



Generative AI in Delaware Education

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Version History

In response to the dynamic nature of artificial intelligence (AI) technology advancements, this document is designed to be regularly updated to encapsulate the most current guidance and policy modifications at both the state and national levels. A summary table is incorporated within the document to facilitate easy tracking of these updates. This table efficiently catalogs the changes introduced in each version, offering a transparent and straightforward historical record of the document's progression. Doing so enables readers to swiftly ascertain how the guidance has evolved to stay in step with ongoing legal, ethical, and technological shifts in AI. Such a methodology ensures that this document remains an up-to-date and dependable source for understanding AI guidelines and best practices in Delaware schools.

Date	Description of Changes	Version
06/2024	Initial Guidance Document Created	1.0

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Statement of Purpose

Artificial intelligence (AI) is emerging rapidly across industries, including K-12 education. The Delaware Council on Educational Technology presents this guidance to support educators and education leaders in the appropriate, equitable, and inclusive use of AI in classrooms across the State of Delaware.

Included in this Guidance Document

- **Understanding AI**

- Delve into artificial intelligence, clarify its definition, weigh the advantages and disadvantages of its use in education, and dispel common myths surrounding its capabilities and limitations.

- **Implementing Generative AI in Delaware Districts and Charters**

- The comprehensive recommendations address crucial policy areas such as protecting student data, ensuring ethical, equitable, and effective Generative AI use, promoting equity, and enhancing learning through content and curricula that leverage Generative AI technologies. Best practices are provided with implementation strategies, suggestions for managing platforms, and tools for evaluating Generative AI products.

- **Integrating Generative AI into the Classroom**

- This section provides optimal practices for integrating Generative AI within the classroom. It emphasizes applications and strategies to enhance educational experiences, demonstrating how tools and applications support teaching and learning processes. The SAMR model includes illustrations to show how applications may align to each level. Also included are strategies for addressing academic dishonesty and ensuring that Generative AI tools are used responsibly in educational settings.

- **Professional Learning**

- The final section suggests a framework for professional learning, listing essential topics and subject areas on which school districts and charter schools may choose to focus. Scalable training and delivery methods are recommended to guarantee that all educators and students across Delaware have equal opportunities to benefit from Generative AI technologies. This approach aims to equip teachers with the knowledge and skills necessary to integrate Generative AI into their teaching practices effectively, thereby enhancing the educational experience for students.

How to Use This Guidance Document

The guidance issued by the Delaware Council on Educational Technology on the adoption of Generative AI in educational settings serves as a comprehensive resource for educators and leaders across the state:

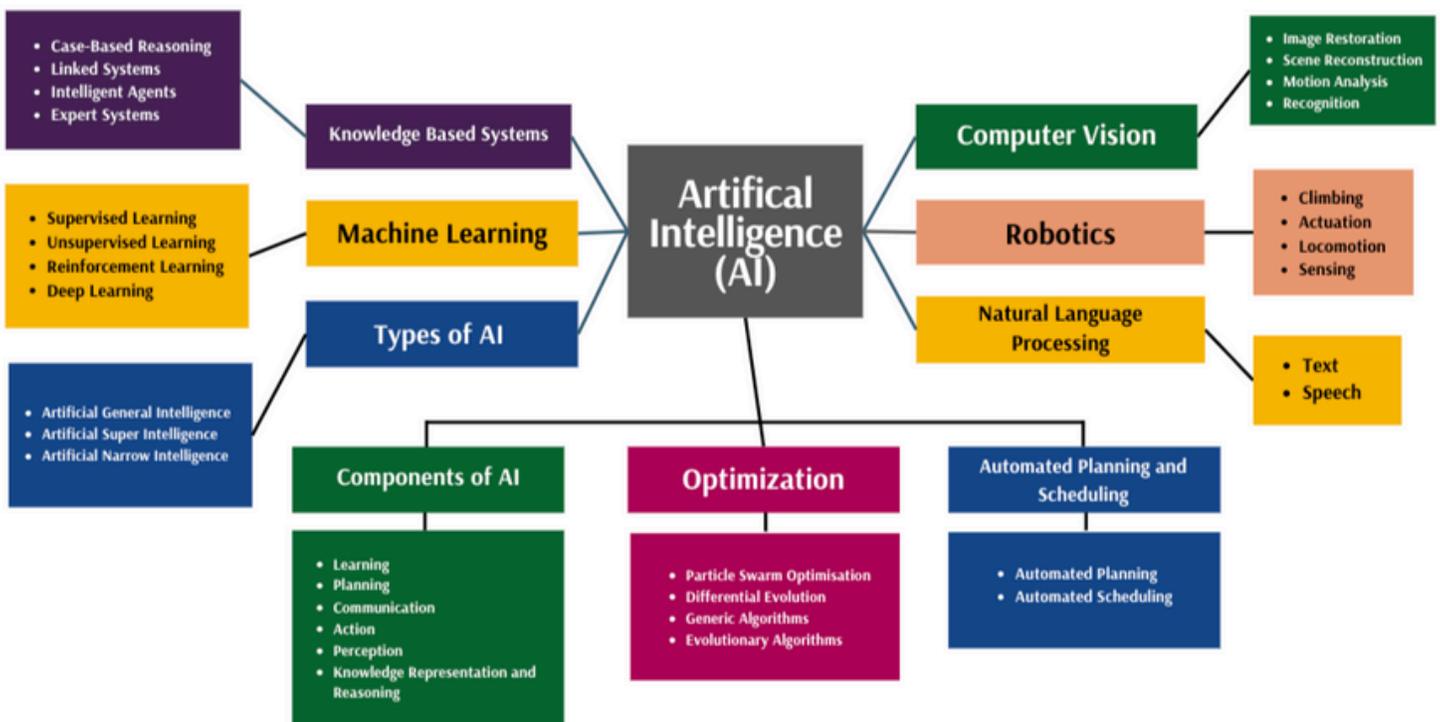
- School District and Charter School leaders may use this guidance to support incorporating AI into their local policies (e.g., responsible use, academic integrity, etc.).
- School District and Charter School leaders and classroom educators are provided with this guidance as a source of support, resources, and established best practices for integrating AI technologies within their instructional environments.

Understanding Artificial Intelligence

The advent of Artificial Intelligence (AI) within the educational sphere marks a pivotal shift towards integrating technology that complements human intelligence and enriches the humanitarian essence of learning. The burgeoning influence demands a discerning approach to adopting and implementing technological solutions. The educational community must engage in an informed evaluation of AI-driven products, focusing on the mechanics of their operation, the nature of data collection, and the origins of their informational content. This strategy ensures the alignment of technological adoption with core educational values of integrity, safety, and instructional efficacy. One helpful glossary on AI for education is the CIRCLS [Glossary of Artificial Intelligence Terms for Educators](#).

Defining AI

AI is not a singular technology but rather a collection of technologies and methodologies to simulate human cognitive processes. These include machine learning, natural language processing (NLP), robotics, and computer vision. AI systems can analyze large volumes of data, learn from experiences, and perform tasks with varying degrees of autonomy. We have provided the following graphic to provide a common language of terms and themes of AI in the K-12 classroom (Regona et al., 2022).



What is Artificial Intelligence? What is it Not?

Artificial Intelligence encompasses a broad range of computer science disciplines aimed at creating machines capable of performing tasks that typically require human intelligence. These tasks include learning, problem-solving, pattern recognition, and language understanding.

While AI augments human capabilities, it does not replicate empathy, creativity, or ethical judgment. Its learning is limited by the data it's trained on, emphasizing the need for critical thinking about its use and limitations.

What is AI and What is it Not??

Artificial Intelligence (AI) encompasses a broad range of computer science disciplines aimed at creating machines capable of performing tasks that typically require human intelligence. These tasks include learning, problem-solving, pattern recognition, and language understanding.

What AI is:

Machine Learning (ML):

AI that learns and makes decisions from data.

Natural Language Processing (NLP):

AI understanding and interpreting human language.

Adaptive:

AI improves its performance based on experience.

Analytical:

AI extracts insights from large datasets.

What AI is Not:

Not Magic:

AI is a technology grounded in science, not an unexplainable force.

Not Consciousness:

AI lacks consciousness, emotions, and self-awareness.

Not Without Limitations:

AI's understanding and operation are confined to its programming.

Not Infallible:

AI can err, especially with unfamiliar data or scenarios.

References:

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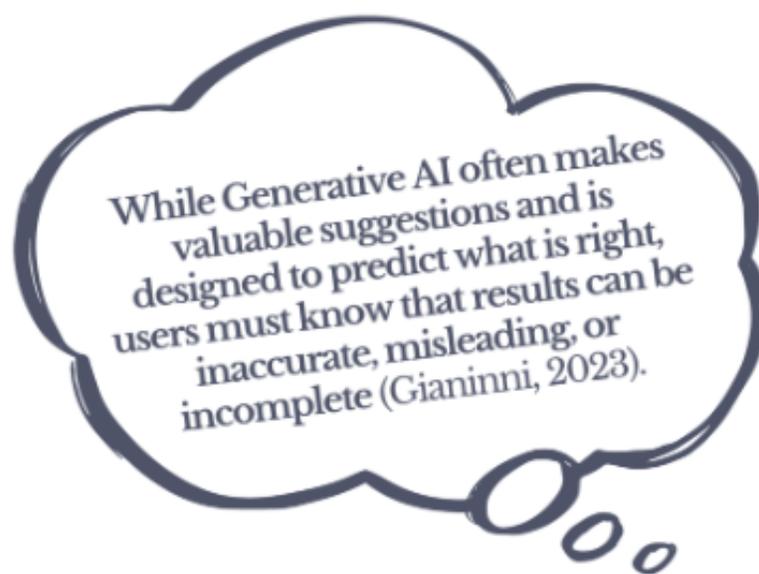
National Institute of Standards and Technology. (2023). Artificial Intelligence Risk Management Framework (AI RMF 1.0). U.S. Department of Commerce. <https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf>

Predictive AI

Predictive AI uses data about past behaviors to identify patterns and forecast things we might want or do in the future. For example, recommending products people may be interested in purchasing or movies they may be interested in viewing. In education, predictive AI tools may analyze patterns in student data to predict outcomes, but it is important to note that these outputs represent informed guesses, not certainty about the future. Educators must use their human discretion to evaluate potential bias or misconceptions regarding student outcomes. Other uses of predictive AI tools that may already be included are tutors that provide personalized teaching and assistance with administrative tasks such as scheduling (OpenAI, 2023).

Defining Generative AI

This guidance document focuses on Generative AI in K-12 educational settings. Generative AI refers to tools that produce new content, such as text, images, videos, or music based on patterns they've learned from their training data (OpenAI, 2023). Imagine having a digital assistant who not only helps with grading papers but can also draft creative lesson plans, generate engaging educational content, and even offer personalized learning experiences for each student. Generative AI is like a highly skilled artist that can produce an array of original creations—from paintings to poems to scientific reports—based on its extensive learning from existing works. At its core, Generative AI learns from a vast collection of data. For teachers, this could mean everything from textbooks and scientific journals to novels and historical documents. By analyzing this data, the AI learns patterns, structures, and the essence of the content, enabling it to generate new, original material that aligns with the learned patterns.



Generative AI presents a transformative opportunity for educational settings, fostering creativity, critical thinking, and engagement among students through activities such as generating creative writing prompts, solving mathematical problems, or illustrating complex scientific concepts. While these technologies offer exciting possibilities for enhancing K-12 education by serving as powerful tools for learning and creativity, they also pose challenges that require careful navigation.

Educators can integrate these technologies more effectively into their classrooms by developing a greater understanding of generative AI's capabilities and limitations. Moreover, fostering a culture of critical thinking and continuous learning among students is crucial for them to adeptly navigate the complexities of AI, preparing them for a future where such technologies play an increasingly significant role (Gianinni, 2023).

Generative AI Advantages and Cautions

The infographic below highlights some of the advantages and disadvantages of AI in K-12 education. The [May 2023 article from the Berkman Klein Center](#) explores the impact of Generative AI in K-12 education, highlighting both advantages and cautions. Advantages include enhancing personalized learning, fostering creativity, and equalizing educational opportunities. Cautions involve exacerbating socioeconomic disparities, challenges in academic integrity, privacy concerns, and the need for critical engagement with AI tools to prevent dependency, among others. It underscores the importance of balancing technological integration with safeguarding educational integrity and equity.

AI in K-12 Education Advantages and Cautions

What are the advantages?

Efficiency and Speed

AI can process and analyze data far more quickly than humans, leading to faster decision-making.

24/7 Operation

AI systems can work continuously without breaks or fatigue, unlike humans.

Error Reduction

AI can significantly reduce errors and increase accuracy in data-driven industries.

What are the cautions?

Privacy Concerns

The use of AI in education involves collecting and analyzing vast amounts of personal data from students, raising significant privacy concerns.

Lack of Creativity

AI lacks the human capacity for creativity and can only generate output based on its programming and training.

Ethical Concerns

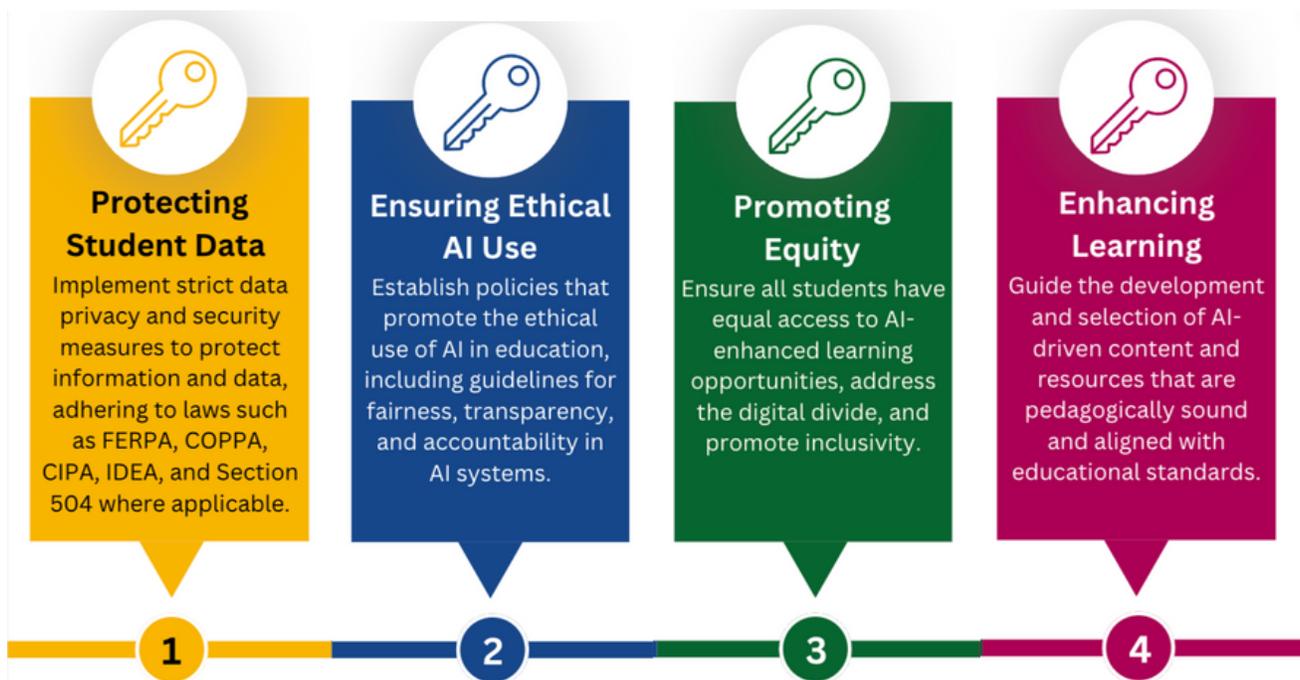
AI can perpetuate social biases in training data, leading to unfair or unethical outcomes.

Implementing Generative AI for Districts and Charter Schools

School districts and charter schools are positioned to leverage Generative AI as a transformative tool within an established framework that prioritizes student safety, educational integrity, and evidence-based instructional methodologies. The integration of Generative AI may not necessitate the creation of new policies but rather the extension of existing policies to address emerging concerns.

The journey towards effective Generative AI integration in education begins with a comprehensive understanding of its potential to revolutionize access and utilization of information and enhance learning and work environments. Policies, systems, and instructional practices must be anchored in safety, ethics, equity, and educational standards, ensuring that applications benefit all learners within our communities.

Key Policy Areas for Implementation of Generative AI



The key policy areas provide a framework for integrating Generative AI technologies within academic settings, ensuring privacy protection, ethical use, and equity to enhance learning.

Best Practices for Implementation Strategies

Districts and charter schools may develop a multidisciplinary task force to oversee AI integration during implementation planning. This team should be tasked with continuously monitoring AI systems to ensure they operate as intended and update them to reflect new data and ethical standards. Diverse stakeholders should be represented on the task force and engaged in implementing Generative AI to ensure broad perspectives and needs are considered. A clear strategy for ongoing task force communication should be developed. Decisions should be widely distributed to ensure transparency for all stakeholders.

District and Charter Schools should consider the following best practices when integrating Generative AI into instruction:

- **Protecting Student Data**

- Establish strict data privacy and security measures to protect PII, especially student information
- Personally Identifiable Information (PII) should not be manually entered into Generative AI systems
- Adhere to federal and state laws
- Ensure the Generative AI vendor complies with signing Delaware Department of Technology & Information (DTI) Terms and Conditions Governing Cloud Services and Data Usage
- Ensure AI systems are safe, minimizing risks to humans

- **Ensuring Ethical AI Use**

- Accountability for the use of AI systems deployed
- Evaluate information generated by AI for social bias

- **Promoting Equity**

- Review and revise existing policies to ensure all students have access to AI for enhanced learning opportunities when applicable and appropriate
- Create equitable outcomes for all users
- Promote inclusivity

- **Enhancing Learning**

- Select content and resources that integrate pedagogically sound AI and align with educational standards
- Align educational resources addressing digital citizenship and media literacy, including information on how Generative AI may be used for cyberbullying
- Stay informed and updated with state terms and conditions for data use, privacy, policies, and legislation.

Managing Generative AI Platforms

New platforms are launching daily. It is important to note that many of these platforms are interfaces between the user and another Generative AI system, such as OpenAI's ChatGPT or Google's Gemini. Districts and charter schools should review each system's terms and conditions and integrations with additional systems before utilizing or adopting them. Steps should be taken to review specific age restrictions, privacy, and student data collection practices within all third-party vendors.

As the landscape of education evolves with the integration of Generative AI, it is essential to recognize that educational platforms and tools will undergo rapid changes. Educators, students, and parents are encouraged to stay informed about their rights, responsibilities, and privacy implications of these technologies.

Evaluation of AI Platforms & AI Within Existing Platforms

Evaluating AI platforms and their integration into existing systems is crucial. It aligns AI deployment with educational goals to improve learning outcomes and ensure equitable access. [The Emerging Technology Adoption Framework](#) promotes transparency and accountability. This approach mitigates risks like data privacy and biases and fosters Generative AI's responsible and ethical use in educational environments.

The Emerging Technology Adoption Framework was developed with education community members to ensure educational leaders, tech experts, teachers, students, and their families actively evaluate and adopt new technologies in PK-12 education settings. This initiative was spearheaded by engaging an Emerging Technology Advisory Board via Educator CIRCLS, an entity under The Center for Integrative Research in Computing and Learning Sciences (CIRCLS) (Ruiz and Fusco, 2024).

Integration of AI into the Classroom

To fully realize Generative AI's potential in education, school districts and charter schools must ensure that educational and technological standards are met, thereby facilitating the use of Generative AI tools to augment educational experiences. State and local policymakers and academic leaders should establish an equitable framework supporting comprehensive policies catering to all students' diverse needs and capabilities. This approach will enable the safe and effective use of tools in learning environments, preparing students for the challenges and opportunities of the future.

Protecting Student Data with Generative AI Classroom Integration

Integrating Generative AI into K-12 education presents a transformative opportunity to enhance learning experiences and outcomes. However, it necessitates a meticulous approach to protecting student data, ensuring privacy, and maintaining compliance with legal frameworks such as the [Family Educational Rights and Privacy Act \(FERPA\)](#). School Districts and Charter Schools must prioritize establishing robust data governance policies with precise data collection, storage, access, and sharing protocols. Implementing these tools should be accompanied by rigorous security measures, including encryption and secure authentication, to safeguard against unauthorized access to sensitive information. Furthermore, transparency with students and parents about using Generative AI and the data it generates is crucial. This involves providing accessible information on how data is used to support educational goals and how privacy is protected. By thoughtfully integrating technologies within a framework of strong data protection practices, academic institutions can unlock the potential of Generative AI to personalize learning while simultaneously upholding the trust and confidence of the educational community in the digital age. The Delaware Department of Technology and Information provides [terms and conditions for cloud services and student data usage](#). This documentation needs to be recorded and signed when contracting with vendors.

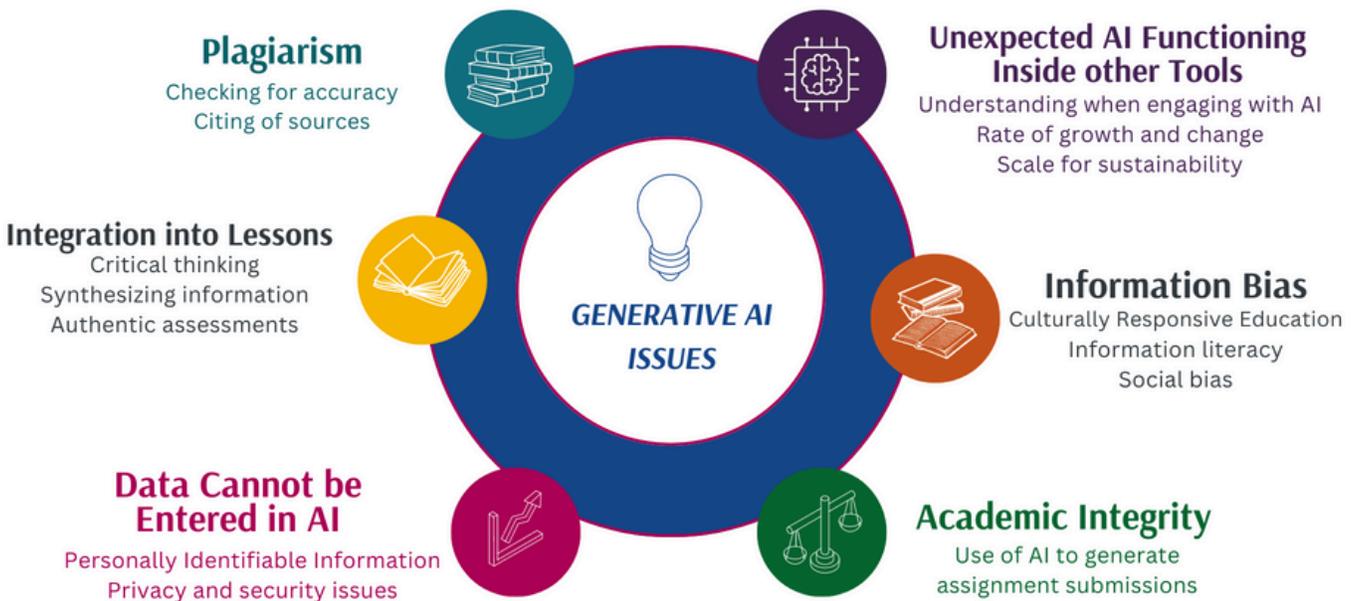
Ensuring Ethical AI Use with AI Classroom Integration

Educators must prioritize digital citizenship and media literacy when integrating Generative AI into the classroom to empower students with essential skills for navigating the digital world. Digital Citizenship encompasses diverse skills, fostering an understanding of appropriate, responsible, ethical, and healthy behavior. Media literacy involves accessing, analyzing, evaluating, creating, and taking action with various forms of communication, including AI-generated responses (AIFWD, 2023).

Promoting Equity with Generative AI Classroom Integration

Adopting Generative AI in education necessitates focusing on ethics, equity, and digital literacy. This involves addressing potential biases in these systems, ensuring data privacy, and promoting an inclusive learning environment that benefits all students. Educational leaders must establish policies and practices reflecting these values, ensuring AI tools are used ethically, equitably, and effectively.

GENERATIVE AI ISSUES IN EDUCATION



Enhancing Learning with Generative AI Classroom Integration

Generative AI has the potential to revolutionize learning by providing access to personalized and immersive educational experiences.

Examples include using augmented reality (AR) for interactive learning sessions and employing chatbots for tutoring and support. These applications engage students in novel ways and support diverse learning styles and needs, making education more accessible and practical.

Integrating Generative AI allows educators to engage students in deep and meaningful learning, promoting high levels of creativity and critical thinking skills. Our role as educators is to educate our students, teaching them how to use Generative AI appropriately to enhance their learning, creativity, and demonstration of standard mastery.

Below are some best practices from [AIFWD](#) for integrating Generative AI in the classroom.

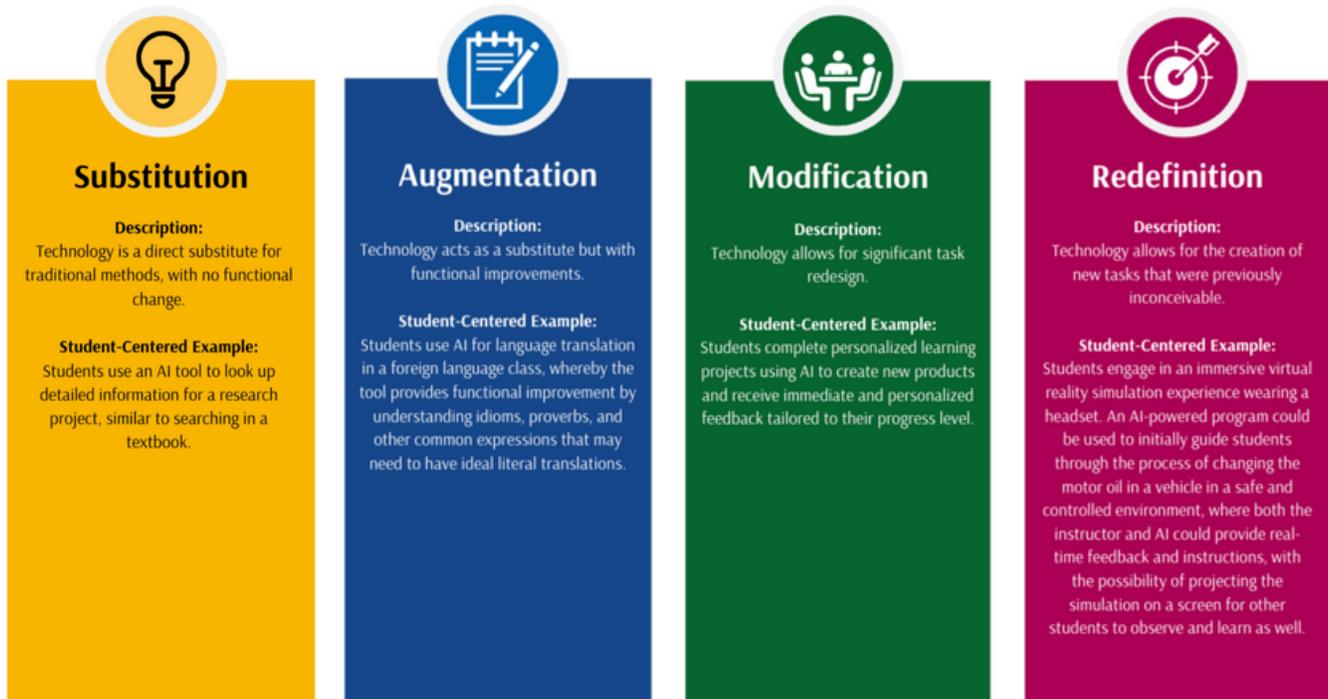
- When selecting a Generative AI tool, carefully review the age restrictions, privacy, and data collection policies before implementing them in the classroom.
- Participate in a classroom discussion on plagiarism and establish guidelines for Generative AI citations. (Citation resources: [MLA Style - Generative AI](#), [APA Style - ChatGPT](#), and [Chicago Style - Generative AI](#); OpenAI has a “Get Citation” feature that creates a current citation)
- Be clear about how and when students are expected to use or not use AI.
 - Permissive: Students freely utilize AI tools to assist in assignments, such as generating ideas, proofreading, or organizing content.
 - Moderate: Students may use AI tools for specific parts of the assignment, such as brainstorming or initial research, but core content and conclusions are original.
 - Restrictive: AI tools are prohibited for the assignment, and all work must be author’s original creation (OpenAI, 2023).
- Avoid using AI detection tools as they are proven unreliable, often resulting in false positives (e.g., Checking the Google version history of the document to see if paragraphs have been added in one keystroke).
- Provide instruction on how students can be critical consumers of Generative AI, evaluating responses to see if they meet their needs and verifying facts, figures, quotes, and data using reliable sources.
- Consider how Generative AI may be used as a thought partner for students as a brainstorming tool or to provide feedback.
- Ensure equity by making Generative AI tools available to all students, considering that some may and some may not have access outside of school if an assignment permits use.
- Provide a blended learning experience integrating technology with discussions, hands-on learning, and project-based assignments and assessments.

AI and the SAMR Model

[The SAMR model](#), developed by Dr. Ruben Puentedura, provides a framework for incorporating technology into education and categorizes technology integration into four levels: Substitution, Augmentation, Modification, and Redefinition.

AI and the SAMR Model

The table below illustrates how generative AI applications in the classroom can fit into each level of the SAMR model, as described with examples that may be suited for secondary classrooms.



Generative AI and Student Learning

As K-12 education systems increasingly integrate Generative AI into the learning environment, it is imperative to harness its transformative potential responsibly and effectively. This guidance document aims to illuminate Generative AI's benefits in enhancing student well-being and improving learning outcomes, as well as the associated risks and strategies for their mitigation. The graphic below outlines AI's potential advantages, related risks, and strategies for mitigating these risks in student learning.

Benefits

Personalized Content and Review: AI can help generate personalized study materials, summaries, quizzes, and visual aids, help students (including those with disabilities) access and develop tailored resources to meet their specific needs, and help students organize thoughts and review content.

Aiding Creativity: Students can harness generative AI as a tool to spark creativity across diverse subjects, including writing, visual arts, and music composition. AI can suggest novel concepts or generate artwork or musical sequences to build upon.

Tutoring: AI technologies have the potential to democratize one-to-one tutoring and support, especially for students with financial or geographic constraints. Virtual teaching assistants powered by AI can provide round-the-clock support, help with homework, and supplement classroom instruction.

Critical Thinking and Future Skills: Students who learn about how AI works are better prepared for future careers in a wide range of industries. They can develop computational thinking skills to break down complex problems, analyze data critically, and evaluate the effectiveness of solutions.

Risks

Plagiarism and cheating can occur when students copy from generative AI tools without approval or adequate documentation and submit AI-Generated work as their original work.

Misinformation can be produced by Generative AI tools, leading to widespread misconceptions.

Bullying and harassment by using AI tools to manipulate media in order to impersonate others can have severe consequences for students' well-being.

Overreliance on AI models can lead to undercutting the learning process and abandoning human discretion and oversight. Important nuances and context can be overlooked and accepted. People may overly trust AI outputs, especially when AI is seen as having human-like characteristics.

Unequal access to AI tools worsens the digital divide between students with independent and readily available access at home or on personal devices and students dependent on school or community resources.

Risk Mitigation

In addition to being clear about when and how AI tools may be used to complete assignments, teachers can restructure assignments to reduce opportunities for plagiarism and decrease the benefit of AI tools. This may include evaluating the artifact development process rather than just the final artifact and requiring personal context, original arguments, or original data collection.

Students should learn how to critically evaluate all AI-generated content for misinformation or manipulation and be taught about responsible development and sharing of content.

Staff and students should be taught how to properly cite and acknowledge the use of AI where applicable.

If an assignment permits the use of AI tools, the tools must be made available to all students, considering that some may already have access to such resources outside of school.

Professional Learning Opportunities

Educators must have the knowledge and skills to effectively integrate Generative AI into teaching and learning processes. These examples of professional learning will equip educators with tools and foundational knowledge to support their classrooms on their journey.

Professional Learning Programs

These offerings below highlight examples for consideration when implementing your school district or charter school's professional learning for educators on Generative AI in the K-12 classroom:

- Generative AI for Teacher and Staff Productivity
 - Training on using AI tools to streamline administrative tasks, improve classroom management, and enhance communication between teachers, staff, and students. This includes automating routine processes, providing insights into student performance, and facilitating resource management.
- Generative AI for Creatives
 - Explore tools that enhance creative processes in education, focusing on integrating Generative AI tools to support artistic and innovative activities, such as digital art, music composition, and creative writing, helping educators foster creativity in students using cutting-edge technology.
- Protecting Student Data
 - Prompt Engineering for Educators: Best practices for designing prompts that maximize teacher capacity while protecting student data and PII.
 - Generative AI to Support Pedagogy: Leverage tools for personalized learning, student engagement, and formative assessment to enhance classroom pedagogy and support individual student needs while maintaining student data privacy.
- Ensuring Ethical Generative AI Use
 - Curriculum Integration: Training on integrating Generative AI tools and resources into the curriculum, including lesson planning and assessment strategies.

- Connections to Generative AI and Special Education: Training on Generative AI and creating support for exceptional education learners. Discuss goals, protecting student data, privacy dos and don'ts when prompting, and best practices for personalized learning.
- Promoting Equity
 - Introduction to Bias in Generative AI: Explore Generative AI in K-12 education, focusing on understanding and identifying bias within artificial intelligence systems and a foundational perspective on the impact of social bias on educational content and student interactions.
 - Equitable Access: Providing access to Generative AI tools and making them available for all learners.
- Enhancing Learning
 - Preparing Students for an AI-Infused Future: The future is now! How can students leverage AI technology to prepare them for their desired futures?

Delivery Methods

- Online courses and webinars for flexible learning.
- Hands-on workshops and seminars for practical experience.
- Peer learning groups are used to share experiences and strategies.

Content Delivery Resource Examples

- [TeachAI - AI in Education Presentation Slidedeck](#)
- [AI for Education - Downloadable Resources](#)
- [AI for Education - Webinar Series](#)

Next Steps in the Process

Outline a roadmap for integrating Generative AI into educational systems, emphasizing ongoing evaluation, stakeholder engagement, and adaptive strategies.

Short-Term Actions

- **Policy Review and Development:** School districts and charter schools can assess current technology policies and develop new guidelines to accommodate Generative AI integration.
- **Pilot Programs:** School districts and charter schools can initiate small-scale Generative AI pilot programs to explore potential uses and identify challenges within specific educational contexts.

Medium-Term Actions

- **Professional Learning Rollout:** School districts and charter schools can expand professional learning programs based on initial feedback and identified needs.
 - Examples include:
 - **Generative AI and Connections to [The Delaware Digital Citizenship Act](#) and Media Literacy Standards**
 - This professional learning centers around Delaware's Digital Citizenship Act and Media Literacy Standards and how Generative AI can support educators in meeting the needs of all learners throughout K-12.
 - **Generative AI Literacy for Educators**
 - Courses and/or workshops designed to enhance understanding of Generative AI technologies, their applications in education, and their ethical implications.

Long-Term Actions

- **Generative AI Integration:** Based on pilot program outcomes and ongoing feedback, school districts and charters roll out integration across more significant segments of the educational system.
- **Continuous Review and Adaptation:** school districts and charter schools can establish mechanisms for continuously evaluating Generative AI use in education, ensuring practices remain ethical, equitable, and effective.

Conclusion

As we conclude our guidance document, the Delaware educational community embarks on a journey toward integrating Generative AI into our educational fabric. This endeavor is not just about keeping pace with technological advancements; it is about redefining the academic landscape to make it more inclusive, innovative, and insightful. With the steadfast support of educators, administrators, and the wider community, we stand at the cusp of a transformative era.

Delaware educators' commitment has laid a solid foundation for this next step. Creating a robust tech infrastructure has facilitated a seamless transition to digital learning and primed our schools to integrate technologies. As we move forward, we must approach AI enthusiastically and cautiously, ensuring its incorporation into teaching, learning, and administrative operations enriches the educational experience without overshadowing the human elements essential to learning.

Our vision extends beyond the mere use of Generative AI in classrooms. We aim to cultivate an environment where technology enhances communication, collaboration, critical thinking, creativity, engagement, and ethical understanding. By equipping our educators and students with the knowledge and resources to use Generative AI judiciously, we prepare them for future jobs and foster a culture of lifelong learning and curiosity.

The journey ahead is not without its challenges. The rapid evolution of this technology demands continuous learning and adaptation. However, by prioritizing professional learning and support for our educators, we can ensure they are well-prepared to guide our students in navigating the complexities of a technology-driven world.

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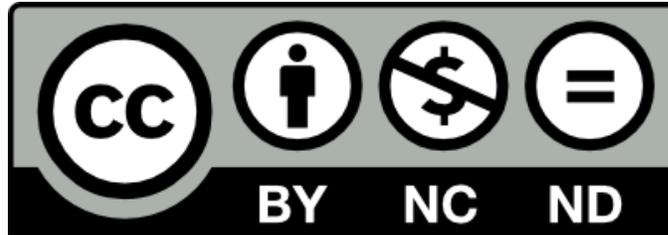
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