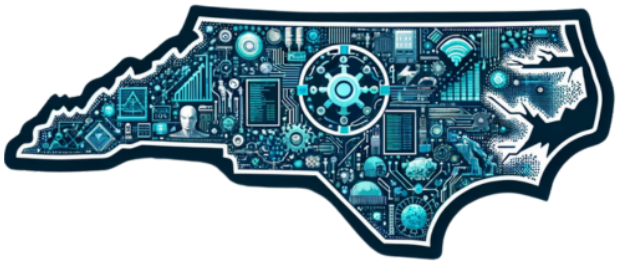


North Carolina Generative AI Implementation Recommendations and Considerations for PK-13 Public Schools

Publication Date 1/16/24

Always use this official short link for the most recent version!

https://go.ncdpi.gov/AI_Guidelines

North Carolina Department of PUBLIC INSTRUCTION

Direct questions about this document to vera.cubero@dpi.nc.gov or ashley.mcbride@dpi.nc.gov
This is a living document and will be updated as needed. Last update 11/27/2024

Navigation

The document outline is available by clicking the 'tabs and outlines' icon in the upper left corner of this Google Document. This outline serves as a navigable table of contents.

Version History

Because AI is an emerging technology and is changing rapidly, as are laws and rules governing its use, this is a living document and it will be updated as needed to reflect changes that take place in this very fluid environment. There are many exciting use cases on the horizon, and as new use cases are evaluated and found safe and effective for use in education, we will add them to this document.
The 'Version History' table below will include details of all updates and changes so that users can see at a glance what updates have been made.
Note that the last update will appear at the bottom of each page for your reference.

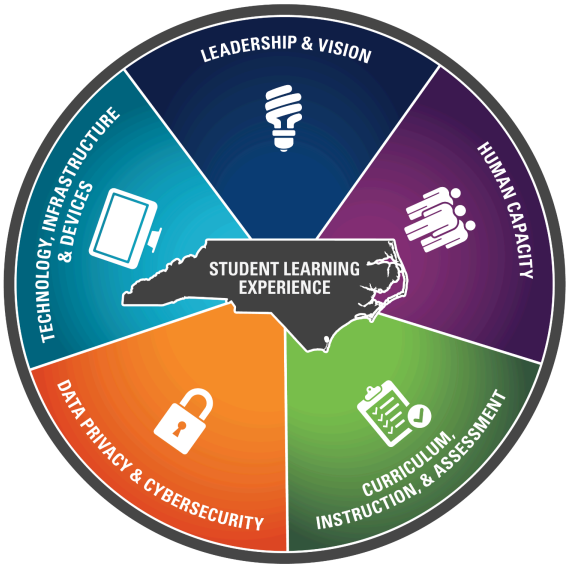
Date	Version	Changes and Updates
1/16/2024	24.01	Original publication
1/28/24	24.02	• Minor technical edits/corrections • Added Version History page p. 2 • Added example prompts p. 20 • Reorganized AI Literacy Recommendations by Grade Span and added new recommendations p. 17 • Added new resources to Appendix p. 33
2/18/2024	24.03	• Technical corrections
3/4/2024	24.04	• Added Student Facing AI Tools p. 19
3/5/24	24.05	• Added AI Resistant, AI Assisted, AI Partnered Assignments p. 29
3/20/24	24.06	• Updated Student-Facing Tools paragraph p.18; • Removed Student Facing AI Tools graphic (was on p. 19) for updates
4/11/24	24.07	• Added more guidance on Student Facing Tools p. 19 in light of new student-facing built-for-education models
4/28/24	24.08	• Added resources- New Teach AI Policy, National Ed Tech Plan 2024 • Updated AI Assessment Scale to AI to 'Student AI Integration: 0 to Infinity' p. 25
8/5/24	24.09	• Added links to editable Procurement/ Evaluation Tools p.11 • Clarified guidance around student-facing AI use by grade span p. 17 • Added link to 0 to Infinity GPT to p. 26 • Updates to AI for Accessibility based on recent developments p. 32

Date	Version	Changes and Updates
		● Added guidance around deep fakes and cyberbullying p.33
11/15/24	24.10	● Update: Gemini Teen now available p. 22 ● Updated EVERY framework Graphic p. 27 ● Additions to Accessibility: p.35 ● New Resources Added to the Appendix ○ AI Foundations for Educators Course added for educators Common Sense Media ○ AI Parent Guide by Common Sense Media ○ Avoiding Discriminatory Use of AI by US Dept. of Ed Office of Civil Rights
11/27/24	24.11	Changed from PDF to Google Doc for improved accessibility. Added long description links for all text-heavy images for screen reader compatibility Replaced 'Table of Contents' with 'Navigation' Updated Job market statistics p. 4 Added Traditional to Transformational Learning p. 31

About this Resource

These generative AI implementation recommendations and considerations have been created as a way to share information and resources to help direct responsible implementation of generative AI tools and guide AI Literacy in North Carolina Public Schools.

These guidelines have been organized around the five focus areas of the North Carolina Digital Learning Plan, which guides digital teaching and learning for North Carolina public schools. The Digital Learning Plan encourages the safe use of innovative technology to prepare students for future school and work to improve student outcomes and support the appropriate use of technology to advance learning.
This document is organized around the five focus areas of the NC Digital Learning Plan as seen in this graphic.



The Office of Digital Teaching and Learning, housed within the North Carolina Department of Public Instruction(NCDPI), supports educators in using generative AI safely to improve student learning. If you need assistance with implementing generative AI into your district or school, please reach out to your regional Digital Teaching and Learning Consultant or Innovative Learning Catalyst.

All regional DTL consultants' and Innovative Learning Catalysts' contact information, as well as a wealth of other information, may be found on the DTL Hub webpage.

Acknowledgements:
This document was developed by the NCDPI AI Guidelines Committee, which is a collaboration between several different Offices within NCDPI and includes the following members:

Vera Cubero. (Lead Contributor). Education Consultant II; Office of Digital Teaching and Learning
Dr. Ashley McBride.(Contributor). Section Chief; Digital Learning Initiative
Diane Dulaney.(Contributor). Director, Office of Data, Reporting and Privacy
Eli Hamrick IV. (Contributor).Secondary Computer Science, IT, and Technology Education Consultant
Timothy Wease.(Contributor). PSU* IT Security Specialist, Cybersecurity Section
Dr. Vanessa Wrenn.(Contributor). Chief Information Officer; Technology Services and Digital Learning
Josh Barton.(Reviewer). State Consultant for Assistive Technology; Office of Exceptional Children
Donna Murray. (Reviewer). Digital Accessibility Specialist- IT Procurement, Accessibility, and Textbooks.

Introduction

Artificial intelligence (AI) has been a part of education for years, working behind the scenes to analyze data, help personalize instruction in online tutoring tools, etc but the introduction of generative AI has brought AI to the forefront of conversations about the future of education since the November 2022 release of ChatGPT made generative AI available to the public. This release, followed by many other generative AI tools, has created a boom of interest in how these tools may potentially transform education as we know it, as well as concerns about their misuse.
In simple terms, Generative AI tools are artificial intelligence tools that generate text, images, audio, video, and code. When presented with a natural language prompt by the user, the model then predicts the next word or pixel based on its training data and the context provided in the user's prompt, resulting in an original output each time.
The recent proliferation of generative AI has been remarkable in its unprecedented pace, which has been more rapid than any other technological innovation in history. In fact, several technologists anticipate that we will see more technological innovation in the next ten years than the past one hundred years, and the trajectory of innovation in generative AI appears to support that statement.

The acceptance and use of generative AI tools is inevitable. Businesses and institutions of higher learning will expect our students to have skills in working with generative AI, so the ways in which public schools address generative AI has serious implications for the future of education and for today's students. Our schools need to be positioned to fully implement AI Literacy training into all curriculum areas so that all of our students have the opportunities to learn to work with the technology before graduation. The urgency for training our students is emphasized by the recent Microsoft study in May of 2024 which found that 75% of knowledge workers are now using AI for their work, a 46% increase over just six months prior. The report also found that 66% of leaders say they wouldn't hire someone without AI skills, and 71% say they'd rather hire less experienced candidates with AI skills, than more experienced candidates without them. ("AI at Work is Here. Now Comes the Hard Part," Microsoft, May 8, 2024).

AI Literacy's importance expands beyond the future job market, however. Our students today will live the remainder of their lives in a world in which AI is an increasingly more prominent part of all aspects of their daily lives, and in which it will be very difficult to discern between human-generated and AI-generated content. They will need AI Literacy and enhanced critical thinking skills to discern whether the text, images, audio, and video they encounter is human or AI-generated and make responsible, safe, legal, and ethical decisions about the media they consume, share, and create and guidance from caring adults about how to safely interact with generative AI. Preparing our students for the future is a crucial step in strengthening our communities. AI Literacy is not just technical; it also involves digital literacy, internet safety, critical thinking, communication, collaboration, and a lot of ethics. As educators, we hold the incredible opportunity not only to ensure our students are ready for the future but to ensure they help create a better future.

In light of these facts, NCDPI encourages public school units to responsibly embrace AI and incorporate AI Literacy for all staff and students.

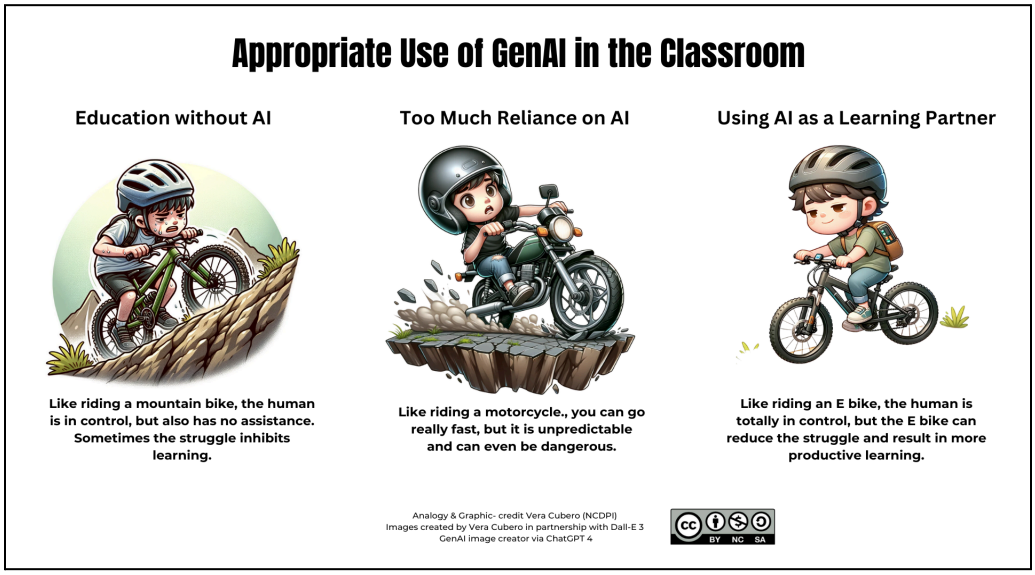
> "AI tools are increasingly prevalent in students' current education experience and in their future professional environments, so empowering learners to understand these technologies is essential. The power of AI tools for education, community engagement and deeper learning will continue to drive innovation and policy. The North Carolina Department of Public Instruction (NCDPI) advocates for the responsible integration of AI technologies in education, aiming to cultivate an educational environment that empowers each individual to reach their full potential and cultivates a lasting passion for continuous learning."
>
> Dr. Vanessa Wrenn, Chief Information Officer; NC Department of Public Instruction

Leadership and Vision

Approach to Generative AI

TeachAI, in the Teach AI Toolkit points out that "Attempting to enforce broad bans on AI is a futile effort that widens the digital divide between students with independent access to AI on personal devices and students dependent on school or community resources. Closing the digital divide in an age of AI still begins with internet connectivity, device availability, and basic digital literacy." Public schools are the best hope for closing the digital divide by ensuring equal opportunity to learn about and with generative AI for all students to prepare them to be competitive in the current and future job market. However, it is important to ensure that AI is implemented responsibly by all stakeholders to ensure safety and privacy, and responsible ethical use.

The US Dept. of Education's "Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations" included an analogy that suggests generative AI and other AI tools should provide a technology-enhanced future more like an electric bike and less like a robot vacuum. While robot vacuums do the user's job without human involvement or oversight, when using an e-bike the human is both fully aware and fully in control, but the user's burden is lessened and their effort is multiplied by a complementary technological enhancement. To further expand on this analogy for educational applications of generative AI, the graphic below compares the use of generative AI to three different types of bikes. This analogy demonstrates that without AI, some students' struggles will inhibit learning, like a mountain bike; while with too much reliance on and lack of understanding of AI is unpredictable and can even be harmful like a motorcycle. Ideally, AI would be used like an E bike, with the human in control. This analogy demonstrates using AI as a learning partner, to help reduce struggles, support individual needs, and result in more productive learning, but always with human oversight and control.



Access the image https://go.ncdpi.gov/AI_in_Education-3Bikes
Click this link for Long Description of Three Bikes Analogy Image

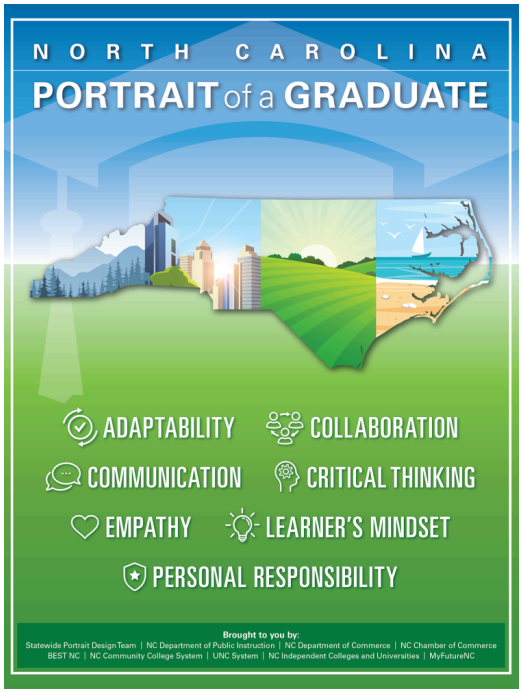
10 Top Skills from Future of Jobs Report & NC Portrait of a Graduate

The World Economic Forum's Future of Jobs Report studies a vast data set from global companies each year to make predictions on the future of work for the next five years in the future.

In their 2023 report, the 10 top skills that will be the most important for students to possess in order to be poised for success in the near future align remarkably well with the 7 durable skills that are highlighted in North Carolina's Portrait of a Graduate.

While they may use different terms, many of the same human skills are highlighted in both are synonymous, such as 'curiosity and lifelong learning' and 'Learner's Mindset'.

Click this link for Long Description of Image: World Economic Forum Top 10 Skill Priorities for 2027



Click this link for Long Description of Image: North Carolina Portrait of a Graduate 7 Durable Skills

In a future in which many things can be completed faster and perhaps better by Artificial Intelligence, companies will value and seek after the durable, transferable, and very human skills that are the focus of the North Carolina Portrait of the Graduate: adaptability, collaboration, communication, critical thinking, empathy, learner's mindset, and personal responsibility. These are skills that can not be replicated by AI, and they will be highly valued.

In addition to these durable human skills, students will need to be AI Literate and able to effectively work with AI as a partner. To truly prepare students for the world they will graduate into, whether they graduate in 2024 or 2034, all these durable skills and AI Literacy should be infused into all grade levels and all curriculum areas.

This document aims to help education leaders adapt to these new realities, implement generative AI responsibly in their schools, and provide guidance for infusing AI Literacy into all grade levels and curriculum areas.

Responsible Implementation

Generative AI, while not perfect, is a powerful tool that can be used by educators and students alike to expand their own abilities. If implemented thoughtfully and responsibly, Generative AI has the potential to transform teaching and learning in profound ways such as:

- Assisting both teachers and students in managing their workload more efficiently through the automation of routine administrative tasks. This support enables teachers to concentrate more on engaging directly with students, resulting in improved learning outcomes.
- Offering additional learning support to students outside of regular school hours, including tutoring and resource assistance. This is particularly beneficial for students lacking access to educational resources or assistance at home.
- Enabling teachers to customize learning experiences and develop lessons and materials specifically designed for individual student needs.
- Adapting teaching methods to suit different learning preferences and providing focused help where needed, reducing gaps in educational achievement by analyzing student performance data.
- Enhancing accessibility for underrepresented groups in education, including providing translation tools for students who speak multiple languages, voice-to-text and text-to-voice options for students with physical challenges or learning disabilities, and planning tools for those requiring assistance in executive functioning.

The responsible implementation of generative AI into NC K12 schools can help close the digital divide, reducing disparities that currently exist, and creating educational environments that are more inclusive. Additionally, responsible implementation will prepare students for a future in which AI is sure to be integral to all aspects of their lives. However, ignoring generative AI or not implementing it responsibly and equitably, can have the opposite effect, increasing the disparities that put many students at a disadvantage and increasing the digital divide.

Many educators fear that generative AI can provide misinformation or can become a method for cheating on assignments. As AI becomes more commonplace in all aspects of life, it is imperative that educators adapt to this new reality and rethink current attitudes about plagiarism and cheating. Teachers should educate students about the responsible use of generative AI, promoting the values of honesty, critical thinking, and originality in academic endeavors, ensuring that generative AI is always used to enhance, not replace human creativity and intelligence.

Responsible generative AI implementation, thorough oversight, and educational awareness that includes AI Literacy for all users including all students is essential. More guidance on AI Literacy is in the Human Capacity section of this document. Implementing rigorous quality checks and validation processes when using generative AI-powered educational tools ensures that the information provided is accurate, reliable, free from bias and that it aligns with educational objectives.

AI Implementation Roadmap for North Carolina's Public Schools

The suggested roadmap for the responsible implementation of generative AI tools in North Carolina's Public Schools was adapted from AI for Education's 'AI Roadmap for K12 Schools'.

1. **Establish a Foundation**
   - Host an introductory meeting & training for district & school leaders, board, student leaders & other key decision makers
   - Create a cross functional team & develop detailed PSU-wide AI guidelines to guide the responsible implementation of AI into public schools. Include leaders, teachers, students, & community members
   - Review current EdTech providers deploying generative AI to vet their safety, privacy, reliability, and efficacy, to determine if they are appropriate to be used for your school, and which users they will be open to based on their Terms of Service and school or district policies

2. **Develop Your Staff**
   - Ensure successful implementation, targeted ongoing, job-embedded professional development for educators on generative AI including its impact, effective use, capabilities, limitations, concerns & responsible generative AI use should be provided for all staff
   - Share PSU AI guidelines draft for feedback; work with teachers on what the guidelines mean for their classroom
   - Support teachers in updating their syllabi and/or classroom policies to include AI integrity guidelines that align with PSU guidelines
   - Work with teachers to help them rethink plagiarism and academic integrity in the AI Age and support them in shifting pedagogical approaches to support future ready learning in the Age of AI.

3. **Educate Students & Community**
   - Share AI guidelines at school-wide events including parents and guardians to build common understanding
   - Teachers review guidelines in each classroom along with syllabi & examples of appropriate & inappropriate student use
   - Implement generative AI training to upskill students and ensure they are prepared to mitigate any biases, inaccuracies or issues that may arise and utilize generative AI effectively as a learning partner
   - Provide content reviews and ongoing opportunities for training and learning to teachers and the school community

4. **Assess and Progress**
   - Create a plan for constant review & reevaluation of academic guidelines in light of AI evolution and advances
   - Evaluate new AI tools for appropriateness to launch pilot programs
   - Continuous updating & training across school community including sharing exemplars & opportunity to express concerns
   - Elevate best practices for generative AI implementation from across community & partner

PSU Generative AI Guidelines

To ensure equity of access and responsible use of generative AI by all stakeholders, it is recommended to develop district-wide guidelines that detail the acceptable and responsible use of generative AI. Many districts are choosing to adapt current acceptable use or academic integrity policies to specifically include generative AI now to provide much needed timely guidance, rather than drafting new policies at this time. Some plan to develop full policies at a later date. It is recommended to note in any policy or guidelines that they may need to be adapted as AI is changing rapidly.

In addition to adapting or creating guidelines and or policies, PSUs should work to build a common understanding and common language. Following the creation and dissemination of district-wide guidance, a comprehensive AI Literacy training plan should be developed to ensure that all users are trained specifically in the responsible, safe, and ethical use of generative AI. Staff should receive training first with guided practice followed by a practice period of at least 4-6 weeks to gain adequate understanding and competency and to express and discuss any concerns or issues in using generative AI tools before generalizing use with students.

Generative AI guidelines/policies as well as any Data Sharing Agreements should be carefully evaluated when making decisions about which tools to allow for students. As with any digital tool, Public School Units should follow the terms of service, including appropriate age limits and seeking parental consent if required. It is recommended to consult with the technology director and, if needed, legal counsel, in evaluating the terms of service.

Most Large Language Models such as ChatGPT, Microsoft CoPilot, and Perplexity are currently prohibited for ages under 13 per their terms of service, but are allowed for ages 13 and over with varying parental/guardian permission requirements. If your PSU decides to utilize a tool with students that requires parent/guardian permission, or if you decide to require parent/guardian permission for other tools, you may choose to customize this Example AI Permission Form.

In some cases, it may be appropriate to include AI tool permissions in other technology policies. Regardless of whether an AI permission form is deemed necessary by the PSU, all staff and student users as well as all parent/guardians should be made aware of the school or PSU's generative AI guidelines, including any academic integrity or acceptable use guidelines that reference the use and disclosure of generative AI and plagiarism. These guidelines should also be signed by both students and parents. You may reference this spreadsheet for a comparison of LLM models.

Built-for-education models:
Some school and district leaders may be hesitant to allow tools such as ChatGPT for students even if they are 13 or older due to privacy concerns, but built-for-education models are becoming more readily available and may provide a safer way to allow students to learn with AI.
NCDPI does not endorse any company or product, but will provide examples below for reference.

- Khan Academy's Khanmigo (khanacademy.org/khan-labs), a personal assistant for teachers and a personal tutor for students.
- Schoolai.com allows teachers to create student-facing AI-enabled assignments and chatbots for which students only need to enter a code to join.
- Magic School magicschool.ai introduced Magic School Student in March of 2024.

Evaluating Generative AI Ed Tech Tools

Credit: Adapted from AI for Education's "Top 6 Questions for Schools to Ask Generative AI Edtech Companies"

AI Evaluation Tools:

- AI Evaluation Tool- Created by NC AI Collaborative members, Marty Sharpe, David Blattner, Daven Hunsicker, Orhan Kul, Melody Lam, Dane Rickett, Casey Rimmer, Susan Rodgers, & Dale Rush
- Force Copy of EdTech Evaluation Tool from EdTech Center @ World Education Workforce EdTech Tools (also based on AI for Education "Top 6 Questions…)

AI Capabilities and Limitations

Generative AI is a new technology with extensive limitations.

- What controls are in place to identify and lower hallucinations?
- Are responses accompanied by links to reliable sources to verify the information?
- Does the tool include an easy way to share the AI Chat so teachers can monitor student use for school work?

Mitigating Bias

It's important that the tools we use do not cause harm to our students or teachers.

- What steps have been or are being taken to identify and mitigate biases?
- How are fair and unbiased outputs supported?
- How can users report instances of bias if they encounter them in AI responses?

Student Privacy and Ethical Data Use

Protecting student data privacy and ensuring ethical use of data is a top priority for our school.

- What policies and safeguards are in place to address privacy of student data?

Human Oversight and Quality Control

Our educators need to validate and trust AI-generated content before use and ensure there is always a human in the loop.

- What human oversight and quality control measures are used?
- How is feedback from teachers/students being collected and actioned?

Evidence of Impact

We need evidence that your AI tool will improve learning outcomes for our student population and/or effectively support our teachers.

- Are there any examples, metrics and/or case studies of positive impact in similar settings?

Accessibility and Inclusive Design

Our school needs to accommodate diverse learners and varying technical skills among staff.

- How does the tool ensure accessibility and usability for all our students and staff?

- How can these tools be used to provide additional support and personalization for students with IEPs, 504s, Multilingual Learner (ML) economically disadvantaged students, marginalized student groups and others?

Cybersecurity

How can we be sure we are minimizing any potential risks to our networks and our users?

- What security practices are you implementing to protect our user and organizational data?
- How do your security practices meet or exceed applicable PSU, State, and Federal requirements including the new NC Third Party Data Integration requirements.

Developing Generative AI Guidelines at Your PSU

Adapted from AI for Education 'Drafting a Generative AI Policy at Your School'"
https://www.aiforeducation.io/ai-resources/drafting-a-genai-academic-policy

Guiding Questions

- How are students using generative AI? How are teachers?
- What was the impact of the release of ChatGPT and other generative AI tools on your school?
- What are your biggest concerns about generative AI this year?
- What are the major ethical concerns your school has about GenAI?
- How can you adapt your current academic integrity policy to include GenAI?
- How can the use of generative AI tools help students with IEP, 504, language barriers, and other learning needs?

Key Steps

- Create a common understanding of Generative AI for all stakeholders through AI literacy.
- Design a clear set of guidelines that work for both students and teachers.
- Partner with stakeholders, including students, to develop and socialize the policy.
- Identify that the policy is a work in progress.
- Provide examples of the policy in stakeholder-specific language.

What to Include

- Appropriate Use of generative AI Tools
    - Identify what types of assignments and assessments can be AI-assisted with teacher approval and which must be completed without GenAI support
    - Provide examples of inappropriate use cases and appropriate use cases.
- Tracking and Citing generative AI
    - Provide guidelines on how students and teachers should track and cite their use of GenAI for their school work/practice
    - Provide examples of proper AI disclosure statements and citations in the correct format
- Data Privacy and Security
    - Clearly define what student, teacher, and school personally identifiable information (PII) includes.
    - Remind all users that PII is off-limits to generative AI tools (including uploading or pasting in of data into genAI models as well as typing it in a chat)
    - Provide a refresher for educators of student data privacy & FERPA
    - Add references to deep-fake images, audio, and video, including deep fake nudes or explicit content to students, faculty, or staff in the existing policies on cyber bullying/ bullying.(see p. 32)

Developing Generative AI Guidelines at Your PSU

Adapted from AI for Education 'Guide to Developing an AI Policy For Your School'
https://www.aiforeducation.io/ai-resources/ai-policy-guide-school

Common Issues to Consider

- Educators should only use generative AI for formative evaluation and the educator should always be in the loop, reading all student work and AI-generated comments.
    - Grading with generative AI tools can be unreliable due to inaccuracies or 'hallucinations' and implicit bias in generative AI tools.
- Generative AI detectors are not reliable.
    - They often create false positives, penalizing non-native speakers and creative writing styles.
    - They often create false negatives for skillful AI prompters who know how to fool the AI.
- Generative AI tools may make up incorrect information, a phenomenon known as 'hallucination'. Users must be trained to verify all data, facts, quotes, etc.
- All users need explicit training on protecting data privacy, including reminders of what constitutes Personally Identifiable Information (PII).

Strategies for Introducing the Policy at the…

Faculty	School	Class
Kick-off Assembly	Open House or Parent Meeting	Personal Scenarios
Faculty Meetings; PLC Meetings	Interactive Presentation	Teach, model, discuss and reinforce responsible use
Case Studies, Debates	AI Literacy Week	Case Studies, Debates
Policy Exploration Workshops	Teach, model, discuss and reinforce acceptable responsible AI Use by Staff and Students including examples of appropriate vs inappropriate use	Teach, model, discuss and reinforce acceptable responsible AI Use by Staff and Students including examples of appropriate vs inappropriate use
Peer Educators	Build common language around AI by teaching & posting graphics such as CRAFT & EVERY framework, AI Acceptable Use Assessment Scale etc in classrooms	Build common language around AI by teaching & posting graphics such as CRAFT & EVERY framework, AI Acceptable Use Assessment Scale etc in classrooms

Example Generative AI Amendment to School Integrity Policy

Adapted from AI for Education 'Guide to Developing an AI Policy For Your School'
https://www.aiforeducation.io/ai-resources/ai-policy-guide-school

Generative Artificial Intelligence (generative AI) tools like ChatGPT are a significant technological advancement that has the potential to support your learning. But with any new technology, there are significant limitations and risks associated with its use, misuse, and overuse.
To support appropriate, responsible use of generative AI in your learning, these steps should be taken when determining if, how, and when to use generative AI tools. If these steps are not followed, your use of generative AI tools will be considered an academic integrity violation.

Step 1
Check with your teacher to find out if the assignment, homework, project, or assessment can be completed with the support of a generative AI tool, and if so, the level of generative AI support that is allowed (School and district leaders may wish to utilize or modify the Generative AI Acceptable Use Scale here to build common understanding and language about accepted level of use).
Step 2
If generative AI is allowed and used, share your conversations with the tool by adding the share link to the chat on your final product or works cited page so that your teacher can evaluate your learning process and how you partnered with the generative AI model, as well as your final product.
Step 3
Disclose all use of AI tools according to your school's policy. This may include disclosure statements or formal citations, as directed by the teacher for the particular assignment.

Examples of Appropriate AI Use	Examples of Inappropriate AI Use
Explain topic in a way that I can understand	Using AI without permission from teacher
Help me brainstorm & explore ideas	Completing an entire assignment, homework, or assessment with AI
Help me study for an upcoming assessment	Not reviewing & verifying AI response for hallucinations or inaccuracies
Provide feedback on my work for areas of improvement	Not revising the AI output so that it reflects your human voice and style
Provide appropriate disclosure of all AI use	Not being transparent about & disclosing or citing your work with generative AI

The TeachAI toolkit also has a very detailed guide to Creating Effective Responsible Use policies with ideas of what to avoid and what to include, as well as templates for elementary school, middle school, and high school.

Human Capacity

Generative AI Training and AI Literacy

Because generative AI is already transforming the way we live, and will continue to have an even greater impact in the future, it is imperative that primary and secondary schools in every district and school develop and implement an AI Literacy program that provides all staff and students with the understanding of this powerful innovative new technology.

The Artificial Intelligence (AI) Literacy Act, recent bipartisan legislation that seeks to promote AI literacy in US schools, emphasizes a balanced focus on the foundational principles, applications, limitations and ethical implications of generative AI. Its goal is to amend the Digital Equity Act to codify AI Literacy as a component of digital literacy, which indeed it is. This AI Literacy act defines AI literacy as "understanding of basic AI principles and applications, the skills to recognize when AI is employed, and awareness of its limits." The importance of AI literacy is stressed in this act; "AI literacy empowers individuals to be informed decision makers and benefits us all by preparing individuals to meaningfully engage in conversations about responsible and ethical development and use of artificial intelligence. Having an AI-literate population will help promote national security and contribute to our economic competitiveness."

The miraculous speed of AI innovation in the past year has made it clear that AI is not going away and will affect all areas of our lives, as well as all people. AI Literacy is digital literacy in the 21st century and beyond. It is imperative that all schools and districts ensure all staff and students are AI literate, and that AI literacy is infused in all curriculum areas. After establishing and sharing district-wide guidelines, it is crucial to develop a comprehensive AI Literacy training strategy that involves training all staff and students to develop in the effective, ethical, and safe use of generative AI tools. Given the risks associated with irresponsible use, it is important to ensure comprehensive and consistent training for all users.

Staff members should receive training initially and should be provided adequate time to practice and attain proficiency with the tools before extending their use to students. The North Carolina Department of Public Instruction strongly advocates for educators to undergo professional development focused on both utilizing generative AI professionally and guiding students to effectively & ethically use generative AI as a learning partner. This training should equip educators with the necessary knowledge to effectively employ generative AI in their work while ensuring its safe and responsible integration into classroom instruction. It is also important to note that one time training will not suffice because generative AI is a rapidly evolving field. AI Literacy training for teachers should be ongoing and job-embedded with opportunities for application into individual instructional practice.

It is also recommended that staff members have the opportunity to discuss their experiences, ask questions, express concerns, and provide feedback on the AI Implementation plan before they are responsible for integrating generative AI use with age-appropriate student groups. We have provided a list of high-quality, free professional development for education leaders, teachers and students in the appendix of this document. Please see the Appendix for these recommendations.

AI Literacy for All

"All students can and should learn ABOUT AI before they are ready to learn WITH AI."

AI is already ubiquitous. One can't go online or on social media without encountering AI-generated content, even if it is not always recognized as AI-generated. Our students' levels of AI literacy will have profound impacts on work, education, the economy and all aspects of their lives in an AI-enhanced world in which humans interact with AI increasingly more each day and in which the old mantra 'seeing is believing' no longer holds true.

So, what is AI Literacy? The TeachAI Toolkit offers a more detailed definition of AI Literacy:

> "AI literacy refers to the knowledge, skills, and attitudes associated with how artificial intelligence works, including its principles, concepts, and applications, as well as how to use artificial intelligence, such as its limitations, implications, and ethical considerations."

Digital Promise also offers a concise, yet thorough definition::

> "AI literacy includes the knowledge and skills that enable humans to critically understand, evaluate, and use AI systems and tools to safely and ethically participate in an increasingly digital world."

While specific guidelines for AI Literacy, especially in younger grades that are not allowed to use many of the generative AI tools are not yet developed, the good news is that many of the standards that NC has already adopted such as Computer Science and the NC Digital Learning Standards for Students (ISTE Standards) will help support AI Literacy, by developing computational thinking, technological skills, and supporting the durable skills in NC Portrait of a Graduate (Adaptability, Collaboration, Communication, Critical Thinking, Empathy, Learner's Mindset, Personal Responsibility), that will be highly valued in the future. AI Literacy will, however, require an increased emphasis on media literacy, critical thinking, and ethics. Students will need to be able to work alongside AI tools, think critically about media, and make ethical decisions about the use of AI tools and dissemination of content. Infusing AI literacy in all curriculum will ensure that our students are poised to succeed.

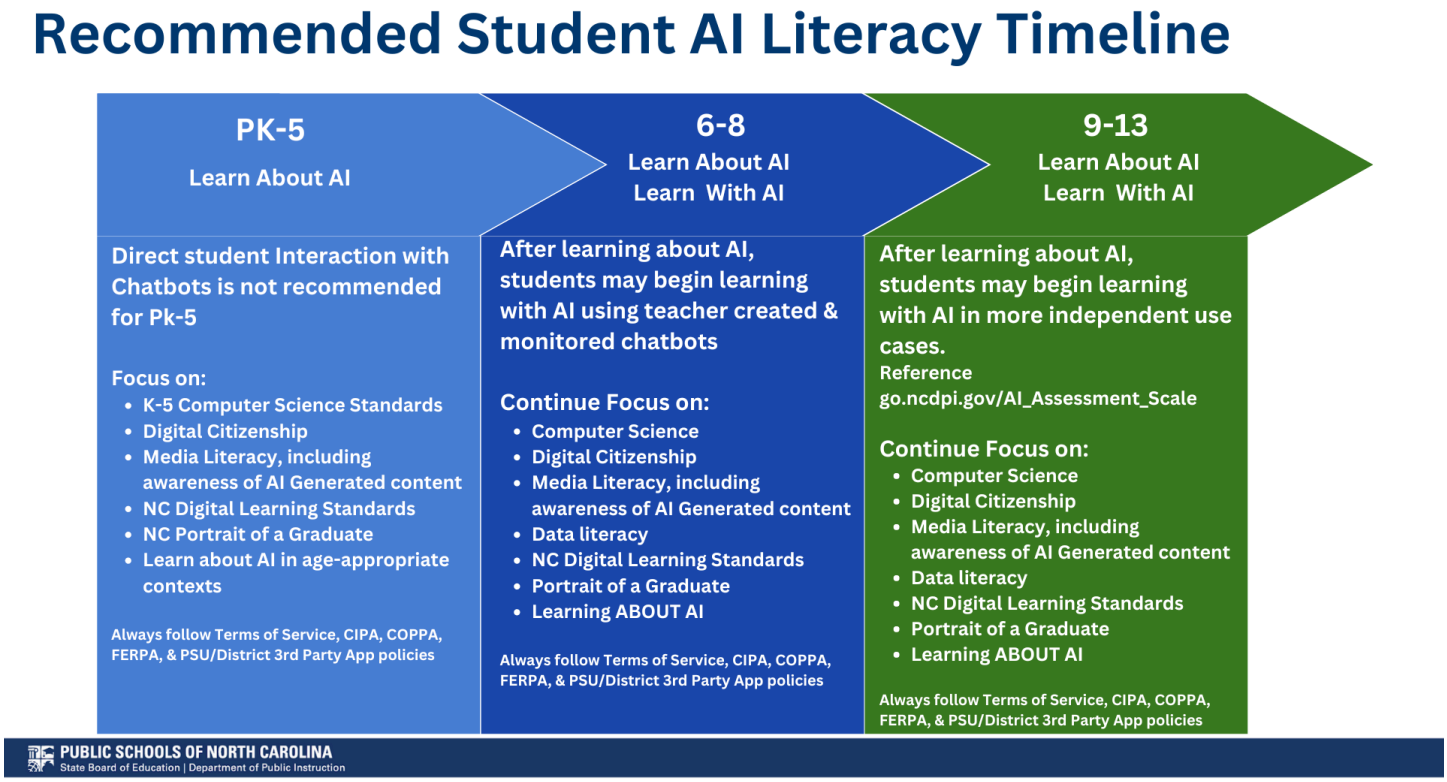
To ensure responsible, safe, and ethical implementation of generative AI, staff and students who are of the age to use generative AI should be trained on safe, effective and responsible use including the following key aspects, each of which is covered in more detail in the 'Curriculum and Assessment' section of this document.

- Alignment with PSU and school-based guidelines/policies governing generative AI usage.
- Building a basic understanding of generative AI: how it works, a balanced view of its power to transform learning and the concerns and limitations of current models.
- How AI impacts education, including potential future implications on the job market.
- Effective communicating with the Large Language models (prompting).
- Safe, Ethical Use and Disclosure of Use and PSU and school guidelines.
- AI as a Learning Partner to support curriculum standards, enhance human creativity & critical thinking.

AI Literacy Recommendations by Grade Span

Students can increase skills to boost AI Literacy and learn ABOUT AI even if they can't yet learn WITH AI. In addition to the grade level standards in the NC K12 Computer Standards and the NC Digital Learning Standards for each grade span, below are some suggestions for ways AI Literacy can be enhanced in each grade span:

All students should have basic AI literacy before interacting with AI chatbots, even those created and monitored by teachers on platforms such as SchoolAI, Magic School Student, Fobizz, and Mizou. Students should have an understanding of what AI is and is not, how it works, and the concerns and limitations of the technology. Students should be cognitively ready to critically evaluate all AI outputs for inaccuracies and bias as well. Because our youngest learners are not developmentally ready to completely understand this technology, we do not recommend the use of AI chatbots in early elementary school, even those that are created and monitored by the teacher. However, students of all ages can begin developing AI literacy.



Download the Recommended Student AI Literacy Timeline Image File: https://go.ncdpi.gov/AI-Literacy-Timeline
Click this link for Long Description of Images: Recommended Student AI Literacy Timeline

AI Literacy Recommendations by Grade Span

Elementary grades: Learn ABOUT AI

- Direct student interaction with AI chatbots, even those created and monitored by teachers, is not recommended for elementary students because our youngest students are not cognitively ready to completely understand AI or critically evaluate content for inaccuracy and bias. Even the safer AI tools run on ChatGPT, which is improving, still is prone to bias and hallucinations.
- Increased focus on media literacy, including recognition that images and video may be manipulated by AI, to become more critical consumers of all kinds of media
- Allow students to provide input into colors, shapes, events, etc in teacher/AI generated stories & images using educational tools such as Adobe Express and Canva
- Basic coding to build computational thinking using code.org activities and using robots such as BeeBots, Sphero etc
- Online and offline problem-solving activities to build computational skills
- AI awareness discussions- simple conversations about how AI is part of their daily lives, such as voice assistants, GPS etc.
- Creating of creative content utilizing education specific creativity tools such as the Generative AI Image tools in Canva Edu (Terms of Service) or Adobe Express (Student Privacy)

Middle grades: Learn ABOUT AI; Learn WITH AI

Learn about AI

- 5 min critical thinking activity (no AI use required) AI Snapshots for Gr. 7-8 by aiedu.org
- Common Sense Media AI Literacy Lessons G. 6-12
- Code.org 'How AI Works' Video Series'
- Common Sense Media AI Literacy Lessons G. 6-12
- AI for Education Uncovering Deep Fakes Lesson & Discussion Questions
- Analyze images in Google Image search by using 'About this image' (3 dots→ about this image; to reveal info about it)
- Recognize other methods of identifying current AI generated images by visual analysis for distortions, looking for watermarks, file name, etc (noting AI image generators are improving so won't always be able to distinguish from human generated)
- Middle school students may also benefit from awareness of potentially unsafe and irresponsible uses of AI in social media applications such as SnapChat MyAI and even in the video games they play

Learn about and with AI (All ages, with permission)

- View, evaluate, and create AI generated content using generative image tools in creative apps such as Canva and Adobe Express to enhance AI Literacy, creativity, collaboration and critical thinking.
- Interact with teacher-created AI assignments on tools such as Schoolai.com ,Magicschool Student, Fobizz, etc that do not require student account creation, can be overseen by teachers, and are FERPA, COPPA compliant
- Always carefully review privacy policies and ensure district approval and compliance with parent/guardian permissions for any AI tool(Ex. SchoolAI Privacy Policy)

High school: Learn ABOUT AI; Learn WITH AI

Learn about AI- no AI required!

- 5 min critical thinking AI Snapshots for Gr. 9-12 by aiedu.org
- Common Sense Media AI Literacy Lessons G. 6-12
- AI for Education Uncovering Deep Fakes Lesson & Discussion Questions https://www.aiforeducation.io/ai-resources/uncovering-deepfakes
- Code.org "How AI Works' Video Series' Analyze AI Images to see if they can pick out the AI images (this-person-does-not-exist.com/en, https://www.whichisai.com/ , https://realoraigame.com/game.html)
- Analyze images from viral social media posts etc using Google Image search using 'About this image'
- In corner of image, click the 3 dots→ about this image to see metadata, history, etc
- Test & evaluate the accuracy of an AI image detection tool such as aiornot.com
- View, evaluate, and create AI generated content in educational apps such as Canva and Adobe Express to enhance AI Literacy, creativity, collaboration and critical thinking
- Gain awareness of the potentially unsafe and irresponsible uses of AI such as in social media applications such as SnapChat MyAI and even in the video games they play
- Interact with teacher created AI assignments on tools such as Schoolai.com, MagicSchool Student, Fobizz, etc that do not require student account creation, can be overseen by teachers. Always ensure any tools are approved by the district and are FERPA, COPPA compliant (ex. School AI Privacy Policy)

Learn about and with AI (13+ Requires use of AI)

- 13+ may begin utilizing LLM tools such as ChatGPT with district/school & parental consent (after training)
- AI for Education Lessons 1-4 for Gr. 9-12
- Teacher-guided prompting to help them learn how to use genAI tools responsibly as a learning partner to expand their own creativity and critical thinking abilities.
- Maintain a prompt library to evaluate prompts used
- Maintaining Prompting Libraries
- Participating in 'Prompt-athon' competitions
- Advanced- Building AI agents or Bots to perform specific tasks

Student-Facing Generative AI Tools

Many students are too young to use Large Language Models or LLMs such as ChatGPT, Microsoft CoPilot, or Perplexity per their terms of service, which requires users to be 13 (with varying requirements for parental permission). Additionally, none of the well-known LLM models were built specifically for education or have not been transparent about their training data, so many education leaders continue to have valid concerns about utilizing them with students. A growing number of 'safer' educational tools are being developed for K12 education, with a strong focus on data privacy. Built for education tools such as School AI, Magic School Student, Fobizz, and Mizou may provide a safer, guided experience to introduce students to utilizing generative AI chatbots that are guided and monitored by the teacher, and that are more respective of data privacy laws. However, it is important to understand that these tools are built on top of the frontier models such as ChatGPT and there is always the potential for students to encounter bias or harmful content, so they also should be used with caution and under teacher supervision with appropriate ages and the output should always be critically evaluated for accuracy and bias.

Update: In November of 2024Google Gemini announced a teen version of their large language model genAI chatbot for Google for Education domains that is accessible to ages 13 & up (per district administrative decision). This is the first of the frontier models to create an LLM specifically for the K12 education space. Gemini on Google for Education domains has added data protection, chats are not reviewed by human reviewers or otherwise used to improve AI models and the Gemini app will be a core service in the coming weeks for Education Standard and Plus users, including teens. Gemini Teen received an overall risk assessment of 'low risk' by Common Sense Media, with the comment "Google's Gemini, which is currently the only major platform to create a specific experience for teens, includes additional CSAM (child sexual abuse material) safeguards, content policies, and in-product experiences that help teens understand the limitations of generative AI." NCDPI urges all public schools to ensure they created and shared clear, detailed guidance for the use of artificial intelligence with all stakeholders and that students have basic AI Literacy BEFORE they begin to learn with AI..

Any student or teacher should have basic AI literacy including understanding how the models work, what generative AI is and isn't, and an understanding of the concerns and limitations of generative AI before using any AI models, including these built-for-education models. Introductory AI literacy training should explain the potential for bias to be infused in the model from the training data, their potential for providing inaccuracies or 'hallucinations confidently, and how to protect their own privacy by never inputting any PII in any of the models whether by typing or pasting it into the context window or uploading images or other files that may contain PII.

To ensure students are not anthropomorphising or attributing human-like characteristics to generative AI, it is also imperative that any student interacting with an AI chatbot is clearly informed that it is a chatbot and not a human. This is especially important when interacting with chatbots in role play scenarios that are taking on the role of historical figures, authors or other people.

These built-for-education models generally do not require student accounts and therefore may be allowed for ages under 13 in the terms of service, but each tool's terms of service should be carefully evaluated as well as parental/guardian notification. Generally, because generative AI is such a hot button issue, it is recommended to default to parental/guardian notification and consent, but each school or district will need to evaluate and make those choices with the advice of leadership and legal counsel or school board policies.

While the terms of service on some of these built for education models may not forbid users under the age of 13, as noted above, it is also important for users of generative AI to have a basic level of understanding and AI literacy including the benefits and the concerns, including how to be critical and evaluate all AI-generated content for inaccuracies and bias. Our youngest students do not have the cognitive development to fully comprehend what AI is, which should be a prerequisite for the use of any AI tool.

Curriculum, Instruction, and Assessment

Large Language Models (LLMs)

ChatGPT is an example of a Large Language Model (LLM), a type of generative artificial intelligence program designed to understand and generate human-like text. It is similar to having a very knowledgeable assistant who has read a vast amount of books and articles and can provide just-in-time assistance. This assistant can answer questions, write stories, and even help with homework, by using the information it has learned. Some other well-known LLM models are Bing Chat, Google Gemini, Claude, & Perplexity. Just as you would review the work of a capable assistant, the human user must also review the work of the LLM and make adjustments as needed.

When used skillfully, LLMs can have significant positive impacts on teachers by drastically reducing the time that is required for tasks such as planning, creating content, assessing student work, and executing tasks such as emails and newsletters. This reduction in time on task can result in a better work life balance and improved job satisfaction.

In addition to saving teachers a lot of time, utilizing generative AI LLM models can also open a whole new world of ideas and creativity, which often revitalizes their passion for teaching. It can give them more control over the content they create, allowing them to personalize content for their teaching style and their students' distinct needs rather than appropriating generic content from text books or online sources. Perhaps most importantly, if used skillfully, these tools can allow educators more time to focus on the reasons they entered the profession; building relationships with students and targeting their individual needs.

For students, generative AI can act as a learning partner to give them just-in-time assistance and guidance based on their individual needs, helping to level the playing field for neurodivergent students, those with learning needs, those who are not native speakers, those from economically disadvantaged or other historically marginalized communities, and all students. Learning to work effectively with generative AI can also help prepare students for rewarding careers in their AI-rich future in which being able to work effectively with generative AI will be an expectation.

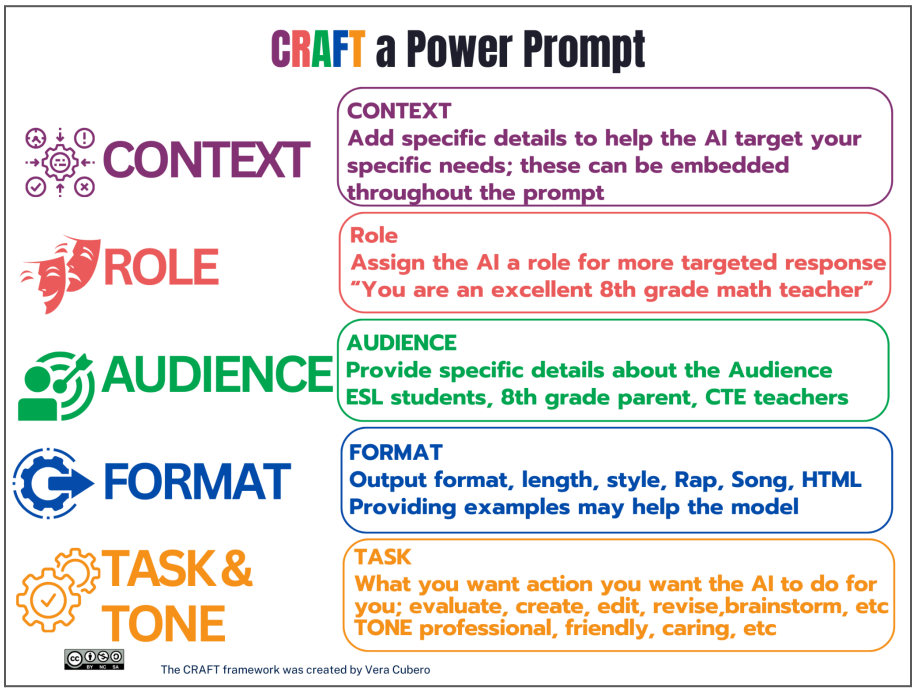
To ensure teachers and students have the skills to realize the tremendous positive impact that AI can have on education, educators need a basic understanding of how the models work. They should know that LLMs are different from search engines, and must be used differently for helpful results.

It is helpful to provide new users with a prompting framework that details how to effectively create a prompt to improve results. This will help ensure a positive introduction to LLMs and help ensure the users get the most efficient and effective results. One such framework is the CRAFT AI Prompting framework by Vera Cubero (NCDPI) This frameworks using an acronym for the word CRAFT as a simple reminder to help guide educators and students alike remember how to craft prompts that get the most targeted and helpful results from the chatbot.

Work Effectively with AI Models: The CRAFT Prompting Framework

This framework allows users to skip the learning curve and interact with the models in a way that will help them see helpful and targeted results quickly, resulting in more successful introductions to LLMs such as Chat GPT, Google Gemini, etc.

A brief explanation of this framework with several example prompts can be accessed at https://bit.ly/CraftPromptEdu.
The image below can be downloaded for printing as a poster by going to https://bit.ly/CRAFT-Poster.
Click this link for Long Description of The CRAFT Framework Image



Example Prompts Based on the CRAFT framework:
TEACHER Prompt:
You are an expert level 4th grade math teacher. Please create 10 word problems to help students practice standard NC.4.0A.I of the North Carolina Standard Course of Study Standard for 4th grade math (below).
Use a fun, engaging tone.
Include names and references from the game Minecraft to engage the students.
[SHIFT + ENTER for new line-->paste standard in prompt]
Example ChatGPT Conversation

STUDENT Prompt:
You are Harriet Tubman, the famous conductor from the Underground Railroad.. I am going to interview you and ask questions about your life and experiences to help me understand this time in history, the experience of slaves trying to reach freedom. As I ask a question, answer in the voice of Harriet Tubman.
Answer all questions with historical accuracy in language that an average 8th grade student can understand.
Answer only the question I ask each time. Do you understand?
Example ChatGPT Conversation

AI for Education Prompt Library

Additionally, educators and students alike would benefit from examining well-developed prompts such as those in the Prompt Library from AI for Education. This terrific resource provides many examples of well-designed and effective prompts along with suggestions for further personalizing the prompts. The prompts can be copied, pasted into a model and then edited to suit the user's needs.

Concerns & Limitations

In order to ensure a responsible implementation of generative AI in school settings, training should be balanced to ensure users understand the potential of the models to transform learning, but also to ensure they understand and mitigate possible issues and concerns with the models.

Data Privacy Concerns:
All users must be taught the importance of protecting data privacy when using generative AI tools. Users should never input Personally Identifiable Information or PII. into an AI tool (or anywhere else without careful consideration)!!! Student ID Numbers are PII. Be especially mindful of this when pasting data into the model or uploading any data that may contain PII.

Bias:
Because generative AI models are trained on the Internet, there is always the potential for inherent societal biases surrounding gender roles, race, religion, and politics.

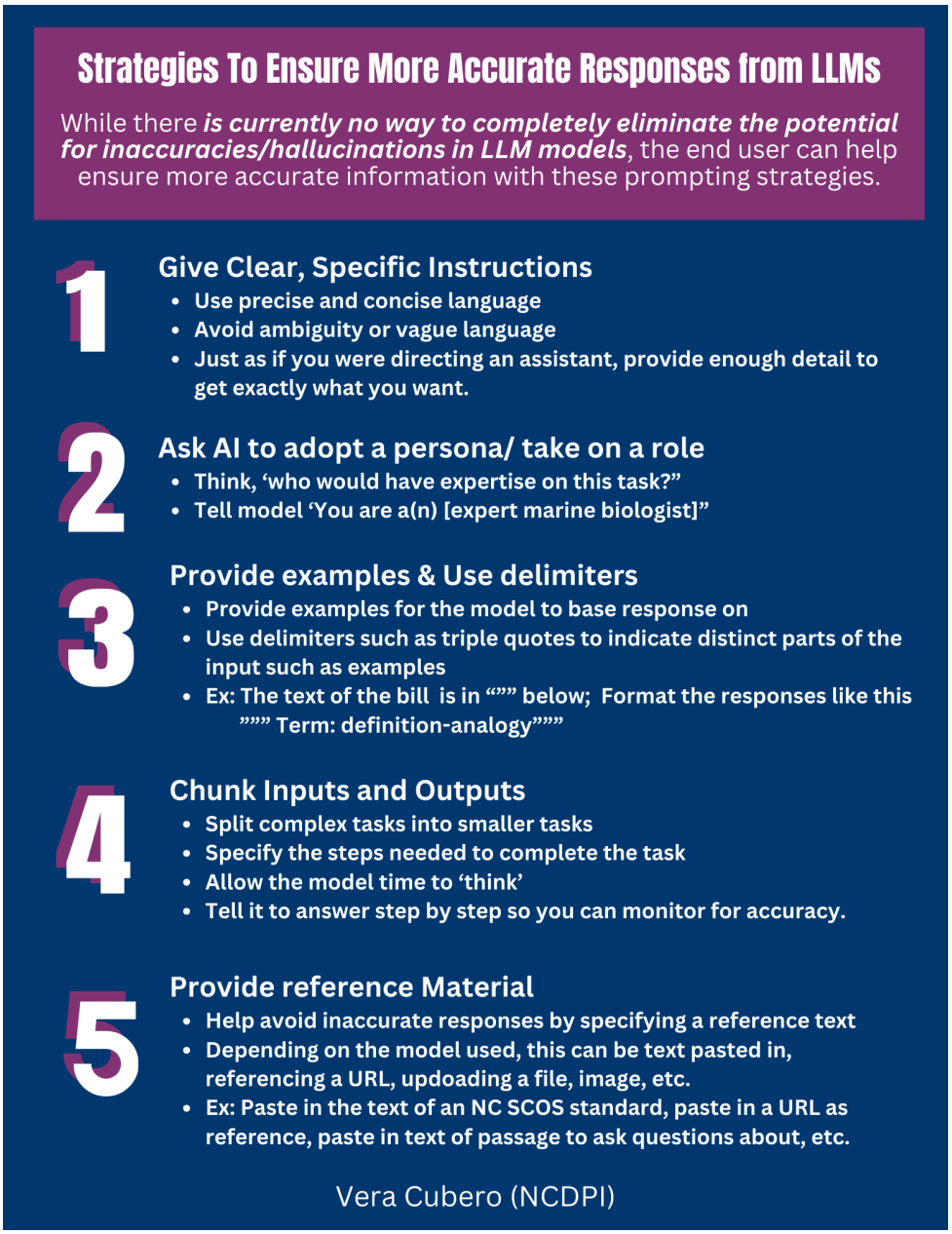
While AI companies are focused on fine tuning their models to ensure that they do not perpetuate stereotypes or biases, such biases are always possible because the training data set includes the entire Internet. Schools and districts must be prepared to mitigate potential issues that arise from bias within the use of AI. AI models have a built in evaluation (thumbs up/down) and an option to include a comment. If bias is suspected or detected, this is one way to report it to the company that produces the tool. Establishing clear methods of communicating concerns with AI systems deployed within their educational environments is also needed at the school or district level. Bias mitigation techniques should be included in AI Literacy training to educators and students including how to identify and address biases in AI-generated content at the school or district level.

Inaccuracies/'hallucinations':
Large Language Models like ChatGPT are not search engines and these models actually generate content by making predictions based on their training data and the user input or prompt. They do not search for and return content that already exists as search engines do. Because of this, LLMs have the potential of generating (predicting) content that is not factually correct, but sounds very plausible. This phenomenon is commonly referred to as 'hallucinations'. AI developers are constantly fine tuning their models to reduce hallucinations, but because of the way the models work, it may not be possible to eliminate them entirely, at least for some time. Therefore, it is essential that users understand this and are trained to verify all facts, quotes, statistics, and resources in AI responses using dependable online sources.

The most effective use of generative AI LLMs is by a user with knowledge of the subject matter, and who is therefore more likely to notice and question inaccuracies. It is especially important to verify data with reliable sources if the user is not a subject matter expert on the topic as they are much less likely to recognize inaccuracies if they do occur. Some LLM models provide links in their responses to make fact checking responses easier (such as Bing Chat & Perplexity) while Google Gemini has a built-in mechanism for the user to verify the information by clicking the G beneath a response.

Strategies to Ensure More Accurate Responses from LLMs

While there currently is no foolproof way to completely eliminate the possibility of generative AI models providing inaccurate information or hallucinations, there are prompting strategies that users can employ to reduce the likelihood of inaccuracies. The following handout outlines five strategies to ensure more accurate responses by LLMs.



You may download this as a poster by going to https://go.ncdpi.gov/AI_Strategies
Click this link for a Long Description of the Strategies to Ensure More Accurate Responses from LLMs Image

How to Use AI Responsibly EVERY Time

The EVERY framework provides an acronym to remind users of the steps needed to ensure ethical use of AI by staff and students alike, EVERY time AI is used. This framework was a collaboration between AI for Education (aiforeducation.io) and Vera Cubero (NCDPI).

To download a printable pdf of the EVERY framework, visit
https://www.aiforeducation.io/ai-resources/how-to-use-ai-responsibly-every-time (updated Sept. 10, 2024)
Click this link for Long Description of the How to Use AI Responsibly EVERY Time image

Disclosing AI Use or Citing Generative AI as a Source

Educators should lead by example and model transparency and academic honesty about their use of generative AI tools, and teach students to do the same. Because today's generative AI tools can not actually create content without some level of human participation and guidance, it is generally considered best practice to acknowledge the use or partnership with the AI tool when a formal citation is not required.
Because generative AI is so new, there will likely be further litigation surrounding AI and copyright. One issue that was decided on 8/18/2023 by the US District Court for the District of Columbia in a federal decision is that a work created entirely by artificial intelligence can not be copyrighted. Reference Thaler v Perlmutter, Case No 1:22-cv-01564 (D.D.C2022). Also, AI can not be considered the sole author or creator of a work.

If traditional citations are not required, but any form of AI assistance was used, it is recommended to include in the disclosure statement how AI was used (brainstorming, outlining, feedback, editing, etc). Disclosure statements can be included in an "AI Credits" section at the end of the work or within the text, beneath an image, etc as appropriate.
A link to AI chats can be shared on most major LLM platforms and this is a great way for teachers to see a student's learning process and how the student relied on or partnered with the AI to complete the work.

Example disclosure statements:

- "Created by John Doe with editing assistance from ChatGPT"
- "I used Google Gemini to help me brainstorm ideas for my project"
- "I used ChatGPT to help me organize my thoughts into a finished product"
- "Image created in partnership with Adobe Firefly. Prompt; 'create a cartoonish image of a bored frog on a lily pad, surrounded by cattails. 16:9 Make it bright and colorful so that young children would enjoy it.'

Formal Citations:
If a formal citation is expected, both the MLA and APA provide guidance on their websites for creating citations. Currently most online citation tools do not include AI in their options. You can ask your LLM to create citations, but as with anything else, the user will need to verify that the details and formatting is correct.

Traditional Citation Guidelines:

- MLA format - https://style.mla.org/citing-generative-ai/
- APA format - https://apastyle.apa.org/blog/how-to-cite-chatgpt

Example MLA Citation:
"For this activity, I want you to take on the role of the character Jonas from the novel The Giver....." prompt. ChatGPT, 24 May version, OpenAI, 8 June 2023, https://chat.openai.com/chat .

Example APA Citation:
OpenAI. (2023). ChatGPT (May 24 version) [Large language model].https://chat.openai.com/chat

Use Great Caution with AI Detectors

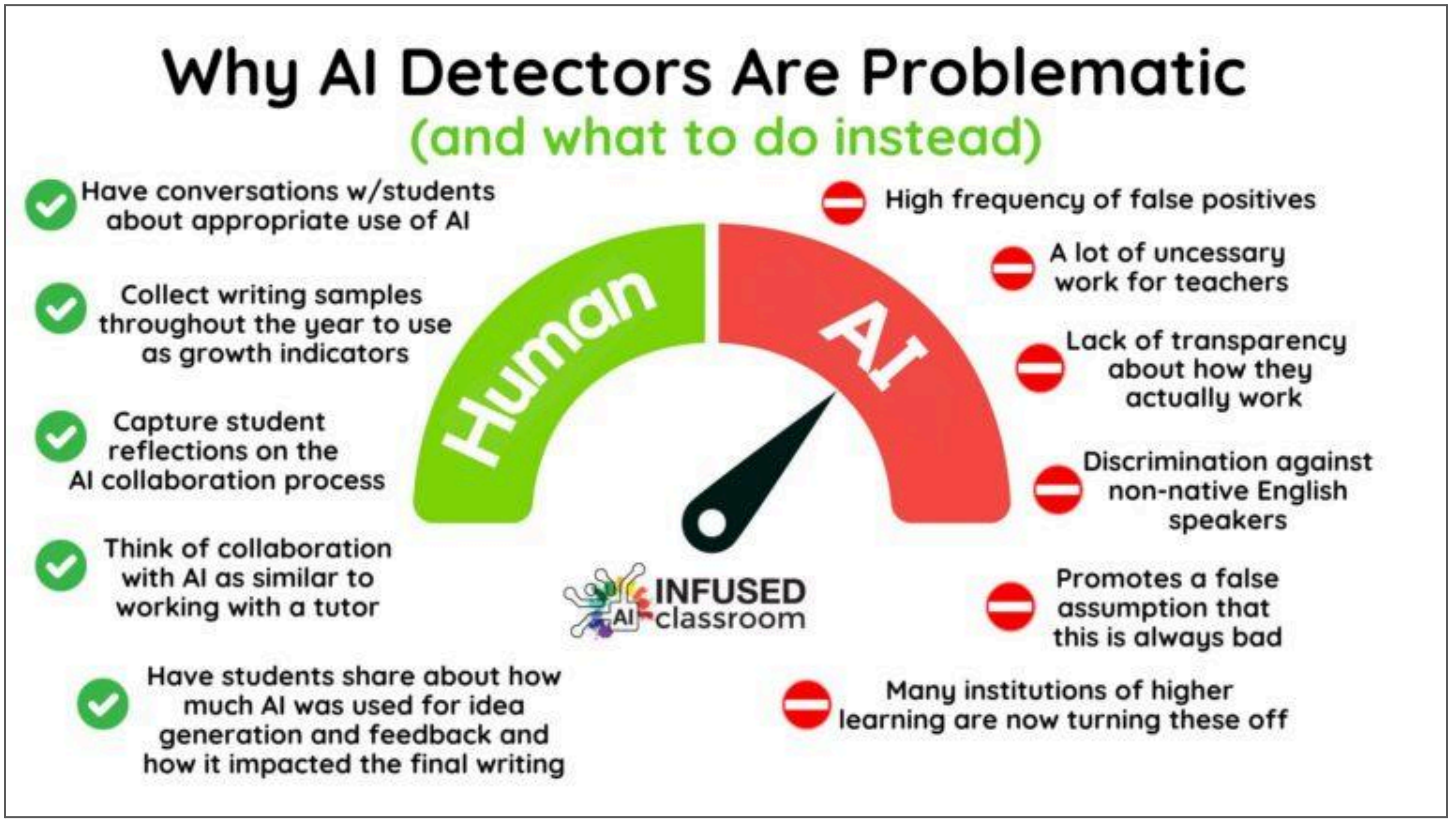
AI detectors have proven not to be dependable, therefore they should never be used as the only factor when determining if a student 'cheated'. Common issues with AI detectors are a high frequency of false positives for non native English speakers and creative writers as well as a high frequency of false negatives for students who are skilled at working with AI and are capable of fooling the detectors. If there is suspicion that a student depended on AI too heavily for an assignment, this should be viewed as a teachable moment to reinforce the appropriate partnership with AI tools rather than a 'gotcha' moment. Working with AI in many ways is the same as working with a tutor, asking a parent for assistance, or completing an assignment with a partner or a collaborative group. In the age of AI, it is important to focus on student reflection on the process of learning, rather than just the end product.

Educators should ensure proper communication about appropriate uses of AI on each assignment, referencing an AI Acceptable Use Scale such as the one provided on the previous page to clarify appropriate level of generative AI as this may vary from assignment to assignment and class to class.

This graphic by Holly Clark of The Infused Classroom, is an excellent visual aid to demonstrate why AI detectors are problematic and what to do instead.

Image credit: Use with permission from Holly Clark of The Infused Classroom, https://www.hollyclark.org/2023/09/22/why-ai-detectors-are-problematic-and-what-to-do-instead/

Click this link for Long Description of the Why AI Detectors Are Problematic Image



Teacher Use Cases of Generative AI

AI can be used by educators to support their daily work tasks and transform the student learning experience in a variety of ways that can help reduce the burden of teaching as well as improve educators' ability to personalize learning for their students, thus improving teaching and learning.

Many educators who skillfully use generative AI in their lesson planning have reported a renewed passion for their content because of generative AI's potential to help them develop engaging new lessons and activities that are personalized to their own teaching style, as well as student abilities and needs. Furthermore, using generative AI to automate routine, mundane tasks can free up time for teachers to focus on higher order thinking tasks, problem solving, collaboration, and making human connections with their students.

There are several areas in which AI can support teachers in both developing and delivering more effective and personalized lessons (this is not an exhaustive list- the possibilities are endless):

- **Brainstorming/Thought Partner:** Large Language Models like ChatGPT and Google Gemini have access to so much information and are fantastic to brainstorm and get fresh ideas. Teachers can utilize generative AI as a thought partner to bring new life into old lessons, brainstorm ideas for projects, labs, and assignments, solve educational problems of practice such as behavior issues, learning to better meet the needs of diverse learners, implementing new strategies, and just about any other issue they face in the classroom.
- **Content Creation Tools**: AI can assist teachers in creating engaging and interactive lesson materials, such as presentations, simulations, games, and more.
- **Efficient Assistant:** Being able to use Large Language Models for completing the mundane tasks such as emails, newsletters, creating rubrics etc frees up teachers to do more creative tasks, make connections with students, and improve their work life balance.
- **Personalization**: AI can help teachers create adapted learning content that meets a student's individual learning style, adjusting reading level, language, pace, explaining complex vocabulary, and clarifying the underlying tone of a text (semantic analysis) to name only a few of many possibilities that can save educators time in personalizing content to meet a variety of student needs.
- **Data-Driven Decision Making**: AI can provide teachers with real-time insights into student performance, allowing them to identify areas of strength and weakness and adjust their instruction accordingly.
- **Automated Grading and Feedback**: AI can automate the grading of quizzes and essays, freeing up teacher time for more personalized instruction and feedback.
- **Creative Assistant**: Use image generator tools such as Adobe Firefly, Canva, etc to create the images you need using plain language instead of searching for hours for them.

Educators will need professional development to adapt their instruction and assessments to help ensure responsible use of AI tools as well as to teach students the valuable skill of working alongside AI.

Traditional to Transformation Learning

Our education systems will need to adapt to the reality that generative AI is here to stay and is increasingly ubiquitous in all technology tools and applications. It is becoming more difficult NOT to use AI now than it is to use it because it is embedded in all our productivity apps, search engines, etc, in our phones and computers, and will soon be common in wearable devices as well. We simply cannot avoid AI and learning to work with it is a necessary job skill. To prepare every student for an unknown future—one that will surely include rapid advancements, unpredictable changes, and careers that do not yet exist—we must rethink traditional instructional practices and shift to transformational practices that focus on adaptability, collaboration, communication, critical thinking, learner's mindset, and personal responsibility- the 7 durable skills in the North Carolina Portrait of a Graduate.

This will require adapting pedagogical approaches and transitioning from the traditional teacher-centered classrooms that served our students well in the past to the student-centered, active learning classrooms that will serve our students well in the future. We recommend focusing on these four pedagogical shifts to move from traditional to transformational learning in the age of artificial intelligence.

4 Pedagogical Shifts from Traditional to Transformational Learning

High-stakes formative assessment	→	Frequent Formative Assessment
Teacher-centered instruction	→	Increased student agency
Lecture-based instruction	→	Project-based learning
One-time summative tests	→	Learning Portfolios

Frequent formative assessment strengthens the learner's mindset and personal responsibility by providing regular feedback loops that allow students to reflect on their progress and adjust their learning strategies.

Increased student agency develops adaptability and critical thinking as learners take ownership of their educational journey and make decisions about their learning pathways.

Project-based learning cultivates collaboration and communication skills by engaging students in complex, real-world challenges that require teamwork and clear articulation of ideas and solutions.

Learning portfolios foster critical thinking and personal responsibility by enabling students to curate evidence of their growth, reflect on their development, and demonstrate mastery of skills over time. An added and important benefit is that students can take their portfolios with them and use them for scholarship, college, and job applications.

Adapting Instruction in the Age of AI

In the not-too-distant future, it will be a common assumption that all writing from academic papers to news reports and emails may be written with AI. In light of this, it is perhaps shortsighted to automatically consider all use of AI as 'cheating'. Educators will need to rethink their ideas of what constitutes plagiarism and cheating in today's world, and adapt their teaching, assignments, and expectations to this new reality.

An AI Acceptable Use Scale is an important part of a school or PSU's generative AI adoption plan to help build common understanding, clear expectations, and common language around the use of AI by students. The scale should be referred to clarify what level, if any, is acceptable use of AI on a given task. It should be explicitly taught and posted in visible locations for reference.

The 0 to Infinity Continuum for Student AI Integration

The 0 to Infinity scale on page 35 below can help build the common understanding and language to ensure fair and equitable treatment of issues of suspected plagiarism or cheating with AI in the K12 setting. This scale reflects the potential of students empowered with AI to be creatives, critical thinkers, entrepreneurs, and problem solvers who may solve some of society's most difficult and complex issues.

For example, this writing prompt *"Write a paragraph explaining the effects of WWII on the United States."* would be very easy for a student to paste into an LLM and in a few seconds get a well-developed paragraph.

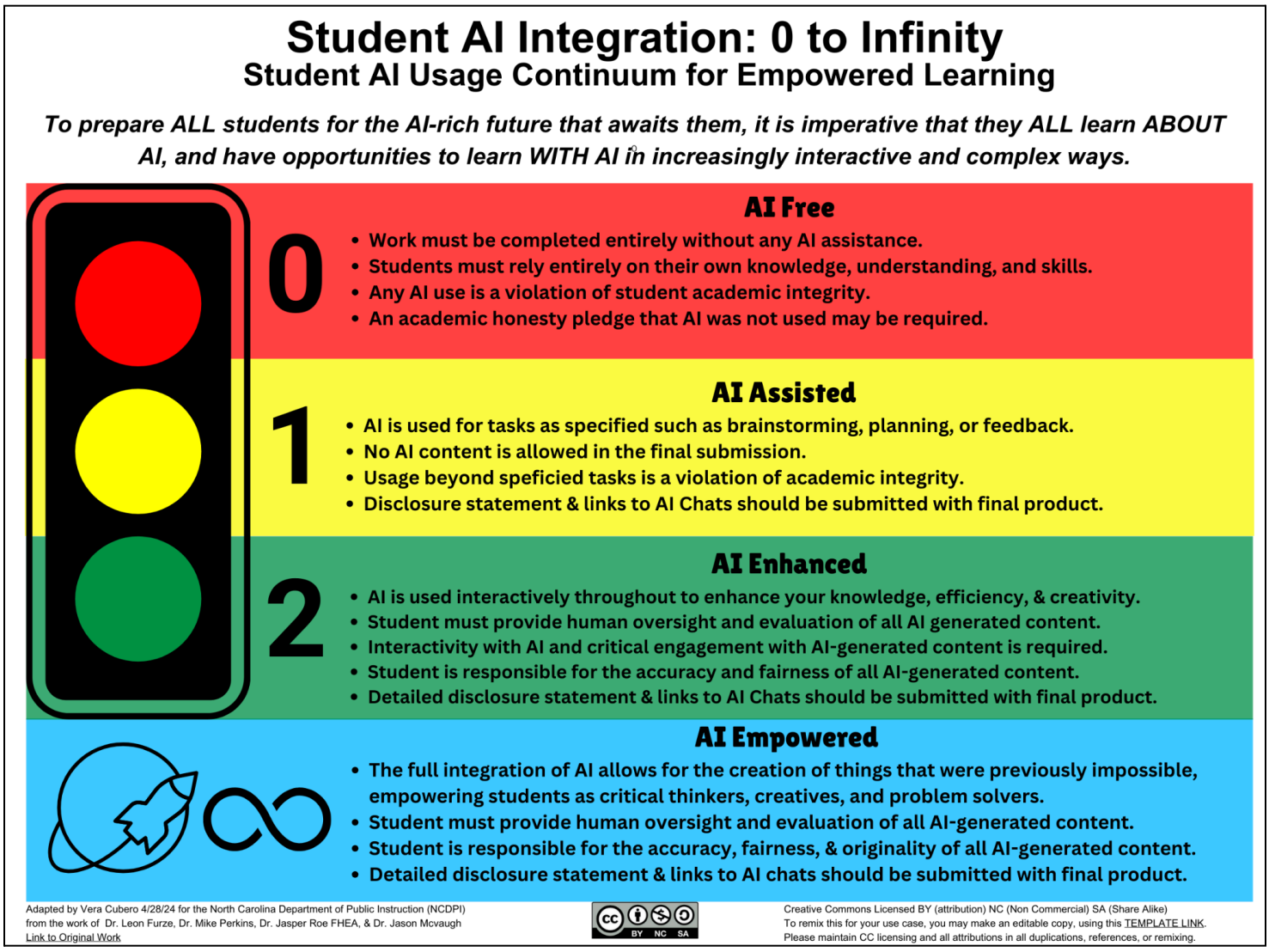
AI Free/ AI-Resistant Assignment:
A more AI resistant version of the assignment might be: "How might your life in America be different today if the Axis Powers had won WWII? Provide specific examples related to the activities in your everyday life."
This assignment requires students to connect to their own personal experiences, which makes it more difficult to compete with AI and also employs deeper critical thinking.
While there is no way to eliminate the possibility of students using AI in ways that are not aligned with teacher directions or responsible use policies, teachers can create assignments that are harder to complete with AI. Below are a few ways to make assignments that are AI Resistant:

- **Process over Product**: Require students to submit outlines, drafts, or notes taken during their research to demonstrate their work process; View document history in Google Docs, etc.
- **Incorporate Personal Experiences**: Design tasks that require students to relate personal anecdotes or experiences to the course material.
- **Classroom Interaction**: Engage students in classroom discussions and activities that require immediate, spontaneous participation such as Oral presentations, debates, discussions.
- **Multimedia or Creative Projects**: Assign projects that involve creating artistic representations of learning or multimedia content, such as podcasts or videos, related to course content.
- **Evaluative and Speculative Elements**: Encourage assignments that require evaluative thinking. Creativity, and self-reflection, which are more challenging for AI to replicate.

AI Assisted Assignments:
An AI assisted assignment may allow students to provide accommodations such as voice to text or text to voice, leveling or translating text to make it more accessible, explaining a concept in simpler terms, helping study for a test, and role playing to help understand literary or fictional characters. Additionally, students may use AI for specified tasks such as brainstorming, planning, organizing, and getting feedback, but with no AI-generated content in the final product. For assistance with the example assignment above, the student may ask the AI to help compile a list of policies and beliefs held by the Axis Powers and then evaluate that list against their own daily life activities to determine which activities or events may not have aligned with the policies and beliefs held by the Axis powers to help them write their essay. After writing the essay, they could potentially copy the essay into an LLM and ask for feedback and suggestions for improving their work.

AI Enhanced Assignments:
As student users mature and gain competence and skill in working responsible with AI tools, teachers may wish to allow opportunities for AI Enhanced assignments in which the student may incorporate the use of AI into their learning process in any way that is needed as long as they retain human oversight and are transparent about their level of use. This level of use is most similar to the way AI will be used in their future jobs.

AI Empowered Assignments:
The AI empowered level of the continuum represents the enormous potential of AI to enable humans to solve problems and create things that were previously not possible. Using the WWII example, students could use AI to create an immersive VR experience simulating key WWII decisions and their cascading effects, or develop an AI-powered analysis tool that processes vast amounts of historical data to identify previously undiscovered patterns in war strategy. The focus is on using AI to solve complex problems or create innovative solutions that transform how we understand and learn from historical events - going beyond traditional assignments to enable entirely new possibilities for learning and discovery.



To download click the image below or visit https://go.ncdpi.gov/AI_Assessment_Scale.
Click this link for Long Description of the Student AI Integration: 0 to Infinity Image

To help educators process how to create content along this continuum, we have created a “0 to Infinity GPT Assistant” that may be used for demonstration and training purposes in your PSU. https://go.ncdpi.gov/0toInfinityGPT.

Important Considerations: Providing Student Feedback Using Generative AI

Generative AI tools can reduce a lot of the time spent in assessing student work, which is one of the most time consuming tasks for most educators. Generative AI can save considerable time in evaluating student writing in addition to the other potential benefits below, but caution must also be used to ensure the human is always in the loop, ensuring equitable treatment of all student work.

AI has the potential to revolutionize assessment by:

- **Lending Objectivity**: Generative AI tools can lend objectivity to the assessment of student work.
- **Alleviating Writers' block**: Generative AI tools are a great starting point for formulating comments, helping teachers find words that reflect the tone and purpose they wish to convey.
- **Analyzing complex student responses**: AI algorithms can analyze student-drawn models and group them based on similarities, helping teachers understand student understanding of complex concepts like "rate of change."
- **Providing instant feedback:** AI can offer immediate feedback on complex skills like learning sign language or speaking a foreign language, even when a human instructor is unavailable.
- **Lightning teachers' workload**: AI assistants can grade simple aspects of student work, freeing up teachers' time to focus on more complex tasks like evaluating essays and projects.
- **Enhancing accessibility**: AI-powered learning technologies can provide verbal feedback to students, making learning more accessible for all students, including those with disabilities.
- **Embedding feedback into the learning process**: AI can provide real-time feedback to students while they are working on a problem, helping them identify errors and improve their understanding before they submit their work.

Considerations and Limitations of Using AI for Feedback/Grading:

However, it is imperative with today's generative AI tools that teachers use generative AI for assessment and grading with some specific guidelines in mind:

Formative Assessment Only: Today's Generative AI should be used only for formative assessment.

- Today's Large Language Models and other generative AI tools are new technology and not completely reliable, therefore should not be used to assign letter or number grades to student work.

Humans must always be in the loop to ensure fair and equitable treatment of student work.

- The teacher should always review student work and evaluate and edit as needed any AI generated comments before sharing with students.
- Teachers should understand the potential for 'hallucinations' and how they can mitigate this when using generative AI to evaluate student work.
- For example, LLMs are more likely to hallucinate if you ask for something that doesn't exist, such as asking it to 'identify all the grammatical errors in this passage'. If there are no grammatical errors, it may 'find' some anyway because you asked it to. Instead, asking it to 'evaluate the writing for grammatical usage' would be less likely to produce hallucinations.

Student Use of Generative AI

Generative AI has enormous potential to improve student learning outcomes and erase the discrepancies that now exist in access to education for economically disadvantaged students, students with learning disabilities, Multilingual Learner (ML), neurodivergent students as well as all other students. Below are a few examples of the ways generative AI can aid students in learning, and new developments are sure to continue to emerge as well.

Learning Partner & Personal Tutor:

- Generative AI tools can provide just-in-time, objective and targeted assistance, feedback and guidance to students.
- Generative AI can help explain difficult concepts, provide evaluation and feedback, help generate ideas, act as a thought partner, debate, partner, a character from fiction, history, a career, and more. The possibilities are endless.
- Adaptive learning platforms: Students can use AI-powered platforms that adjust the difficulty and pace of learning materials based on their individual performance. This ensures they are challenged but not overwhelmed.

Self-Directed Learning:

- AI-powered research assistants: Students can use AI assistants to find relevant information and resources for their research projects.
- Learning simulations: Students can participate in AI-powered simulations that allow them to explore complex concepts and practice applying their knowledge in a safe environment.
- AI-powered writing tools: Students can use AI tools to brainstorm ideas, check their own work for plagiarism, and improve their writing skills.

Creativity and Collaboration:

- Collaborative learning platforms: Students can use AI-powered platforms to collaborate with peers on projects, share ideas, and receive feedback from peers and teachers.
- Generative image generators such as Adobe Firefly, Adobe Express, Canva, and others provide students the ability to explore their creativity in new ways by using natural language input to create new works of art for self expression, illustrate their own writing, or demonstrate learning.

Accessibility Tools:

- Text-to-speech and speech-to-text tools: Students with disabilities can use AI tools to access learning materials and communicate more effectively. ChatGPT mobile apps now offer a conversation mode that provides much more engaging and natural interaction. This technology holds great promise for those with text disabilities or those who can type but do not have the ability to speak.
- Translation tools: Students who are learning English or another language can use AI tools to translate text and audio content. The ChatGPT mobile apps now have live translation capabilities, with the potential to provide real time translation for student newcomers and language learners.
- Vision capabilities: Generative AI tools such as ChatGPT now have vision capabilities, which hold great

promise for increasing independence for vision impaired individuals.

- With the advent of artificial intelligence (AI) capabilities such as computer vision, conversational ability, and live translation that is readily available via mobile apps, the potential to provide life-changing support for those with disabilities or challenges has increased immensely.
- A few examples include:
    a. AI tools also provide on-demand access to explanations and support. This is helpful not only to students with documented disabilities and 504 plans but also to students from lower socio-economic backgrounds as well as marginalized communities who may not have documented disabilities or accommodations.
    b. ChatGPT, Gemin, CoPilot, & Claude apps have vision capabilities that can assist with navigation as well as school work for students with vision impairments.
    c. ChatGPT, Gemini, MS CoPilot and other LLM apps have a conversational ability which is helpful for students with text disabilities, English language learners, and students with dexterity issues.
    d. ChatGPT mobile app can now work as a live translator, allowing for meaningful interaction between teachers and non-English speaking students or parents.
    e. Generative AI voice creation tools such as Eleven Labs can help deaf-mute or other individuals who have lost the ability to speak to create or recreate their voices.

Data Privacy and Cybersecurity

Data Privacy

FERPA defines the term personally identifiable information (PII) to include direct identifiers (such as a student's or other family member's name) and indirect identifiers (such as a student's date of birth, place of birth, or mother's maiden name).

LLM models such as ChatGPT utilize user input in the form of chats to continue training the models. Therefore it is imperative that users fully understand what PII is, and learn NOT to enter, paste, or upload any PII into the chat of any generative AI tool. All users should be reminded of what data is considered PII, and that it includes student ID numbers. Users should use caution in particular to avoid inadvertently copying or uploading PII into the model when evaluating student responses, analyzing data, or creating personalized content such as IEP goals, personalized learning plans, etc.

Cybersecurity

Conduct and review a security audit on the product/vendor to ensure they meet or exceed applicable security practices, PSU, State, and Federal requirements.

Understand how the product harvests data for training and continual learning. This is critical to help ensure sensitive data or contaminated data is not ingested.

Deep Fakes
With the advancements in AI technology making it easy to create images, video, and audio that can pass as real and recent events involving deep fake images, audio, and video, including deep fake pornographic content, all PSUs should consider amending current bullying & cyberbullying policy to specifically reference deep-fake images, audio, and video, including deep fake nudes or explicit content of students, faculty, or staff.

It is also strongly recommended to caution students and staff to be more conscious of protecting images, audio, and video content of themselves that could potentially be manipulated by a bad actor to create deep fake content.

As part of the PSU's AI Literacy plans, staff and students need to understand the emotional and reputational damage that can be caused as well as the legal implications of creating, possessing, or sharing such content. AI for Education has created a resource called Uncovering Deepfakes that is free and is a great tool to help both staff and students navigate this new technology safely and ethically.

Reviewing and Adapting Guidelines

School districts and schools must continuously review and adapt their AI guidelines to keep pace with the rapid evolution of AI technologies. This involves regular assessments of AI practices, potential risks, and emerging trends to maintain responsible and ethical integration. All PSUs engaging with AI technologies should regularly review the company's usage and privacy guidelines.

Usage: PSUs, schools, educators and students that are utilizing any type of AI tools adhere to specific usage requirements outlined by the tool's developer or provider. This includes complying with age restrictions, data usage practices, any restrictions, inclusivity, limitations, notifications, and any other relevant guidelines or restrictions. This should include awareness and procedures in place regarding, but not limited to following COPPA, CIPA, IDEA, FERPA, and section 504.

Relevant Policies in the US

FERPA - Family Educational Rights and Privacy Act: Protects the privacy of student education records & gives parents certain rights regarding student education records

- AI systems must protect the privacy of student education records and comply with parental consent requirements. Data must remain within the direct control of the educational institution.

COPPA - Children's Online Privacy Protection Act: Imposes requirements on websites and online services directed to children under 13 years of age, or that collect personal information from a child under 13.

- AI chatbots, personalized learning platforms, and other technologies collecting personal information and user data on children under 13 must require parental consent.

IDEA - Individuals with Disabilities Education Act: Ensures students with disabilities are provided with free appropriate education that is tailored to their individual needs.

- The use of AI as an instructional tool must be reasonable, appropriate, and individualized based on unique needs for students with disabilities.
- AI AI may provide options for expanding learning experiences through unique accommodations or as a supplement to assistive technology.
- Remember: The "I" in AI is not the same as the "I" in IDEA or IEP

CIPA - Children's Internet Protection Act: Requires schools and libraries that receive federal funds for Internet access or internal connections to adopt and enforce policies to protect minors from harmful content online.

- Schools must ensure AI content filters align with CIPA protections against harmful content.

Section 504 - A federal law designed to protect the rights of individuals with disabilities in programs that receive federal financial assistance from the US Department of Education.

- This section of the Rehabilitation Act applies to both physical and digital environments.
- Schools must ensure that their digital content and technologies, like AI, are accessible to students with disabilities.

Technology, Infrastructure, and Devices

Purchasing and Using AI Technologies:

When it comes to investing in technologies to support learning with and about Artificial Intelligence, it is important to ensure that the technology resources:

- **Are Age Appropriate for the User of the AI Technology:**
  - Pay special attention to age allowances of the technology to ensure compliance with federal, state, and local laws and policies as well as age limits and permission requirements in the terms of service for each application.
- **Comply with Regulations:**
  - Prioritize technologies that comply with federal, state, and local regulations regarding data privacy and cybersecurity in educational settings. Familiarize yourself with regulations like the Family Educational Rights and Privacy Act (FERPA) in the United States and similar laws in other regions.
- **Secure Access Controls**:
  - Implement secure access controls to ensure that only authorized individuals have access to sensitive student data. This includes usernames, passwords, and multifactor authentication methods to protect against unauthorized access.
- **Encrypt and Secure Transmission:**
  - Ensure that data, especially personally identifiable information (PII), is encrypted both in transit and at rest. This adds an extra layer of protection against data breaches or unauthorized interception.
- **Are Required to Undergo Regular Security Audits**:
  - Periodically conduct security audits and assessments to identify vulnerabilities in the technology infrastructure. This helps in proactively addressing potential security risks and ensuring a robust cybersecurity posture.
- **Meet Clear Data Usage Policies**:
  - Clearly communicate to students, parents, and educators how data collected by AI technologies will be used, stored, and shared. Establish transparent policies that align with best practices for data privacy in educational settings.
- **Meet Vendor Security Standards**:
  - If using third-party platforms or services, verify that the vendors adhere to stringent security standards. This includes evaluating their data protection policies, encryption practices, and overall commitment to cybersecurity.

Appendix: Free, High Quality Resources

Resources for K12 School Leaders:

- NCDPI DTL Team- 'Deep Dive: NCDPI Generative AI Implementation Recommendations…' Slide Deck: https://go.ncdpi.gov/DLE_DeepDiveAI
- US Dept. of Education Office of Educational Technology: Artificial Intelligence
- TeachAI Guidance for Schools Toolkit
- ISTE Artificial Intelligence in Education Resource Collection: https://iste.org/ai
- The White House Blueprint for an AI Bill of Rights
- Common Sense Media "AI and Our Kids: Common Sense Considerations and Guidance for Parents, Educators, and Policy Makers 2023"
- Common Sense Media AI Initiative: Product Reviews
- AI for Education Launch Pad Webinars and Resources aiforeducation.io
- Revealing an AI Literacy Framework Digital Promise
- TeachAI New Foundational Policy Ideas for AI in Education https://www.teachai.org/policy
- National Education Technology Plan 2024 https://tech.ed.gov/netp/
- Ed Tech Center @ World Education EdTech Evaluation Tool from Workforce EdTech Tools (also based on AI for Education "Top 6 Questions…)
- Avoiding Discriminatory Use of AI Tools by US Dept. Office of Ed Civil Rights- https://www.ed.gov/media/document/avoiding-discriminatory-use-of-ai
- The Dawn of the AI Era: Teens, Parents, and the Adoption of Generative AI at Home and School by Common Sense Media Sept. 2024
- In Deep Trouble: Surfacing Tech-Powered Sexual Harassment in K-12 Schools by Center for Democracy & Technology Sept. 2024

Resources for Staff Development:

- **aiforeducation.io**
  - NEW: Empower Educators to Explore the Potential of Artificial Intelligence
    - Aligned to ISTE and UNESCO Standards for Education
  - Free 2 hour Course: on demand An Essential Guide to AI for Educators
  - AI Launchpad Webinar Series
  - Prompt Library
  - Student Curriculum (also great for staff!)
    - 4 complete lessons for grades 7-9 or 10-12
    - 1. Interview a Chatbot, 2. Mind of a Machine, 3. Hallucination Detective, 4. Co-Creating an AI Policy
- **Code.org**
  - "AI 101 for Educators" Approx. 5 hours, on demand
  - How AI Works Video Series (for teachers and students)

- **Common Sense Media**
  - NEW- 'AI Foundations for Educators" free online course: https://www.commonsense.org/education/training/ai-foundations
  - Lessons and Tools for Teaching about Artificial Intelligence
  - Curated resources 'unpack how AI can be used and its current and future economic, cultural, and social impacts"
- **Google**
  - Introduction to Generative AI
  - Considered to be an eight-hour free course (but more like 2 hours); includes information specifically about generative AI
  - Introduction to Large Language Models
  - Considered to be an eight-hour free course (but more like 2 hours); includes information specifically on Large Language Models
  - Introduction to Responsible AI course
  - Considered to be an eight-hour free course (but more like 2 hours); includes information about what responsible AI is and why it is essential
- **Microsoft**
  - Microsoft Learn Educator Center AI for Education
    - Contains 4 Educator Trainings on AI
    - AI for Education: Resources and Learning Opportunities

Resources for Parents About AI

- Common Sense Media= Parent's Ultimate Guide to AI Companions and Relationships
  - An important new resource to help guide parents through the potentially harmful use of AI companions by children.
- AI in Education 101 for Parents- A one page overview of AI for parents from AI in Education
- UNICEF-Global-Insight-AI guide for parents-2021.pdf

Resources for Teaching Students about AI

- **The AI Education Project aiEDU.org**
  - AI Snapshots
    - AI Snapshots by aiedu.org
    - 5 min critical thinking activities about AI for grades 7-12
    - The link above allows you to download a Google folder with all Snapshots.
    - Snapshots do not require student use of AI
  - AI in Five Minutes-
    - https://www.aiedu.org/ai-in-five

        - A great quick overview of AI for staff or students
    - Learn About AI
        - AI challenges & Projects https://www.aiedu.org/learn
    - Intro to AI Course
        - Full 10 week Project Based Learning course for grades 9-12
        - https://www.aiedu.org/intro-to-ai
    - Moral Machine- Card Game
        - Emphasizes Critical Thinking and Ethical Issues of AI
        - https://drive.google.com/file/d/1V68obfPtrJy9PzXbCzj_tLTmEGB6AZIk/view
- **AI for Education aiforeducation.io**
    - Student Curriculum lessons
        - https://www.aiforeducation.io/curriculum (also great for staff!)
        - 4 complete lessons for grades 7-9 or 10-12
        - 1. Interview a Chatbot, 2. Mind of a Machine, 3. Hallucination Detective, 4. Co-Creating an AI Policy
    - Prompt Library for Students
        - https://www.aiforeducation.io/prompt-library-for-students
        - An ever growing collection of well developed prompts geared toward student use of genAI as a learning partner.
        - Prompts can be copied and pasted, then edited to suit as needed.
    - NEW Uncovering Deepfakes- Classroom Guide + Discussion Questions
- **Code.org**
    - How AI Works Video Series
    - AI Curriculum (multiple options for grades 3-12)
    - Educators can use code.org curriculum and their learning platform for free. It allows educators to create classes and make assignments.
- **Common Sense Media**
    - AI Literacy Lessons for Grades 6-12
    - Eight 15-20 minute lessons
- **Google**
    - Learn About Generative AI by Google
    - 5 Must Knows to Get Started with generative AI (video)

References

AI for Education."Drafting a GenAI Academic Policy at Your School." *AI for Education*, 2023, https://www.aiforeducation.io/ai-resources/drafting-a-genai-academic-policy. Accessed 5 Dec. 2023.

AI for Education."Guide to Developing AI Policy at Your School." *AI for Education*, 2023, https://www.aiforeducation.io/ai-resources/ai-policy-guide-school. Accessed 5 Dec. 2023.

AI for Education., Cubero,V. "How to Use AI Responsibly EVERY Time." *AI for Education*, 2023, https://www.aiforeducation.io/ai-resources/how-to-use-ai-responsibly-every-time. Accessed 5 Dec. 2023.

AI for Education."Prompt Library." AI for Education, 2023, https://www.aiforeducation.io/prompt-library-all-prompts. Accessed 16 Dec. 2023.

AI for Education."Top 6 Questions for GenAI Ed Tech Providers." *AI for Education*, 2023, https://www.aiforeducation.io/ai-resources/questions-genai-edtech. Accessed 5 Dec. 2023.

Blunt, L, Bucshon, L. "The Artificial Intelligence (AI) Literacy Act.", 2023. https://bluntrochester.house.gov/uploadedfiles/20231215_ai_text.pdf. Accessed 21 Dec. 2023.

Center for Democracy & Technology. "Off Task: Ed Tech Threats to Student Privacy and Equity in the Age of AI." *Center for Democracy & Technology*, 2023. https://cdt.org/wp-content/uploads/2023/09/091923-CDT-Off-Task-web.pdf Accessed 27 Oct. 2023.

Clark, Holly. "Why AI Detectors are Problematic and What to Do Instead." *Infused Classroom, 2023.* https://www.hollyclark.org/2023/09/22/why-ai-detectors-are-problematic-and-what-to-do-instead/ Accessed 25 Nov. 2023.

Code.org, CoSN, Digital Promise, European EdTech Alliance, Larimore, J., and PACE (2023). "AI Guidance for Schools Toolkit". Accessed from teachai.org/toolkit. 20 Dec. 2023.

Common Sense Media. "AI Evaluation Tool." *Common Sense Media*, 2023, https://www.commonsensemedia.org/aiframework. Accessed 5 Dec. 2023.

Cubero, Vera (NCDPI)."How to Use AI Responsibly EVERY Time." *AI for Education & Vera Cubero*, 2023, https://www.aiforeducation.io/ai-resources/how-to-use-ai-responsibly-every-time. Accessed 5 Dec. 2023.

Cubero, Vera (NCDPI)."3 Bikes Analogy." 2023, https://go.ncdpi.gov/AI_in_Education-3Bikes. Accessed 3 Dec. 2023

Cubero, Vera (NCDPI)."Can I Use AI on this Assignment? Generative AI Acceptable Use Scale." 2023, https://go.ncdpi.gov/AI_Assessment_Scale. Accessed 18 Dec. 2023.

Cubero, Vera (NCDPI).”Comparing LLMs.” https://go.ncdpi.gov/ComparingLLMs. Accessed 30 Dec. 2023.

Cubero, Vera (NCDPI). “CRAFT AI Prompting Framework for Educators.” 2023, https://bit.ly/CraftPromptEdu. Accessed 5 Dec. 2023.

Cubero, Vera, Dall-E 3. "Outline of North Carolina Filled with AI and Computer Science Imagery…." OpenAI's DALL-E, ChatGPT, chat.openai.com, Accessed 9 Jan. 2024.

Cubero, Vera (NCDPI). “Strategies to Ensure More Accurate Responses from LLMs”. 2023, https://go.ncdpi.gov/AI_Strategies Accessed 17 Dec. 2023.

Office of Digital Teaching & Learning at North Carolina Department of Public Instruction. “Leading K12 Schools in the Age of AI.” https://go.ncdpi.gov/LeadingK12AgeAI. Accessed 2, Dec. 2023.

OpenAI. 'Overall Evaluation of 'North Carolina Department of Public Instruction AI Implementation & AI Literacy Recommendations and Considerations for Public Schools' Document.' ChatGPT, https://chat.openai.com/share/a401dfeb-0945-494a-a2e4-0060a13dae3c . 1 Jan. 2024.

Perkins, M., Furze, L., Roe, J., & MacVaugh, J., 2023. “Navigating the generative AI era: Introducing the AI assessment scale for ethical GenAI assessment”. arXiv preprint arXiv:2312.07086. Accessed 17, Dec. 2023.

Portrait of a Graduate. "North Carolina Department of Public Instruction”, North Carolina Department of Public Instruction, 2021. Accessed 4 Dec. 2023, www.dpi.nc.gov/districts-schools/operation-polaris/portrait-graduate.

Teach AI. "AI Guidance for Schools Toolkit." *Teach AI*, 2023, https://www.teachai.org/toolkit. Accessed 15 Nov. 2023.

Teach AI. “Teach AI Foundational Policy Ideas for AI In Education.“ *Teach AI, 2024,* https://www.teachai.org/policy. Accessed 25 April 2024.

U.S. Department of Education, Office of Educational Technology. "Artificial Intelligence and Future of Teaching and Learning: Insights and Recommendations." *U.S. Department of Education*, 2023, Full Report. https://tech.ed.gov/ai-future-of-teaching-and-learning/ Accessed 20 Nov. 2023.

U.S. Department of Education, Office of Educational Technology. "National Educational Technology Plan 2024" *U.S. Department of Education*, 2024, https://tech.ed.gov/netp/ Accessed 25 April 2024.

World Economic Forum. "Future of Jobs Report 2023." *World Economic Forum*, 2023, https://www3.weforum.org/docs/WEF_Future_of_Jobs_2023.pdf. Accessed 25 Nov. 2023.