



Generative Artificial Intelligence (AI) in K-12 Classrooms

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Kenneth Shelton
Joanna Goode
Katy Tibbs
Jodi LePla
Corin Ahlberg
Oregon's Canvas Administrator Group

What is Generative Artificial Intelligence (genAI)?

Broadly speaking, artificial intelligence (AI) is defined as “the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence, but AI does not have to confine itself to methods that are biologically observable.”¹ Many types of artificial intelligence have been defined, which have led to a large number of applications of AI including self-driving vehicles, automatic language translation, facial recognition, virtual assistants (like Siri or Alexa), recommendation systems used in streaming platforms like Netflix and of course chatbots like ChatGPT and Google Gemini.

While AI includes a wide variety of applications and tools used in education and other fields, this document focuses on AI applications that are generative in nature - referred to herein as “generative AI” or “genAI.” This includes programs like [ChatGPT](#), Google [Gemini](#), [Claude](#) and other chatbots that use AI and natural language processing (NLP) to provide human-like responses to questions and prompts.

The field of AI encompasses far more than just generative AI. However, given the rapid emergence of chatbots like ChatGPT and Google Gemini being used in the field of education, this resource focuses solely on the application of genAI in schools.² It is important to acknowledge that AI in all forms are growing at a rapid pace and additional platforms and resources will continue to be developed.

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1 McCarthy, J. (2004). What is artificial intelligence? Retrieved from: <https://www-formal.stanford.edu/jmc/whatisai.pdf>

2 Additional types of artificial intelligence include: Reactive Machines, Limited Memory, Theory of Mind, Self-aware, Artificial Narrow Intelligence (ANI), Artificial General Intelligence (AGI) and Artificial Superintelligence (ASI). You can read more about these types in the Forbes article “[7 Types Of Artificial Intelligence](#)”

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When considering these foundational AI technologies that make tools like ChatGPT and Google Gemini possible, to keep the following in mind.

- These tools are designed to act like or simulate what most would consider intelligent behavior, such as responding to questions in a human-like manner. They are not artificial brains or sentient life forms with human characteristics like free will, self-awareness and / or emotions.
- These tools are trained on vast amounts of data, much of which comes from the internet. As such they are subject to biases and inaccuracies that are inherent in the information found on the internet. Caution must be exercised when considering a response from a generative AI system and it is important to understand from a user perspective that the words we input into these tools can and will shape its future behavior.³

Key Terminology

Generative AI: Generative AI systems fall under the broad category of machine learning with GPT being one example. GenAI is generating some form of output, either text, images, video or audio.

Large Language Model AI: This model is trained using an extensive amount of data to process tasks in a natural language format.

GPT: Generative Pre-trained Transformers (GPTs) are an example of generative AI. GPT models are trained using large data sets to generate text output and other modes of media and can be applied to applications beyond language processing alone. Examples of GPT AI include Gemini, ChatGPT and Microsoft's Copilot.

There are various forms of AI that have been integrated into classrooms and our everyday lives for decades now. For example, instructional resources and assessments that use algorithmic or adaptive learning, automatic translation tools such as Google translate or Babelfish (which was an early translation tool) and programs such as Grammarly that support writing are all examples of AI use. The Office of Educational Technology published a report titled "[Artificial Intelligence and the Future of Teaching and Learning](#)" that provides additional examples regarding the history of AI and the importance of proactively addressing the growth of AI in our schools and classrooms.

This report puts an emphasis on **keeping humans in the loop when using AI, rather than machine-centered policies**. The authors use the following metaphor to describe its use noting that "teachers, learners and others need to retain their agency to decide what patterns mean and to choose courses of action."

We envision a technology-enhanced future more like an electric bike and less like robot vacuums. On an electric bike, the human is fully aware and fully in control, but their burden is less and their effort is multiplied by a complementary technological enhancement. Robot vacuums do their job, freeing the human from involvement or oversight.

It is essential that educator knowledge and expertise is honored in decision making when implementing genAI in schools.

³ To chat or bot to chat: Ethical issues with using chatbots in mental health. Retrieved from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10291862/>

Why talk about AI now?

The use of AI in education, while not a new phenomenon, has gained traction recently given the introduction of generative AI that uses large language models such as ChatGPT, Gemini and Copilot. Such models have the potential to transform the way that technology is used by educators, students and families alike. AI tools are also being integrated into learning platforms and curriculum adoption committees would benefit by focusing on both the challenges and the opportunities in these rapidly evolving digital learning environments.

Given this influx, **it is vital that schools and districts plan proactively in developing policies and guidance related to the use of AI in classrooms to ensure that policies are clear, attentive to the current moment, mindful of student data privacy and equity centered.** ODE's [companion policy and guidance document](#) is designed to help school leaders develop policies on the use of genAI tools in classrooms.

Whenever new technologies are introduced, there is a potential for both innovation and risks when considering the impact on instructional practices and student learning experiences and outcomes. Generative AI is just the newest example of these emerging technologies, with previous generations experiencing advances in technology such as the internet, graphing calculators, smart phones, etc. While generative AI has the potential to support access to learning in classrooms for all students, these technologies can exacerbate inequities for students from marginalized groups in the absence of thoughtful guidance, practice and educator support and training.

Given the recent arrival of AI in education, several organizations are working to provide guidance on the use of AI in education. Examples include:

- The Kapur Foundation's [Responsible AI and Tech Justice: A Guide for K-12 Education](#), focuses on the ethical and equitable uses of AI in K-12 education. The Kapur Foundation's work, "focuses at the intersection of racial justice and technology to create a more inclusive technology sector for all."
- [Teach AI](#), a partnership between major education organizations, including Code.Org, ISTE, the World Economic Forum, National Association of State Boards of Education, National School Boards Association, Educational Testing Service, Khan Academy and ISTE was developed in an effort to provide guidance to policymakers and educational leaders around AI in education.
- [AI for Education](#): Offers a number of educator resources including free webinars, a prompt library, AI curriculum for students and other resources.
- [Common Sense Media AI Initiative](#): Offers AI-specific product reviews and assessments, free lesson plans for teachers and additional resources for both educators and parents.
- [The Hands-On AI Projects for the Classroom](#) ISTE developed guides for elementary and secondary teachers to support student-driven learning related to AI and its impacts on society.
- [The CRAFT \(Classroom-Ready Resources About AI For Teaching Project\)](#), developed by Stanford University's Graduate School of Education has resources to support high school teachers in supporting students' AI literacy.

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AI and Green House Gas (GHG) emissions: It is important to know that AI has a significant negative impact on global GHG emissions. However, AI technologies are also driving efficiencies and innovations in areas such as energy development, manufacturing, and agriculture which have the potential to lower emissions. For example, AI-driven precision analysis can make agriculture more sustainable by improving farming efficiencies, reducing water and fertilizer use. In the energy sector, AI is being used to help detect methane leaks from pipelines, making energy generation more efficient and lowering emissions. Many companies are also working hard to develop carbon-neutral systems for their data centers and beyond, mitigating some of AI's environmental impact.⁴

However, AI development and deployment also contributes to higher GHG emissions. Training advanced AI models requires substantial computational power, leading to increased electricity consumption and emissions. Data centers that power AI applications consume significant energy, often relying on non-renewable sources depending on their location.

A recent [2024 report from Google](#) stated that **they have increased total GHG emissions by 48% since 2019**, stating that this was “primarily due to increases in data center energy consumption and supply chain emissions. As we further integrate AI into our products, reducing emissions may be challenging due to **increasing energy demands from the greater intensity of AI compute**, and the emissions associated with the expected increases in our technical infrastructure investment.” This highlights the environmental challenges posed by the growing integration of AI and school leaders should be aware of this challenge in incorporating genAI tools into their classrooms.⁵

What are the equity implications of generative AI in K-12 classrooms?

When developing policy around the use of genAI in K-12 classrooms, understand that creating and cultivating a digital learning ecosystem wherein equity is at the heart of the decision-making process is key to ensuring that the learning experiences that students engage in honor their sociocultural identity and lived experience. Take into consideration the fact that genAI is a component of a larger digital learning ecosystem.

While digital learning and education technology have the potential to address inequities, they can also amplify disparities and exacerbate existing inequities when not guided by an equity-focused mindset. As highlighted in the [Resource on Avoiding the Discriminatory Use of Artificial Intelligence](#) from the federal Department of Education, the use of AI in schools should align with federal civil rights laws to prevent discrimination and promote equitable access for all students.

Equity implications to keep front and center when designing policy specific to generative AI in K-12 classrooms includes bias, inaccuracy, plagiarism, copyright/licensing unknowns and equity of access. Table 1 provides examples of strategies to address these equity implications.

4 AI's Growing Carbon Footprint. Retrieved from: <https://news.climate.columbia.edu/2023/06/09/ais-growing-carbon-footprint>

5 Google Environmental Report 2024. Retrieved from <https://www.gstatic.com/gumdrop/sustainability/google-2024-environmental-report.pdf>

- **Bias:** As generative AI uses algorithms created by human designers, there is a strong potential for the introduction of bias into the system. Some examples include privileging certain language variations, showing racial and gender biases, having a United States-centric lens and providing only a limited perspective. As generative AI uses large data sets, historical and systemic biases are introduced into the system. Further, as generative AI lacks cultural knowledge and experience, this can lead to misinterpretations of prompts given and answers that privilege a certain cultural perspective.
- **Inaccuracy:** As generative AI draws from large data sets, it is not guaranteed to be accurate as not all information on the internet is accurate. AI is only as good as the data that is fed into the machine learning algorithms. Additionally, generative AI is not necessarily coded to provide accurate information, rather it simply predicts the type of information needed to best fit a given Prompt. For example, when asking ChatGPT for sources to support information provided, there are times in which the sources are fabricated. This is known as “AI hallucinations.”⁶
- **Plagiarism:** A common concern from educators is that generative AI and other AI technologies will be used by students to write essays and complete assignments. As genAI does provide written responses to prompts, this concern led a number of districts across the nation to initially ban access to generative AI platforms due to a concern for cheating and plagiarism. More recently, this trend seems to be reversing with districts allowing some access to generative AI tools for both teachers and students. All students should have access to genAI tools to ensure they have the opportunity to learn how to positively and expertly use it as they prepare for future college and career opportunities.
- **Copyright/ Licensing Unknowns:** Understanding copyright laws is an important element of guiding the use of genAI and other AI technologies in the classroom because this is new technology and there are not yet clear boundaries regarding how AI tools can use copyrighted materials to learn from, nor who owns content generated by AI tools. As companies continue to develop licenses on their products, it is essential for educators to reflect on the implications of copyright/licensing unknowns. The U.S Copyright Office webpage on [Copyright and Artificial Intelligence](#) is the best resource to follow ongoing updates and revisions to copyright law and policy issues related to AI.
- **Equity of Access:** Access to generative AI and lack thereof can have broad and deep equity impacts on students – both while in K-12 education and for college and career readiness. Addressing equity issues regarding which students have access to AI and which do not is an example of the digital use divide that must be mitigated now as schools develop policy around how students interactive w AI tools. Ensuring access to these tools, proactive usage and teacher training in generative AI will be crucial in the coming years as part of a collective effort to close the three digital divides identified in the [2024 National Educational Technology Plan](#) (NETP).

Given the inherent equity impacts of introducing generative AI into the digital learning ecosystem, educating students, families and educators (including paraeducators, secretaries, support staff, etc.) on these equity implications can help to move toward using generative AI in ways that are culturally responsive and sustaining for students, families and communities.

⁶ What is AI Hallucination? What Goes Wrong with AI Chatbots? How to Spot a Hallucinating Artificial Intelligence? Retrieved from: <https://www.marktechpost.com/2023/04/02/what-is-ai-hallucination-what-goes-wrong-with-ai-chatbots-how-to-spot-a-hallucinating-artificial-intelligence/>

Table 1. Potential Strategies to Address Equity Impacts of the use of Generative AI in K-12 Classrooms

Equity Impact	Strategies to Address Equity Impact
Bias	<ul style="list-style-type: none"> Ensure that all educators are trained to understand the potential for bias in AI. This can include training modules, PLC focused topics, book studies, etc. Talk with students about the potential biases of AI in addition to teaching strong research and digital literacy skills to ensure that if generative AI is used, it is done so with an understanding that it is a first step rather than a final step with the most importance being placed on the human user in verifying the information presented. Provide resources to families so that they understand the potential bias within genAI tools. Common Sense Media has a Guide to ChatGPT for Parents and Caregivers that is a great place to start.
Inaccuracy	<ul style="list-style-type: none"> Provide training to educators, students and families (e.g. digital literacy) to support in deepening skills in lateral reading and fact checking for misinformation, disinformation and malinformation within generative AI responses. For more on lateral reading and fact checking, some great resources include Stanford's Digital Inquiry Group (formerly SHEG) and Dr. Mike Caulfield's (research scientist at the University of Washington's Center for an Informed Public) SIFT method. If using generative AI in the classroom, ask students to find other sources that support the information provided by generative AI in order to check for accuracy. Consider using resources such as Stanford's Digital Inquiry Group Civic Online Reasoning curriculum, National Council for Social Studies (NCSS) Evaluating Sources and Using Evidence resources and Ithaca College's Project Look Sharp for K12 schools.
Plagiarism	<ul style="list-style-type: none"> Rethink assignments and be clear on what standards/skills are being addressed. Create more opportunities for students to problem solve, analyze and synthesize and share their thinking within the classroom. Embed formative assessment throughout, in order to get a deeper sense of students' writing over time. Train educators to look for the presence of AI written communication such as repetitive sentences, overly complicated vocabulary and predictable writing structure. At this time, we suggest that educators not use AI-based plagiarism detectors. Research has shown that they often incorrectly report that a student's writing was generated by AI. In fact, AI-based plagiarism detectors have recently been reported to incorrectly identify non-native English writing as AI-generated more often than native English writing, which is one of several ways in which genAI tools have shown bias since their inception. Develop strong policies and student expectations about when and how generative AI can be used in the classroom. Be sure to discuss the potential risks of using AI with students (e.g. inaccurate information, bias, etc.) and provide students with digital media literacy curriculum and learning opportunities so that they understand these risks. Use ODE's genAI Policy Development guidance document to help support these efforts. Support students in sharing their writing process such as discussing how and where they got their information and their strategy for integrating it into their drafts. Creating discussion opportunities in addition to having students turn in outlines and drafts of their writing along the way to show that the process is equally as valuable as the final product, which can be helpful in creating strong writers and researchers. Teachers looking at student writing can think about some of the following when determining if a student potentially plagiarized the work:



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Equity Impact	Strategies to Address Equity Impact
	<ul style="list-style-type: none"> Does the students voice come across clearly in the writing? Are sentences too repetitive? Does the paper not really make normal progress? What are some ways to ensure students are involved throughout the entire expected writing process? When using digital platforms like a Google Doc, there are a number of tools to look at the writing history, such as looking at the version history and going even deeper by incorporating browser tools like the free Draftback Chrome Extension, which produces a short video of the entire writing process history.⁷ Consider how to teach and support students in developing digital media literacy skills. For example, the International Baccalaureate (IB) has determined that rather than banning software, they will support schools in using software to “...support their students on how to use these tools ethically in line with our principles of academic integrity.”⁸
Copyright/ Licensing Unknown	<ul style="list-style-type: none"> Review licensing types on Creative Commons and discuss copyright and licensing information with staff. Review the Copyright Office’s New Artificial Intelligence Initiative, which will continue to have the most up-to-date information on legal developments regarding copyright and generative AI. While not specific to education, as educators often use, curate and share instructional materials through digital means, understanding copyright laws and how they impact the use of information developed through AI will be essential.
Equity of Access	<ul style="list-style-type: none"> Consider the equity impacts of certain students having access and others not having access. While we are still very early into the development of generative AI tools entering the workforce, some are worried about AI systems replacing jobs. What we know with more certainty is that we need to help ensure our students know how to use AI proficiently. As Code.org founder and CEO, Hadi Partovi, stated recently, we should not think about AI taking jobs away from people, but rather “It’s losing their job to somebody else who knows how to use AI. That is going to be a much greater displacement... The imperative is to teach how AI tools work to every citizen and especially to our young people.”⁹ Educators, both certified and classified staff, will need training to support their students in the use of this technology. For example, generative AI can be a particularly impactful tool for students with disabilities and multilingual learners. Not using these tools has the potential to limit students’ access to learning opportunities (see below for information regarding the use of ChatGPT and UDL - Universal Design for Learning). Talk to students, educators, families, community members and industry professionals to better understand the potential uses of generative AI and how it might be used as a skill set for future employment. Be attentive to the cost of platforms such as ChatGPT. While platforms such as ChatGPT are currently available at no cost, this might not be the case in the future as it is not uncommon for technology companies to create a paywall after initial success and a large stream of website traffic. This has the potential to create equity implications for students and families who are unable to afford the associated cost of these tools.

7 Byrd, C. (2023). WRITE Center Helps Teachers Grapple with ChatGPT and Future of Writing Instruction. Retrieved from: <https://education.uci.edu/chatgpt.html>

8 Statement from the IB about ChatGPT and artificial intelligence in assessment and education. Retrieved from: <https://www.ibo.org/news/news-about-the-ib/statement-from-the-ib-about-chatgpt-and-artificial-intelligence-in-assessment-and-education/>

9 From Sam Altman to António Guterres: Here’s what 10 leaders said about AI at Davos 2024. Retrieved from: <https://www.weforum.org/agenda/2024/01/what-leaders-said-about-ai-at-davos-2024/>

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How can schools help protect staff and student privacy?

Federal and State Privacy Regulations. There are numerous federal and state policies associated with student data privacy that are crucial to be aware of when determining policy and guidance for the use of genAI in schools including the [Family Educational Rights & Privacy Act \(FERPA\)](#), the [Children’s Internet Privacy Act \(CIPA\)](#), the [Children’s Online Privacy and Protection Act \(COPPA\)](#) and the [Oregon Student Information Protection Act \(OSIPA\)](#).

COPPA, in particular, impacts technology users under the age of 13 in that companies are not allowed to collect personal information them without parental consent, while OSIPA lays out certain requirements that must be met when using digital platforms of any kind including the following:

- Disclosing any covered information provided by the operator to subsequent third parties, except in furtherance of kindergarten through grade 12 school purposes of the site.
- Engaging in targeted advertising on the operator’s site, service or application.
- Selling a student’s information, including covered information.

When developing district policies and guidance, it is essential to ensure that they are not in violation of COPPA or OSIPA. All schools and districts engaging with genAI technologies (or any technology broadly) should regularly review the company’s usage and privacy policies to ensure that they are not in violation of COPPA or OSIPA.

NOTE: On July 30, 2024 the US Senate overwhelmingly passed children’s online privacy legislation through the Children and Teens’ Online Privacy Protection Act (COPPA 2.0) and the Kids Online Safety Act (KOSA).

Recommendations And Resources For Student Data Privacy Implications

Whenever new technology is introduced, reviewing the data use and privacy policies are of key importance. For example, for the purposes of ChatGPT, a starting place is to read the [privacy policy of OpenAI](#), the developer of ChatGPT. The privacy policy includes specific information related to the use of ChatGPT for children:

“Our Service is not directed to children who are under the age of 13. OpenAI does not knowingly collect Personal Information from children under the age of 13. If you have reason to believe that a child under the age of 13 has provided Personal Information to OpenAI through the Service please email us at legal@openai.com. We will investigate any notification and if appropriate, delete the Personal Information from our systems.”

Schools and districts are also encouraged to look over [OpenAI’s Educator Considerations for ChatGPT](#) for additional information.

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Personally Identifiable Information (PII), oversharing and genAI. ORS 339.329 (c) defines the state of Oregon’s statewide tip line concerning threats or potential threats to student safety. In it [Personally Identifiable Information \(PII\)](#) is defined as any information that would permit the identification of a person... and is not limited to name, phone number, physical address, electronic mail address, race, gender, gender identity, sexual orientation, disability designation, religious affiliation, national origin, ethnicity, school of attendance, city, county or any geographic identifier included in information conveyed... or information identifying the machine or device used by the person...”

Users, both school staff and students, should be cautious when entering any personal information into any and all digital applications, including generative AI tools. Entering Personally Identifiable Information (PII) into any generative AI system should always be avoided. This is a particularly important consideration when using generative AI applications such as ChatGPT, as the information entered by users (including prompts and questions posed, etc.) is stored on the application’s server and integrated into the large language model used to respond to user prompts. Essentially, generative AI tools are learning from every single piece of text or other input typed into their platforms.¹⁰

Oversharing occurs when individuals share too much of that PII or other sensitive information in *inappropriate* or *unsecured* contexts. When we think of genAI tools like ChatGPT specifically, oversharing can lead to significant risks. These risks can potentially include:

- Exposure to data breaches
- Misuse of information and
- Unintended data harvesting

Generative AI tools, while powerful in processing and generating content based on vast data sets, can retain or expose information in ways that might compromise privacy. This makes understanding and mitigating oversharing critically important in K12 educational settings where schools are dealing with minors and the federal privacy regulations cited above, like [FERPA](#) and [COPPA](#).

School Staff Oversharing. For school staff, the dangers of oversharing with generative AI tools can have potential professional and legal ramifications. Staff might inadvertently, or even intentionally, enter sensitive information such as student performance data, behavioral reports, or even personal health information into AI systems. **All staff need to understand they must not enter this type of personal information into AI systems. Doing so poses potential risks of violating privacy regulations like FERPA, which could lead to legal consequences for the school and the individual.** Moreover, such data breaches can damage the trust between educators and students and potentially harm the school’s reputation. It is crucial for *all* school staff to be trained on the appropriate use of AI tools and the types of information that should never be entered into such systems.

Student Oversharing. Students, often less aware of the implications of data privacy, are particularly vulnerable to risks of oversharing. As students engage with generative AI tools, they may share personal anecdotes, family information, or sensitive personal identifiers, especially as students (and adults) begin to build superficial quasi-relationships with chatbots rather than seeing them as tools.^{11,12} Such oversharing has the potential to lead to cyberbullying, identity theft and other forms of exploitation. Educators should play an active role

¹⁰ The tricky truth about how generative AI uses your data: AI systems train on your data. What can you do about it? Retrieved from: <https://www.vox.com/technology/2023/7/27/23808499/ai-openai-google-meta-data-privacy-nope>

¹¹ To chat or bot to chat: Ethical issues with using chatbots in mental health. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10291862/>

¹² Chatbots Are Not People: Designed-In Dangers of Human-Like A.I. Systems. Retrieved from <https://www.citizen.org/article/chatbots-are-not-people-dangerous-human-like-anthropomorphic-ai-report/>

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in educating students about the risks of oversharing, guiding them on safe digital practices and setting up stringent privacy controls on educational technology to safeguard student data.

While there is a growing number of online resources for teacher professional development resources and K12 student lessons that focus on these issues, including many listed in **Table 3** below, one resource worth highlighting here is the Commonsense.org [Quick Digital Citizenship Lessons for Grades K-12](#), which includes lessons that are divided up by grade level.

What is the potential of generative AI in K-12 classrooms?¹³

Generative AI can be leveraged for use in education in a variety of ways including the support in designing learning experiences for students, as a support for differentiation, as an instructional partner or as a virtual tutor. See Table 2 below for additional ideas. As this technology is expanding at rapid speed, it is likely that its uses in education will continue to expand, thus providing additional ways in which to create equitable learning opportunities for students if done so in tandem with strong and intentional policy development, guidance and support.

AI is part of the larger educational technology ecosystem and its use is most effective when implemented alongside strong policy and educator training. Generative AI alone will not transform educational opportunities for students. Instead, using AI within an educational technology ecosystem that centers relationships and mental health, robust pedagogy and practice and high- quality instructional materials, creates opportunities for more equitable and culturally responsive learning opportunities for students – opportunities that lead to student learning and belonging.

Multilingual Learners. School leaders need to understand how generative AI tools can support multilingual learners across the entire K12 spectrum. These tools can provide real-time language translation, helping students grasp content in their native languages while improving their English skills. By leveraging genAI, educators can create inclusive learning environments, ensure equal opportunities for multilingual learners, and enhance overall student engagement and comprehension. Knowledge of these technologies enables school leaders to implement effective strategies that cater to diverse linguistic needs, fostering academic success for all students. Be sure to see the [ODE Generative Artificial Intelligence](#) page for links on suggested tools for teachers working with multilingual students.

Although generative AI is still in its infancy, educators across the world have found beneficial use of these tools to create increased learning opportunities for their students. Some learning opportunities include:

- **Learning Design:** Generative AI can support teachers in developing lesson plans to support student learning in addition to lessening the burden of creating individualized instructional materials for students. While it is essential that generative AI is seen as a starting point for this work, with the teacher being the most important part of lesson and materials development, generative AI can support teachers in the beginning stages of the development. Generative AI can support students with disabilities as it can streamline content and therefore scaffold learning materials.¹⁴

13 This list has been modified from McClenner, N. and Dené Poth , R. (2023). Education is about to radically change: AI for the masses. Retrieved from: <https://www.gettingsmart.com/2022/12/16/education-is-about-to-radically-change-ai-for-the-masses/>

14 AI technologies more broadly provide support for students with disabilities including: image and facial recognition for students with visual impairments, lip-reading recognition for students with a hearing impairment, text summarization and real-time captioning and AI-powered automatic speech recognition and transcription.

- **Teaching Tool:** Generative AI can be used as a teaching tool in the classroom. When teachers have explicit policies about when it is appropriate to use generative AI and students have been taught digital literacy skills to understand how to couple the information provided by generative AI with lateral reading skills, it can serve as a teaching tool.
- **Instructional Support:** Generative AI can be used by teachers to efficiently find instructional resources on the basis of specific topic areas as well as pedagogical approaches to provide individualized instruction. This includes using a program like ChatGPT to differentiate instructional resources by student grade level or individual student needs, strengths and interests, for example.
- **Student Accessibility:** Teachers using genAI tools can create personalized learning materials tailored to the individual needs of K12 students, enhancing their learning experiences. These tools can also provide real-time support for students with disabilities, such as generating text-to-speech outputs or simplifying complex texts, making education more accessible.
- **Virtual Assistant:** Generative AI can serve as a virtual assistant for educators to support everyday tasks. This use of generative AI can create additional time for teachers to spend on building relationships with their students, engaging in direct and small group instruction and providing feedback on assignments.
- **Student Support and Guidance:** Generative AI has the potential to support students with developing research skills, learning to ask strong questions and providing advice regarding college and career planning.
- **Future Career Options:** Generative AI and the use of AI is likely to be central to future careers - both in terms of understanding the ways in which AI functions (computer science) and using AI to communicate and engage in work functions (digital literacy). Therefore, supporting students in learning about AI and using it responsibly, ethically and productively will support them far beyond their K-12 education.

The critical role of teachers. While generative AI provides valuable educational opportunities, it is merely a starting point. Teachers are the most essential part of the teaching and learning process. Generative AI and any other AI or technology does not and cannot, replace a teacher or a counselor. Generative AI is an emerging tool with no critical thinking abilities - it cannot discern whether the information it provides is generated in a way that is responsive to the needs and context of the students. However, it can be used as a teaching and learning tool when implemented by a teacher trained in genAI. Therefore, when developing training to support policy related to the use of AI technologies, ensuring that teachers are regularly trained in its uses (and limitations) as well as lifted up as the experts will be of utmost importance.

Using AI To Reach All Learners

With intentional use and teacher guidance, AI can also be a great aid to students receiving special education and language services. For example, AI can provide visual descriptions of objects and scenes for students with visual impairments and can help them in visualizing content. Text to speech features and speech to text features can also make accessing and contributing to classroom content more fluid and immediate. Multilingual learners can benefit through language conversations with AI in order to practice speaking and writing skills. Asking questions and receiving immediate feedback allows for language development and can introduce new words, idiomatic expressions and varied vocabulary. Given student data privacy laws, however, it is crucial that districts confirm that their policy around student use of AI conforms to student data privacy rules – student privacy and safety should be emphasized first and foremost in any policy decisions.

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Table 2. Instructional Strategies for the Use of Generative AI in K-12 classrooms

Opportunity	Example(s)
Learning Design	<ul style="list-style-type: none"> Teachers can lean on generative AI to develop assessment questions based on content or from a prompt or teachers can ask for specific question types e.g. written response, multiple choice, higher order thinking, etc. Teachers can use Generative AI to support and expand their own learning about the content they are teaching. Generative AI can generate lessons, activities and assessments that follow UDL (Universal Design for Learning) guidelines. Generative AI can provide steps in how to integrate culturally specific content into lesson planning.
Instructional Support	<ul style="list-style-type: none"> Teachers can modify a response provided by generative AI to provide more specificity e.g. rewrite using a project-based learning activity, rewrite the lesson with a focus on vocabulary development. Teachers can provide a rubric and include student writing samples and ask generative AI to evaluate student work. Generative AI responses can be generated in a variety of languages allowing multilingual learners access to translated materials that may not be embedded within the school's instructional materials. When asking generative AI a question, the user can request the response to be provided at a particular grade level or reading level. Furthermore, the user can request that responses contain specific vocabulary and sentence complexity. Teachers can use generative AI tools to support writing instruction. For example, ChatGPT and other AI platforms can be used to develop outlines for student writing to provide scaffolds for students.
Virtual Assistant	<ul style="list-style-type: none"> Generative AI can help with developing drafts of emails and other communications, finding supplementary content aligned with their curriculum and searching the web for continuing education courses aligned with their interests and needs.
Student Support and Guidance	<ul style="list-style-type: none"> Students can practice writing research questions and use generative AI responses as a determination of the strength of their questions. Students who have difficulty with writing can use generative AI to write an initial draft of an essay and use it as a "rough draft" with the next step being to revise to make it unique. Students can ask generative AI which colleges or universities offer particular programs of interest or what education or experience is required for certain career pathways. Students can use generative AI to better understand the revision process by asking ChatGPT to revise a particular section and then analyzing the methods used to accomplish the requested revision.
Future Career Options	<ul style="list-style-type: none"> Show students examples of the ways that AI is being used in spaces outside of education e.g. the medical industry, the automobile industry and the manufacturing industry. Consider integrating instruction about AI into the curriculum. For example, AI4All has an openly licensed curriculum "Bytes of AI" available on Oregon Open Learning that can be integrated into high school courses. Also, be sure to see the ODE genAI guidance page with additional related resources for Oregon teachers. Ensure that students understand how to use AI responsibly, ethically and productively by integrating digital citizenship lessons into the curriculum. For example, Common Sense Media has openly licensed digital citizenship lessons that can provide a starting point for integration across K-12.

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District Policy Considerations and The Implications of Synthetic Media and Deepfakes

With the influx of generative AI platforms entering the education sphere, it is important that schools and districts are taking into consideration the equity impacts of such technologies alongside the potential for student learning that generative AI can have when implemented with equity at its core. What is equally important is for schools and districts to reflect on the larger digital learning ecosystem in order to ensure that generative AI platforms, if used, are done so in culturally responsive and sustaining ways and supported by strong professional development for teachers, transparent communication with families and the larger school community as well as ongoing education for students.

Be sure to become familiar with the information and processes for genAI policy and guidance suggestions available in our companion document, [Developing Policy and Protocols for the use of Generative AI in K-12 Classrooms](#).

For some schools and districts that do not have technology plans to address these topics, this might require creating new policy. However, many schools and districts may already have policies that address the topics, so consider revising current policy and / or developing guidance for use as aligned with their current technology policy and cyber plans.

Starting Points for Reflection and Development of Policies and Guidance. As schools and districts begin or continue discussions related to policy and guidance development or revision around the use of genAI in classrooms, it is essential to acknowledge the prevalence of AI being used outside of the education system in areas such as the [entertainment industry](#) and [judiciary systems](#). Computer programmers are already using it to write code, Human Resources departments are using it to write job descriptions, companies like Microsoft and Salesforce are using it to write emails and perform administrative tasks and the use of AI is continuing to change the medical field. Additionally, there are examples of AI technologies being used for language revitalization within Indigenous communities.¹⁵ Therefore, while there are concerns to be aware of regarding the use of AI within school, it will be a tool that many will use throughout their lives.



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The Implications of Synthetic Media and Deepfakes. Synthetic media refers to digital content that is created using genAI tools like OpenAI’s [Dall-E](#) (image generation) and [Sora](#) (video generation) to audio tools from [Lovo AI](#) (audio generation). The term synthetic media can refer to images, videos or audio recordings that are generated or altered using genAI tools and appear real (i.e. photorealistic) and / or authentic (i.e. portray known people, events, etc. and which seem very convincing). The ability of synthetic media to appear even more real and genuine is rapidly expanding. A 2024 study from the [University of Waterloo](#) found that a large number of participants (39%) struggled to correctly identify synthetic media versus real photographs of people and that many participants overestimated their own ability to spot the fakes.¹⁶

15 How AI is helping revitalise indigenous languages. Retrieved from: <https://www.itu.int/hub/2022/08/ai-indigenous-languages-maori-te-reo/>

16 Real Person or Deepfake? Can You Tell? Retrieved from <https://neurosciencenews.com/real-person-or-deepfake-can-you-tell/>

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The continued development of genAI tools able to produce realistic synthetic media does truly offer educators some promising opportunities for student learning. For example, teachers could use these genAI tools to:


- Create engaging and interactive learning materials, such as virtual simulations and educational videos that can enhance students’ understanding of complex concepts,
- Create personalized learning experiences by generating customized content tailored to individual student needs and interests,
- Work with students to explore digital storytelling, multimedia projects and other creative endeavors that foster critical thinking as well as digital citizenship and media literacy skills.

For students, these types of experiences, skills and knowledge will continue to grow in importance as AI will be a central component to future career growth across many different industries.¹⁷ Analyzing and understanding synthetic media can help encourage students to think critically about authenticity, bias and manipulation.


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Deepfakes are a specific type of synthetic media that use genAI to manipulate or replace existing content with fabricated or altered material. For example, deepfake technology can be used to superimpose someone’s face onto another person’s body in a digital image or video, making it look like they are saying or doing something they never actually did. Examples of deepfakes being used by students to bully, harass and intimidate other students are becoming more frequent, including recent examples in [Florida](#), [New Jersey](#), [California](#), and [Washington](#).

These synthetic media technologies raise concerns because they can be used to create highly realistic and convincing fake content that is becoming more difficult to distinguish from real media. According to [a report by the Department of Homeland Security](#), the increasing sophistication of deepfake technologies poses a growing threat, including the potential for identity theft, fraud and the spread of disinformation. There is a growing need to raise awareness in our schools about the related potential dangers of misinformation, harassment, bullying and the importance of teaching all school staff and students about digital citizenship and media literacy, including methods for trying to determine if certain media are synthetic (fake) or not.


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School district leaders can help staff and students alike by prioritizing the understanding of the risks posed by deepfakes and other synthetic media, which include potential risks of [harassment, intimidation, bullying and cyberbullying as defined in Oregon’s ORS 339.351](#). More resources are becoming available regularly around this topic, one good option available from AI for Education is their [Classroom Guide on Uncovering Deepfakes](#).

School district policies, guidance and student codes of conduct designed to address the use and misuse of genAI tools will want to include clear definitions and prohibitions of the creation and dissemination of deepfakes and other synthetic media designed with the intention to harm or harass others. These efforts should include mechanisms for reporting such incidents, as [mandated by ORS 339.356](#), which requires schools to have a uniform procedure for reporting and investigating acts of harassment, intimidation, bullying and cyberbullying.

Additionally, school district leaders will need to be aware that there is a growing number of deepfake cases where the media (e.g. video, images, audio, etc.) is being characterized as [“child sexual abuse material”](#)

17 Navigating the Future of Work: Perspectives on Automation, AI and Economic Prosperity. Retrieved from <https://shapingwork.mit.edu/research/navigating-the-future-of-work-perspectives-on-automation-ai-and-economic-prosperity/>

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or CSAM. Currently at the time of the release of this guidance, there are a number of state and federal legislative initiatives to specifically combat deepfakes and CSAM, including The Biden Administration [Executive](#). A number of states have current legislation attempting to move forward, which address this specific issue, including [Pennsylvania which successfully passed their legislation into law](#), as well as federal efforts such as [H.R.5586 – The DEEPFAKES Accountability Act](#) among others. In lieu of successful federal efforts that specifically address the issues around deepfakes, or Oregon specific legislation addressing the same issue, district leadership need to understand that there are existing [federal laws criminalizing the creation and possession of CSAM](#), which have been and will continue to be used to prosecute potential offenders. In May, 2024 The Federal Bureau of Investigation (FBI) [recently addressed this specific issue of AI-generated CSAM](#) stating, “Put simply, CSAM generated by AI is still CSAM and we will hold accountable those who exploit AI to create obscene, abusive and increasingly photorealistic images of children.”¹⁸

District leadership should work with legal counsel and law enforcement to address policy concerns and all potential incidents related to deepfakes and / or CSAM.



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Specific recommendations for school districts include:

- ★ Examining district policies about how permission is obtained and how media (audio, video and digital photographs) of staff, students and other community members is used for posting online through district websites and social media.
- ★ Policy makers will want to have clarity and understanding regarding the determination of jurisdiction for how and when a school can investigate cases of potential technology misuse. This includes the basic understanding of whether the incident occurred inside or outside of school hours, whether it was on district equipment and what impact the post potentially had on the school community.
- ★ Consulting with organizations that have expertise in harassment, intimidation, bullying and cyberbullying, as well as local law enforcement (as appropriate), when developing district plans and policies that relate to artificial intelligence, synthetic media, deepfakes and school safety. Incorporating risks associated with deepfakes, online exploitation and grooming into existing threat assessment efforts.
- ★ Ensuring district policies relating to harassment, intimidation, bullying and cyberbullying as required by [ORS 339.356](#) include procedures and consequences relating to incidents involving deepfakes of school staff, students and/or their families or caregivers.
- ★ Implement training for all school staff which focuses on the identification of synthetic media and deepfakes and how to respond appropriately according to district policy and reporting requirements, including details for appropriate reporting when potential incidents occur. Encourage staff to be vigilant in their ongoing monitoring. Because this technology is changing rapidly, training for staff will be needed on a regular and ongoing basis.
- ★ Implement regularly occurring learning opportunities for students of all grade levels that emphasize responsible creation and consumption of synthetic media and the risks and ethical implications involved. This should be a part of a larger body of digital ethics and media literacy learning being offered to all students. Lessons may include:
 - Connecting to student mental health and well-being, incorporating Oregon’s [Transformative Social and Emotional \(TSEL\) framework and standards](#) whenever possible
 - Identifying steps to help recognize common signs of deepfakes

¹⁸ Man Arrested for Producing, Distributing, and Possessing AI-Generated Images of Minors Engaged in Sexually Explicit Conduct. Retrieved from: <https://www.justice.gov/opa/pr/man-arrested-producing-distributing-and-possessing-ai-generated-images-minors-engaged#:~:text=%E2%80%9CToday’s%20announcement%20sends%20a%20clear,generated%20child%20sexual%20abuse%20material.%E2%80%9D>

- Understanding the potential impact synthetic media and deepfakes can have on misinforming society
- Reviewing of student codes of conduct, potential consequences for misuse, privacy violations, expectations around bullying and harassment
- Teaching of how students are to report incidents of misuse, bullying and harassment to school staff
- Promoting of the use of the Safe Oregon tip line safeoregon.com (ORS 339.329).

If you would like to make sure you are kept up on the latest genAI guidance information from the Oregon Department of Education, please visit our [Digital Learning page](#), where you can also sign up for our quarterly [Digital Learning newsletter](#). If you have any specific questions, please reach out to our digital learning team with any questions or for further assistance: ODE.DigitalLearning@ode.oregon.gov

Be sure to also check out:

Resources To Support The Development Of Policies And Protocols For The Use Of Generative AI In K-12 Classrooms

[Developing Policy and Protocols for the use of Generative AI in K-12 Classrooms](#): This document serves as a worksheet style resource for school and district leaders when considering the use of AI in schools. The document highlights policies from across Oregon, the nation and internationally and provides district leaders a genAI-specific policy and protocol development planning tool.

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