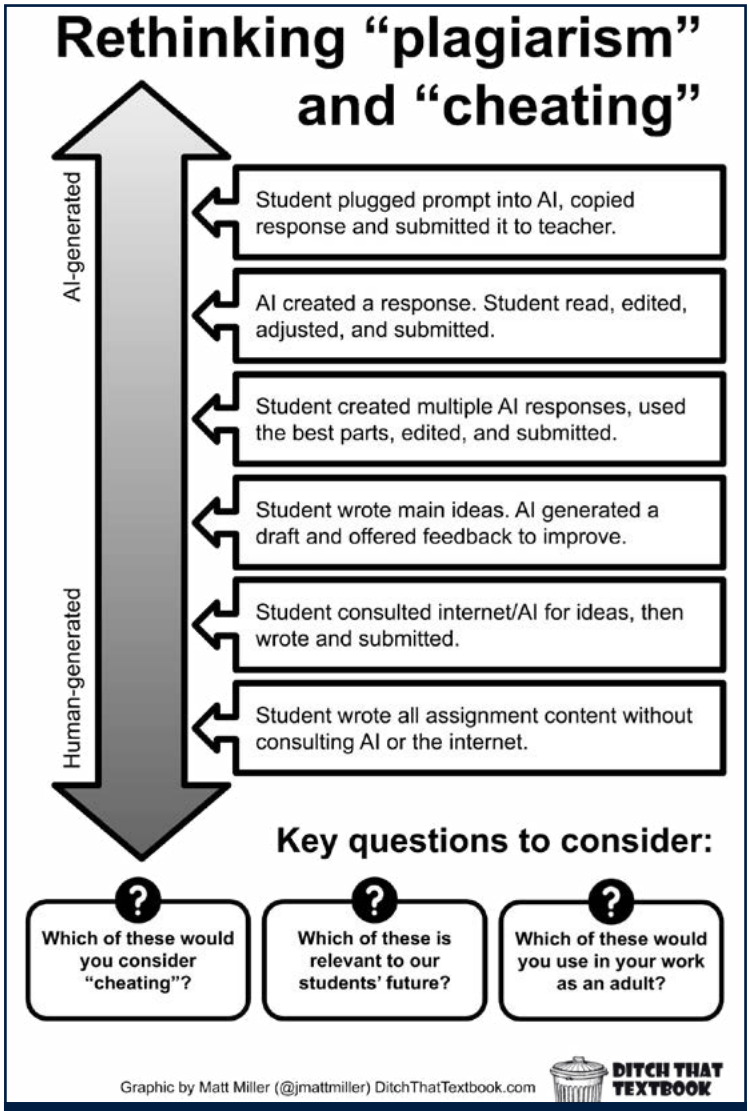
Redefining Academic Integrity

Within the educational implementation of GenAI lies a transformative opportunity to reconsider the methods we use to teach and assess student learning. We can challenge the traditional notion of cheating and plagiarism by redesigning curriculum and assignments that students are eager to learn and are willing to invest time and effort to complete. Assignments that encourage authentic student engagement and creation can rarely be completed via automated solutions.

Redefining "acceptable use" requires students, staff, and families to grapple with new questions about cheating, plagiarism, and future-forward skills.

Matt Miller (2022) offers updated definitions of plagiarism and cheating, as well as a graphic that illustrates a continuum of GenAI-reliance that education leaders can use to foster important dialogue with administrators, teachers, students, and families.

- **Cheating:** When a student does something dishonest in academic work that misrepresents what they understand or are able to do for an unfair advantage.
- **Plagiarism:** When a student represents some type of work as their own creation when, in reality, it is not their own work.



Graphic used with permission from Matt Miller of Ditch that Textbook

Refer to state and federal laws regarding age requirements and data privacy to further guide decisions about student-use.

Provoking Thought:

In general, educators encourage students to work with tutors and ask for peer feedback on writing assignments. We also approve of family members proofreading student work.

So why would we consider the use of AI in similar ways cheating?

What important role could AI fill for students who don't have access to a tutor, peer, family member, or other educational support when they need it?

Citation and Disclosure

It is true that integrating GenAI into our creative processes introduces more complexity to practices that ensure transparency and ethical use of tools and content. For example, citing AI use becomes challenging when AI technology is embedded into other digital tools (Bauschard, 2024). Additionally, as educators and students adopt a collaborative approach with AI (Human -> AI-> Human) it becomes difficult to distinguish the contributions made independently from those generated by AI.

Despite these complexities, the overarching goal remains: to uphold transparency. Adults and students should strive to consistently be clear and forthright about the extent to which GenAI tools have been utilized in the creation of academic work. Communicating clear disclosure expectations to students strengthens their AI literacy as they learn when and how to be transparent about GenAI use.

The following resources provide a sample of how to formally cite the use of AI:

- MLA Style - Generative AI
- APA Style - ChatGPT
- Chicago Style - Generative AI

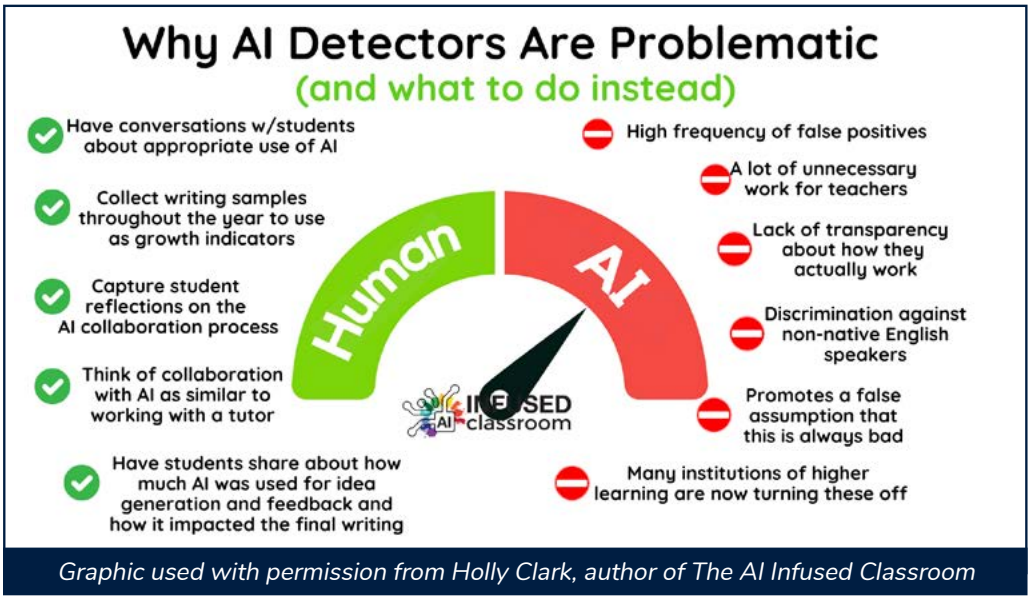
A general "AI-use" statement may be used when a formal academic citation is not necessary or appropriate.

Example: I used AI tools to help with this assignment. AI helped me with [specific task, e.g., researching, organizing ideas, editing, etc.], but the final work is my own. I understand how AI works and made sure to check the information it gave me.

AI Detectors

In the pursuit of upholding academic integrity, some teachers and administrators have looked to AI detectors to combat cheating and plagiarism. The primary problem with this approach is that AI detectors have proven to be unreliable. Their frequent false positives punish students whose first language isn't English at a higher rate (Sample, 2023). What's more, students with higher AI literacy are more likely to get past the detector.

For these reasons, AI detectors should not be used as a sole source of determining whether plagiarism has occurred. Rather than relying on flawed technology, a more effective approach is to clearly communicate expectations, discuss effective use, and scaffold AI literacy skills by using an AI Use Scale such as the one developed by Perkins, Furze, Roe & MacVaugh (2024). Encourage open communication and nurture students' intrinsic motivation by offering students choices and opportunities to explore their interests within assignments (Clark, n.d.).



Graphic used with permission from Holly Clark, author of The AI Infused Classroom

Human Oversight: Teachers can foster academic integrity by establishing clear policies and expectations for AI use, encouraging communication, and nurturing students' intrinsic motivation.

School and Administrative Use

Not only does GenAI present transformational opportunities for the classroom, it also provides capabilities that can enhance efficiency within school systems. The truth is, GenAI can perform some administrative and organizational tasks better than a human can. Consider its ability to analyze student data quickly and accurately. GenAI can also help streamline administrative tasks, freeing up time to focus on more impactful activities.

The following ideas can spark ideas about how using GenAI might transform school operations and systems outside of the classroom. This list is not exhaustive; in fact, conversations regarding AI for non-classroom use are still at the beginning stages and gaining interest. As AI becomes even more integrated in education, opportunities and risks for school and administrative use will become more apparent.

How might GenAI be used to support operations in departments such as human resources, finance, transportation, or facilities?

Opportunities

- **Improve efficiency:** Use GenAI to automate repetitive tasks such as drafting communications and preparing presentations.
- **Enhance data analysis:** AI algorithms can analyze large volumes of data quickly and accurately, making its analysis easily consumable for all users and aiding in data-driven decision-making processes.
- **Streamline master scheduling:** Use AI to create a master schedule in minutes, not months. Balancing class sizes, teacher availability, and room assignments while taking into account factors such as teacher certifications, student course selections, and resource availability becomes far less cumbersome.
- **Optimize evaluation processes:** GenAI tools can aid evaluation processes by organizing notes by the appropriate criteria.
- **Consider discipline responses:** Feed a discipline matrix into GenAI to receive thoughtful, policy-driven recommendations for handling disciplinary matters or individual student situations with unique context.
- **Draft procedures and policies:** Use GenAI to draft internal processes and procedures that can be sent to a legal team for review rather than having an attorney develop it from scratch.
- **Create how-to resources:** Use GenAI to create both video and written steps for internal processes such as taking attendance, accessing a shared drive, submitting a time off request, etc.
- **Translate:** GenAI can translate documents, spoken word, or typed information to many different languages simultaneously. It can also answer questions, give directions, and provide information to stakeholders in many different languages.

Risks

- **Loss of human interaction:** Over-reliance on AI may diminish the personalized interactions and human connections that are essential for fostering a supportive and inclusive school environment.
- **Bias in algorithmic decision-making:** AI systems are susceptible to biases present in the data used to train them, potentially leading to discriminatory outcomes or reinforcing existing inequities within the school system.
- **Data privacy concerns:** The collection and analysis of sensitive student and staff data by AI systems can raise privacy concerns that must be carefully addressed through robust data protection measures and compliance with relevant regulations.
- **Technical challenges:** Implementing and maintaining AI systems requires specialized technical expertise and infrastructure, posing challenges for schools with limited resources or technological capabilities.

Responsible & Ethical Implementation

The power of GenAI to produce human-like outputs presents remarkable opportunities for Arizona's schools and classrooms; it also punctuates the need for staff and student training, as well as regulation that is informed by legal and ethical input. At this point in its societal adoption, it is impossible to know the full gamut of ethical considerations – but based on how GenAI is trained, what it produces, and how, some key ethical risks are evident.

To help Arizona's education leaders better understand the ethical terrain of GenAI, we present five key considerations to begin critical dialogue within their institutions. While these may not cover the entire spectrum of ethical challenges posed by GenAI, they reflect some big ideas that LEAs should consider. We end this section with recommendations to address ethical considerations.

Consideration #1: Bias

GenAI systems use Large Language Models (LLMs) that are trained on extensive datasets, primarily consisting of human-generated content. Consequently, these models inherently incorporate human and societal biases into the applications and outputs they produce. Punya Mishra from Arizona State University has highlighted a concern that most contemporary datasets are WEIRD, that is, they "disproportionately represent Western, Educated, Industrialized, Rich, and Democratic societies" (Mishra, 2023; Shulz et al., 2018). This imbalance can distort perspectives, perpetuate narrow worldviews, exacerbate biases that marginalize minority and underrepresented communities, and cause harm to individuals.

Risks

- Student tracking based on data containing inherent bias can lead to unfair treatment that perpetuates inequities.
- Use of biased GenAI output absent critical evaluation can affirm narrow worldviews and exacerbate societal biases.
- AI-generated teaching materials may reflect bias.

> "Datasets are used to develop AI, and when they are non-representative or contain undesired associations or patterns, resulting AI models may act unfairly in how they detect patterns or automate decisions. Systematic, unwanted unfairness in how a computer detects patterns or automates decisions is called "algorithmic bias." Algorithmic bias could diminish equity at scale with unintended Discrimination."
>
> Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations. (U.S Department of Education, Office of Educational Technology)

Consideration #2: Misinformation and Falsehoods

Manipulated videos of political leaders, websites containing inaccurate medical advice, and tales of celebrity death hoaxes are examples of GenAI-created falsehoods. While misinformation has been persistent in digital platforms for some time, the introduction of generative technologies makes both intentional and unintentional creation of "believable" stories easier, amplifying its spread. Widely spread misinformation can manipulate public opinion, polarize society, and even influence election outcomes, over time eroding citizens' faith in institutions and undermining democracy.

Why does GenAI produce misinformation?

If the data used to train a GenAI model contains misinformation or biased content, its output will reflect the false information. Moreover, when confronted with incomplete or contradictory input, GenAI models resort to probabilities to fill in gaps that are often creative but lack any factual basis. This phenomenon is commonly known as "hallucination" - although many prefer the term "error" which uncouples it from the medical definition and humanization of the technology.

Risks

- As with bias, misinformation generated by AI can perpetuate biases and stereotypes or reinforce societal prejudices.
- GenAI-generated curricular materials can contain general inaccuracies which, if undetected by teachers, can mislead students and distort learning.
- Misinformation can plague student research efforts if they are not taught to use GenAI effectively, including evaluating and verifying output.

Consideration #3: Intellectual Property

Since GenAI relies on existing data, its output naturally raises questions about content ownership, copyright, and intellectual property (IP). Current policies and laws may be inadequate to address IP issues generated by a machine, although interpretations are beginning to surface amidst novel situations. For example, in 2023 a federal judge ruled that copyright may not be granted for images generated with AI citing a lack of human authorship; this ruling was upheld by the U.S. Court of Appeals for the District of Columbia Circuit in March, 2025, stating that U.S. copyright law "requires all work to be authored in the first instance by a human being" (Reuters, 2025).

The introduction of GenAI into educational contexts has left many educators feeling apprehensive about accepting student work that may have been machine-generated. Certainly, these new tools challenge traditional understandings of authorship with respect to human creativity. Concerns over intellectual property intersect with questions about academic integrity, professional responsibilities, and student learning.

Risks

- GenAI introduces another means for plagiarism - whether intentional or unintentional.
- Authorship is not always clear-cut, leading to confusion around plagiarism and academic integrity.
- GenAI can inadvertently produce content that violates copyright laws or lacks appropriate attribution.
- The authenticity of content and communication may be compromised or challenged.
- Personal values may be threatened by individuals, including teachers and other professionals who feel as though their use of machine-generated content or lessons is "cheating."

RESOURCE

The Role of Postplagiarism in Understanding AI-Generated Content

Consideration #4: Data Privacy

Because of the way GenAI uses data, it can store, process, and reveal personally identifiable information (PII). According to the 2023 report, Artificial Intelligence and the Future of Teaching and Learning, published by the U.S. Department of Education Office of Educational Technology, most AI models do not consider educational use or student privacy. Therefore, their products or educators' use of them may put student data at risk, diminishing an LEA's efforts to comply with student privacy mandates. Data privacy may also justifiably be a concern for parents and caretakers. Being transparent with the community about data protection practices can go a long way in building trust and credibility with the community.

Risks

- An LEA's compliance with student privacy laws may be put at risk by using certain tools and applications in a school setting.
- Introducing GenAI in the school environment may raise questions from parents and families regarding the protection of their children's data.
- Privacy issues can occur when humans input sensitive data into GenAI tools.
- GenAI tools and platforms may be susceptible to security breaches, hacking attempts, or unauthorized access which could compromise the confidentiality and integrity of student data.

Relevant Policies in the US and Arizona

- **Children's Internet Protection Act (CIPA):** Ensure that AI tools and platforms align with internet safety policies, web-filtering measures, monitoring requirements, and provisions established to protect students from accessing obscene or harmful content online.
- **Family Educational Rights and Privacy Act (FERPA):** Safeguard student educational records to protect student privacy and confidentiality. Train teachers to securely manage student records, such as grades and attendance, and avoid the disclosure of personally identifiable information without proper consent.
- **Children's Online Privacy Protection Rule (COPPA):** Only use tools that adhere to COPPA age and parental consent requirements, noting that some platforms' terms of service require users to be at least 13 years old or with parental consent while others may have age restrictions for students under 18.
- **Protection of Pupil Rights Amendment (PPRA):** Be mindful of AI use that requires students to provide information on protected areas.
- Arizona Revised Statute 15-142: Ensure that the use of generative AI tools safeguards student directory information and school property data.
- Arizona Revised Statute 15-117: Adhere to survey protocols, obtain parental consent, and maintain informed consent procedures when employing GenAI tools.
- Arizona Revised Statute 15-1046: Implement robust student data privacy measures to protect sensitive information, respect privacy boundaries, and secure student data confidentiality.

Consideration #5: Equitable Access

The 2024 National Educational Technology Plan (NETP) recognizes technology as a powerful tool to transform learning through student-centered and personalized models. It also acknowledges the present-day failure of technology to realize its full potential to benefit all students. The 2024 NETP calls upon all education agencies to close divides in digital use, digital design, and digital access that contribute to growing inequities.

Risks

- Digital Divides may be created or exacerbated by unequal AI implementation
  - > Digital Use Divide: Students who actively use digital tools including GenAI for higher level learning tasks such as analysis, creation, and evaluation are at a significant advantage over students who don't use it or who use it for low level activities and passive assignment completion.
  - > Digital Design Divide: Teachers who receive quality ed tech professional learning are better equipped to design effective digital learning experiences for all students. A digital design divide can take place between neighboring classrooms in the same school, schools in the same district, and districts throughout the state.
  - > Digital Access Divides: Teachers and students in some communities have far better access than others to the devices, internet connectivity, and resources that GenAI-use requires.
- Differences in exposure and use of GenAI tools can position some students to gain skills and competencies they will need to thrive in future workplaces while leaving others behind. A lack of AI literacy could potentially limit students' career opportunities.
- Widespread AI bans and/or inconsistent expectations have the potential to perpetuate an uneven playing field for students who lack access to educational support and resources.

Relevant US Regulations

- **Individuals with Disabilities Education Act (IDEA):** AI implementation must not deny students with disabilities equal access to education opportunities.
- **Section 504 of the Rehabilitation Act:** Schools must ensure that students with disabilities have equal access to digital content, technologies, and platforms, including AI.

Addressing Ethical Considerations

While it is important to understand all that is at stake for GenAI use and implementation, education leaders should also consider the incredible opportunities that implementation affords. For example, renewed attention to data privacy practices can help LEAs shore up procedures and build trust with the community. Creating a plan to strengthen AI literacy may prompt a new community partnership. Best of all, engaging teachers, staff, and students in ethical conversations about AI strengthens everyone's understanding of humanity and citizenship in an AI-powered world.

Human Oversight: Humans serve as a safeguard to ensure that GenAI is used in pursuit of educational and societal goals.

"Engaging teachers, staff, and students in ethical convesations about AI strengthens everyone's understanding of humanity and citizenship in an AI-powered world."

Responsible & Ethical Implementation

To help education leaders envision and operationalize the opportunities of responsible implementation, we provide the following recommendations.

Recommendations

1. Educate and Train: Train teachers, staff, students, and community members to recognize, evaluate, and challenge bias and misinformation in generated content. Training should also help individuals recognize personal values that influence the interpretation of biased content.

2. Hold Ed Tech Companies to Ethical Standards: Evaluate educational technology companies' ethical commitment; include contractual clauses related to ethical compliance when procuring ed tech services.

RESOURCE

Resource: Top 5 Questions for GenAI EdTech Providers (AI for Education, 2023)

3. Prioritize AI Literacy and other "new literacies": Adults and students alike need training to effectively and ethically navigate an AI-powered landscape. Build AI and other new literacies into the curriculum across grade levels and provide ongoing professional development for teachers and staff.

- **AI Literacy:** AI literacy includes the knowledge and skills that enable humans to critically understand, use, and evaluate AI systems and tools safely and ethically (Digital Promise, 2024).
- **Digital Literacy:** Digital literacy involves the ability to access, manage, understand, integrate, communicate, evaluate, and create information safely and appropriately through digital technologies (UNESCO, 2018).
- **Media and Information Literacy:** Media and information literacy teaches how information is created, packaged, and disseminated, and encourages critical thinking skills to evaluate sources and verify information. Include training on how cognitive biases influence our perception of media and information.
- **Technology Literacy:** Technology literacy encompasses a range of skills related to using and understanding technology devices, tools, and systems in various contexts.

4. Revisit Existing Privacy Practices: Use GenAI implementation as a good excuse to revisit existing data governance practices. Your current practices may be robust enough to account for GenAI. If not, consider it an opportunity to update and strengthen them. It is also a great time to train administrators and teachers how to safeguard student data and handle privacy challenges.

5. Strengthen Digital Citizenship Education: Move digital citizenship education from the back burner to the front. Instead of relegating it to an assembly or a few lessons per year, help students to make informed decisions about their digital use all the time and in meaningful ways.

6. Evaluate Digital Access: Assess the digital access of your entire school community to pinpoint existing gaps and barriers. Then investigate and promote appropriate solutions such as low-cost internet options from local providers like Cox's Connect2Compete plan, federal programs such as Lifeline, and state support such as Arizona's Broadband Extention Fund to bolster digital access efforts.

7. Align to Universal Design for Learning (UDL): Use UDL as a frame to focus GenAI use around greater inclusivity and accessibility for all learners.

8. Revisit Existing Security Measures: Review your security practices to evaluate their ability to protect against cyber threats and ensure the security of sensitive information.

Implementation Recommendations

While AI Literacy is an important skill for the workforce of the future, adoption should not be rushed or fully implemented without intentionality and preparation. In fact, AI implemented poorly may be worse than not implementing AI at all due to what is at stake if certain safety and ethical measures are not in place.

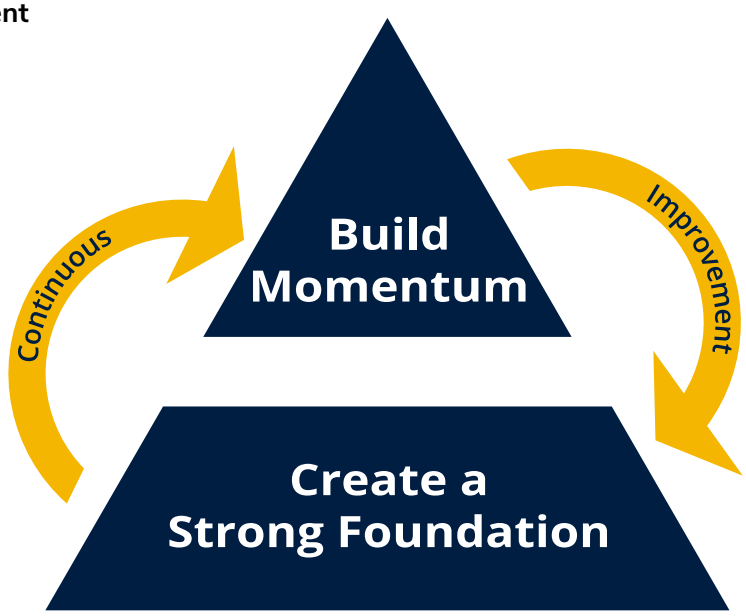
To assist education leaders thoughtfully implement GenAI we recommend a three-phase implementation structure which was informed by the TeachAI Toolkit's Framework for Incorporating AI in an Education System.

1. Create a Strong Foundation

2. Build Momentum

3. Continuous Improvement

Human Oversight:
Keep the human in AI! Refer to resources such as the Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations policy document (US ED, 2023) to guide implementation, ensuring that human values and ethics remain central.



Implementation Recommendations

Stage 1 - Create a Strong Foundation

Build a stakeholder group and task force to review policy, develop guidelines, and prepare a timeline for AI implementation.

- **Convene a Task Force:**

Identify individuals to carry out tasks and develop a timeline associated with AI implementation and associated professional development. Consider curriculum directors, IT directors, education technology specialists, and other LEA and site leaders.

- **Create a Stakeholder Group:**

Identify and invite stakeholders to help conceptualize GenAI within the context of LEA priorities and initiatives. Together, think through the shared values of the community to develop organizational stances on AI integration. Include all stakeholder groups in the development of guiding principles including district leaders, school staff, parents, students, community partners, tribal leaders, etc.

Topics to be explored:

> Alignment of AI to LEA mission and vision

> Stance on plagiarism, cheating, and the use of AI detectors

> Equity, inclusion, and access for all learners

> Safe, responsible, and ethical usage by staff and students

> Applicable federal laws that protect student data

All members of the task force and stakeholder group should first develop foundational knowledge around GenAI and its use in education. This will help ensure conversations are productive, leading to effective decisions around its implementation.

- **Review and Update Policy:**

> Review existing policy. Many of the current technology related policies cover the concerns that district leaders have about the implementation of GenAI. ASBA members should start with policy IJNDB. Trust Model Policy members should start with policy 3-403.

> Update or create new policy to mitigate risks posed by new technology. Bring policy recommended changes to association attorneys and present to the school board for changes.

- **Review Existing Guidelines:**

Instead of creating separate rules specific to AI use, start by reviewing guidelines already in place. Depending on their currency and strength, it may take only minor revisions to account for GenAI use.

> Student Code of Conduct

> Acceptable Use Policy for Technology Use

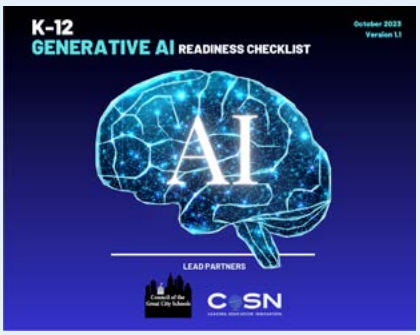
> Academic Integrity Statement

> Discipline Procedures

Keep guidelines flexible to accommodate changes as you progress through implementation, learn more, or refine your practices.

RESOURCE

Refer to this readiness checklist from CGCS and COSN.



Stage 2 - Build Momentum

Expand the small group of key stakeholders from stage one to a broader audience. As you build momentum, remain rooted in your LEA's overarching vision for GenAI adoption, legal and ethical practices, and long-term aspirations for the growth and development of staff, students, families, and the community.

- **Recruit and Support Early Adopters:**
  - > Early adopters who explore and experiment with new technologies pave the way for innovation in education.
  - > Encourage and support early adopters to share their experiences and insights with peers to foster a collaborative learning culture within the district and scale best practices.
  - > Leverage the experiences of early adopters to identify potential challenges associated with AI implementation so that issues can be addressed early on. For example, they can serve as "white hats" specifically tasked with attempting to break, abuse, and identify vulnerabilities and security issues in any GenAI platform being considered for broader adoption.
  - > Look for the success gems of early adopters, then celebrate and share widely! Early wins can create a buzz of success that can help reduce anxiety for those who are more resistant.
- **Identify and Communicate Approved Tools:**
  - > Determine which AI tools to allow access for teacher and staff use.
  - > Determine which AI tools to allow access for student use.
  - > Clearly communicate approved tools and expectations for use including how to protect student data when using them.
- **Build Exposure and Provide PD:**
  - > Provide ongoing professional development opportunities that expose instructional and non-instructional staff to GenAI tools and applications, alongside responsible use and ethical considerations.
  - > Share how the district mission and vision align with the implementation of AI with staff, students, and families.
  - > Work with stakeholders to help them rethink plagiarism/cheating in light of GenAI integration.
  - > Introduce common language and transparency protocols for teachers to establish and teach GenAI use. One forward-thinking example is the AI Usage Guide from Brophy College Preparatory, which designates the use of AI for tasks like research, brainstorming, and minor revisions as the default permission.
  - > Continue to involve families - ask for ongoing input, provide learning opportunities, and communicate regular updates.
- **Develop an AI Literacy Plan:**
  - > Involve multiple stakeholders in the development of an AI literacy plan that includes curriculum and professional development.
  - > Make clear how AI literacy and integration support students to develop skills included Arizona's Academic Standards.
- **Initiate Cross-Sector Conversations:**
  - > Engage non-classroom staff (e.g., HR, finance, transportation, facilities) in conversations about how AI may support their department's operations.

Stage 3 - Continuous Improvement

Human Oversight: Dedicated continuous improvement efforts show human oversight in action.

Continuous Improvement is crucial for any design or implementation project. While all technology evolves quickly, GenAI seems to be growing daily. This means that it will be impossible for any plan to remain accurate for long. Focus on feedback and goal-setting, understanding that doing so will help bring clarity to the task force. As staff becomes more AI literate, you will be able to further leverage the power of AI to meet broader district goals.

- **Regular Monitoring:**
  - > Continuously monitor emerging technologies and adjust policies, practices, and procedures as necessary. Stay vigilant for transformative changes to teaching and learning methodologies and congruence with system values.
- **Continual Professional Development:**
  - > Provide ongoing professional development for GenAI implementation inside and outside of the classroom that integrates the technology with pedagogy, content, and ethical use.
  - > Create and monitor a plan to develop AI literacy in age-appropriate and safe ways.
- **Community Engagement:**
  - > Continue to seek feedback from parents and guardians about GenAI implementation.
  - > Provide training to parents and guardians that help strengthen their AI literacy.
- **Ethics and Bias Evaluation:**
  - > Continuously delve into ethics and bias conversations among leadership teams.
  - > Engage teachers and staff in continuous learning, enabling them to apply AI ethics to their implementation and teaching.
- **Context-Specific Evaluation:**
  - > Develop an evaluation process to determine whether AI implementation is meeting your LEA-specific goals.
  - > Develop measurements to gauge how well the plan addresses AI literacy goals.
- **Revision and Adaptation:**
  - > Continuously review outcomes of implemented strategies, solicit feedback from stakeholders, and analyze data to identify areas for improvement.

Conclusion and Next Steps

We have already glimpsed the potential of GenAI to change education, the workforce, and the way we "do life". Fellow educators, we are called to recognize these shifting sands and adapt to an ever-evolving digital world powered by Artificial Intelligence. This includes preparing students for a future increasingly powered by AI.

The Arizona Institute for Education and the Economy and the Core AI Guidance Team see the incredible opportunity we have to grab hold of emerging technologies and use them to improve education and make the world a better, more equitable place. We hope our guidance can be a useful tool for all LEAs who are ready to embark on this exciting journey.

Consider the following to guide initial steps:

Determine then clearly communicate which tools/apps are approved for use.

- What tools/apps are district-approved for teachers? Students?
- Should teachers use their work email to sign up for non-approved tools that they will use independently?
- Can teachers inquire about getting tools/apps approved?

Train teachers and staff about pitfalls to avoid.

- What information shouold never be entered into GenAI apps? (Think: FERPA)
- Can GenAI output be trusted? What should teachers and staff look for when evaluating GenAI-generated content?
- What responsibility do we have for oversight when using GenAI?

Adopt a system to help teachers communicate GenAI use.

- How will students know when and in what way(s) they may use GenAI on an assignment?
- What happens if they do?
- How does this align with our existing academic integrity policy?
- Have students been given a voice in shaping AI use expectations? How have you engaged them in meaningful dialogue and shared decision-making?

Additional Resources

General Resources and Research

- The AI Education Project: aiEDU
- ISTE: Artificial Intelligence in Education Resource Collection
- Learn 21: Generative AI Annotated Bibliography and AI Video Series
- Microsoft: Education AI Toolkit and AI in Education Research
- Teach AI: AI Guidance for Schools Toolkit & Policy Resources & Future of CS Education in an Age of AI
- European Commision: Ethical Guidelines on the Use of Artifical Intelligence (AI) and Data in Teaching and Learning for Educators
- US Department of Education Office of Educational Technology: Artificial Intelligence and the Future of Teaching and Learning

Technology Bias, Ethics, and Justice

- Kapor Foundation: Responsible AI and Tech Justice: A Guide for K-12 Education

Data Privacy

- Future of Privacy Forum: Student Privacy Compass Vetting Generative AI Tools for Use in Schools & The Spectrum of Artificial Intelligence & Youth & Education Privacy
- Consortium for School Networking (CoSN): Student Data Privacy Toolkit
- Access for Learning (A4L): Arizona Student Privacy Alliance (AZSPA)

Academic Integrity

- Matt Miller, Ditch that Textbook: AI in the Classroom: What's Cheating and What's OK?
- Dr. Rahul Kumar: The Role of Postplagiarism in Understanding AI-Generated Content
- Perkins, Furze, Roe, & MacVaugh: The AI Assessment Scale

AI Literacy

For Educators

- AI4K12: Guidelines and Grade Band Progression Charts
- Digital Education Council: AI Literacy Framework
- Evergreen: AI Competencies for K-12
- Leo S. Lo: The CLEAR path: A framework for enhancing information literacy through prompt engineering
- UNESCO: AI Competency Framework for Students

For Students

- aiEDU: Teach AI Classroom Curricula
- Code.org: AI Curricula
- Common Sense Media: AI Literacy Lesson for Grades 6-12
- MIT: Day of AI Curriclum
- MIT: An Ethics of Aritifical Intelligence Currriculum for Middle School Students
- Stanford Graduate School of Education: CRAFT AI Literacy Resources

AI Leadership and Implementation:

- ILO Group: Framework for Implementing Artificial Intelligence (AI) in K-12 Education
- Teach AI: Guidance for Schools Toolkit
- Common Sense: AI and Our Kids: Common Sense Consdierations and Guidance for Parents, Educators, and Policymakers

Professional Development:

- Google: Grow with Google Generative AI for Teachers
- Code.org: AI 101 for Teachers
- AI For Education: An Essential Guide to AI for Educators

Family Engagement:

- A Parent's Guide to AI: Parents' Ultimate Guide to Generative AI

References

Arizona Institute for Education and the Economy. (n.d.). Retrieved March 18, 2024, from https://nau.edu/college-education/community-resources/arizona-institute-for-education-and-the-economy/

AI for Education. (2023). *A framework for incorporating AI in an education system from the AI for education toolkit* [Graphic]. Retrieved March 12, 2024, from https://www.teachai.org/toolkit#widget_s5XUJ-CeV

AI for Education.(2023). *Generative AI explainer* [Graphic]. Retrieved March 12, 2024, from https://www.aiforeducation.io/ai-resources/generative-ai-explainer

AI for Education.(2023). *Top 5 questions for genAI edtech providers* [Infographic]. Retrieved March 12, 2024, from https://www.aiforeducation.io/ai-resources/questions-genai-edtech

Arizona Department of Education. (2022). *Arizona educational technology standards.* Retrieved from https://www.azed.gov/standards-practices/k-12standards/standards-educational-technology

Arizona Department of Education. (2019). *Arizona history and social science standards.* Retrieved from https://www.azed.gov/standards-practices/k-12standards/standards-social-studies

Arizona Department of Education. (2018). *Arizona computer science standards.* Retrieved from https://www.azed.gov/standards-practices/standards-computer-science

Arizona Department of Education. (2018). *Arizona science standards.* Retrieved from https://www.azed.gov/standards-practices/k-12standards/standards-science

Arizona Department of Education. (2016). *Arizona english language arts standards.* Retrieved from https://www.azed.gov/standards-practices/k-12standards/english-language-arts-standards

Arizona Department of Education. (2016). *Arizona mathematics standards.* Retrieved from https://www.azed.gov/standards-practices/k-12standards/mathematics-standards

Bauschard, S. (2024). *Thoughts on West Virginia's AI guidance.* Education Disrupted: Teaching and Learning in An AI World. https://stefanbauschard.substack.com/p/thoughts-on-west-virginias-ai-guidance

Brophy College Preparatory. (n.d.) Brophy AI Usage Guide. Retrieved April 22, 2025, from https://docs.google.com/document/d/1S1vVqBGaQvBWokyex042-yt6Uv4faX2EJCTaSu9_MKU/edit?pli=1&tab=t.0#bookmark=id.efli7j42oiaf

CAST (2018). *Universal Design for Learning Guidelines version 2.2.* Retrieved from http://udlguidelines.cast.org

Clark, H. (2023). *The AI-infused classroom.* Elevate Books Edu. https://www.hollyclark.org/2023/09/22/why-aidetectors-are-problematic-and-what-to-do-instead/

Council of the Great City Schools & COSN. (2023). *K-12 Generative AI Reading Checklist , Version 1.1.* https://www.cgcs.org/genaichecklist

Cubero, V. (NCDPI). (2023). 3 bikes analogy. Retrieved April 22, 2024, from https://go.ncdpi.gov/AI_in_Education-3Bikes

Digital Promise. (n.d.). *Artificial Intelligence in Education.* Retrieved March 20, 2024, from https://digitalpromise.org/initiative/artificial-intelligence-in-education/

Eloundou, T., Manning, S., Mishkin, P., & Rock, D. (2023). Gpts are gpts: An early look at the labor market impact potential of large language models. arXiv preprint arXiv:2303.10130. Retrieved from https://doi.org/10.48550/arXiv.2303.10130

European Commission, Directorate-General for Education, Youth, Sport and Culture, (2022). *Ethical guidelines on the use of artificial intelligence (AI) and data in teaching and learning for educators,* Publications Office of the European Union. https://data.europa.eu/doi/10.2766/153756

Human Intelligence Movement. (n.d.). *Human Intelligence Movement.* https://www.humanintelligencemovement.org/

References

Kumar, R. (2024). The Role of Postplagiarism in Understanding AI-Generated Content. Postplagiarism.. https://postplagiarism.com/2024/11/15/the-role-of-postplagiarism-in-understanding-ai-generated-content/

Miller, M. (2022). *How to define "cheating" and "plagiarism" with AI.* Ditch That Textbook. https://ditchthattextbook.com/ai/#tve-jump-18606008967

Mishra, P (2023, December 19). *Generative AI is WEIRD.* https://punyamishra.com/2023/12/19/generative-ai-is-weird/

North Carolina Department of Public Instruction. (2024). *North Carolina generative AI recommendations and considerations for PK-13 public schools, version 24.02.* https://go.ncdpi.gov/AI_Guidelines

Perkins, Furze, Roe & MacVaugh (2024). The AI Assessment Scale. Retrieved April 17, 2025, from https://aiassessmentscale.com

Reich, Justin and Mizuko Ito. (2017). *From Good Intentions to Real Outcomes: Equity by Design in Learning Technologies.* Digital Media and Learning Research Hub. https://clalliance.org/wp-content/uploads/2017/11/GIROreport_1031.pdf

Schulz, J., Bahrami-Rad, D., Beauchamp, J., & Henrich, J. (2018, June 22). The origins of WEIRD psychology. SSRN. https://doi.org/10.2139/ssrn.3201031

Brittain. B. (2025). US appeals court rejects copyrights for AI-generated art lacking 'human' creator. Reuters. https://www.reuters.com/world/us/us-appeals-court-rejects-copyrights-ai-generated-art-lacking-human-creator-2025-03-18/

Sample, I. (2023). *Programs to detect AI discriminate against non-native English speakers, shows study.* The Guardian. https://www.theguardian.com/technology/2023/jul/10/programs-to-detect-ai-discriminate-against-non-native-english-speakers-shows-study

UNESCO. (2019). *Artificial intelligence in education: Challenges and opportunities for sustainable development* (No. 978-92-3-100336-3). United Nations Educational, Scientific and Cultural Organization https://unesdoc.unesco.org/ark:/48223/pf0000265403

United Nations Educational, Scientific and Cultural Organization. (2021). *AI and education: guidance for policy-makers.* https://unesdoc.unesco.org/ark:/48223/pf0000376709

U.S. Department of Education, Office of Educational Technology, *National Educational Technology Plan*, Washington, DC, 2024. https://tech.ed.gov/netp/

U.S. Department of Education, Office of Educational Technology, *Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations*, Washington, DC, 2023. https://www2.ed.gov/documents/ai-report/ai-report.pdf

Washington Office of *Superintendent of Public Instruction. (2024)*. Human-centered AI guidance for K-12 public schools. https://ospi.k12.wa.us/student-success/resources-subject-area/human-centered-artificial-intelligence-schools

White, S. & Scott, A. (2023). *Responsible AI and tech justice: A guide for K-12 education*. Kapor Foundation. https://kaporfoundation.org/wp-content/uploads/2024/01/Responsible-AI-Guide-Kapor-Foundation.pdf

World Economic Forum. (2025). *Future of Jobs Report 2025.* https://reports.weforum.org/docs/WEF_Future_of_Jobs_Report_2025.pdf

Long Alt Descriptions

Appropriate Use of GenAI in Education, page 8

Example 1, Education without A I. An illustration of a person wearing a helmet and riding a mountain bike. The person is sweating and struggling to make it up a mountain. Caption: Like riding a mountain bike, the human is in control, but also has no assistance. Sometimes the struggle inhibits learning. Example 2, Too much reliance on A I. An illustration of a person wearing a helmet and riding a motorcycle. They seem unsure and scared. Caption: Like riding a motorcycle, you can go really fast, but it is unpredictable and can even be dangerous. Example 3, Using A I as a Learning Partner. An illustration of a person wearing a helmet and riding an e-bike. A look of confidence is seen on their face. Caption: Like riding an e bike, the human is totally in control, but the e bike can reduce the struggle and result in more productive learning. Analogy and graphic credit Vera Cubero (N C D P I). Images created by Vera Cubero in partnership with Dall-E 3. Gen A I image creator via Chat G P T 4.

Defining Generative AI, page 9

To understand generative artificial intelligence (Gen A I), we first need to understand how the technology builds from each of the A I subcategories listed below. A circle holds four subcategories built within. Each one building on top of the other. Number 1, Artificial Intelligence, the theory and methods to build machines that think and act like humans. Number 2, Machine Learning, the ability for computers to learn from experience or data without human programming. Number 3, Deep Learning, mimics the human brain using artificial neural networks such as transformers to allow computers to perform complex tasks. Number 4, Generative AI, generates new text, audio, images, video or code based on content it has been pre-trained on. Examples, Chat G P T, Midjourney, and Bard. Expert system A I, programmers teach A I exactly how to solve specific problems by providing precise instructions and steps. Credit, A I for Education 2023, aiforeducation.io.

Rethinking “plagarism” and “cheating”, page 15

A scale depicting human-generated or A I-generated content and how to rethink plagiarism and cheating. Title: Rethinking “plagiarism” and “cheating”. Six scenarios are described along the scale. The top of the scale shows A I-generated. The bottom of the scale shows human-generated. Listed from the top. 1. Student plugged prompt into AI, copied response and submitted it to teacher. 2. A I created response. Student read, edited, adjusted, and submitted. 3. Student created multiple A I responses, used the best parts, edited, and submitted. 4. Student wrote main ideas. AI generated a draft and offered feedback to improve. 5. Student consulted internet/A I for ideas, then wrote and submitted. 6. Student wrote all assignment content without consulting AI or the Internet. Key questions to consider. Which of these would you consider “cheating”? Which of these is relevant to our students’ future? Which of these would you use in your work as an adult?

Why AI Detectors are Problematic, page 16

A guage has two categories, human and A I. The guage hand points to A I. Why A I Detectors are Problematic (and what to do instead). Do have conversations with students about appropriate use of A I. Do collect writing samples throughout the year to use as growth indicators. Do capture student reflections on the A I collaboration process. Do think of collaboration with A I as similar to working with a tutor. Do have students share about how much A I was used for idea generation and feedback and how it impacted the final writing. A I detectors have a high frequency of false positives. Detectors have a lack of transparency about how they actually work. They have a discrimination against non-native English speakers. They promote a false assumption that this is always bad. Many institutions of higher learning are now turning these off.